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The effects of COVID-19 pandemic on Physical activity and sports: An overview of scientific production in the field

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Abstract

Purpose: The purpose of this study is to analyze descriptively scientific documents published in the Web of Science in physical activity and sports and reveal an observational overview of the research process in the unexpected pandemic days.

Methods: We applied a retrospective descriptive analysis from Web of Science within the permission of this database for non-commercial open access data usages. We applied a customized query in the titles and abstracts of WoS indexed materials that contain at least one of "COVID-19" or "SARS-CoV-2" with "Physical activity" or "Sport" keywords (last inclusion on 03 January 2021).

Results: After the filtering within keywords "COVID-19 and SARS-CoV-2" with "physical activity or sport", 466 publications were founded in the core collection. These publications were produced with the contribution of 3254 researchers from 90 countries and 712 different institutions & universities. These 466 studies consist of 322 original research, 3 corrections, 71 editorial materials, 15 letters, 3 abstracts, and 51 reviews published in 224 different journals, the physical activity, or sport-related publications in the pandemic process 1045 times cited.

Discussion: The finding of the present study indicates that found large volume of scientific documents published in 2020. Therefore, it suggested that a fast research process with analysis, submission, and acceptance. The importance of the pandemic once again revealed that the question of what the future role and organization of sport should be more discussed. It is important to recognize and promote the potential beneficial effects of sport on physical, mental, and social health.

Keywords: COVID-19 pandemic, physical activity, Web of Science.

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Introduction

The new coronavirus pandemic affected negatively daily life in almost all areas such as education, health, sports, and also forced people to change daily habits (1,2). There is a growing literature with a rapid scientific production process regarding COVID-19 and the importance of study topics have emerged (3). It is predicted that the effects of the COVID-19 pandemic, which is an emerging public health problem, will occur in the long term. Investigations do not only advance in clinical aspects such as vaccination, treatment, and prevention of virus spread but also research processes have been started in the field of sports. Studies focus on impacts of COVID-19 on the area for canceled sports events or continuing in different conditions, and physically or mentally health problems due to inactivity and isolation.

Although athletes are in the low-risk group, many teams and athletes from various disciplines have been infected (4). Therefore, sports events have been stopped in almost every branch, including Europe's top football leagues such as England, Spain, Germany, and Italy (5), and the Tokyo Summer Olympics that planned to be held in 2020 has been postponed (6). In addition, the cancellation of tournaments has indirect effects on the future of the sport such as elimination tournaments that determine the athletes to participate in the 2022 Winter Olympics. It started to appear various social and economic effects on the sports industry that formed by professional teams, youth leagues, recreational and fitness centers as a result of mandatory precautions (7,8). During the pandemic, the revenues of the teams (from the audience tickets and matchday sales in food and beverage and team stores) have significantly reduced as a result of postponed sports events and continued without spectators afterward (9,10).

Pandemic related changes in athletic performance and physiological responses seem to a raising research topic. It is well studied that exhausting high-intensity endurance exercise resulted in an immunosuppressed period changing with a few hours or 2-3 days known as open window theory (11). Hence, there is not enough evidence-based relationship between increased infection risk of COVID-19 and acute high-intensity training in the athletes however team physicians advise avoiding long-term large volume exercises (12,13). In addition, it is observed that increased injury risk and functional physical capacity loss due to detraining (14). Therefore, injury management is also an important factor to the resumption of sports including nutrition, weight control, anxiety, and stress-related challenges besides physical specific training (15).

Nowadays the sedentary lifestyle and physical inactivity are considered as also pandemic whereas disrupted daily life with social distancing and strict quarantine periods diminished energy expenditure and emerged the researches on physical activity and health (16,17). Moreover COVID-19 pandemic may result in possible adverse effects such as weight gain, metabolic disorders, hypertension i.e. (18,19). Recently, Hemphill et al. (2020) showed that limitation of physical activity during the COVID-19 pandemic reduced the number of steps in children with Congenital Heart Disease (20). The COVID-19 lockdown affected the lifestyles of the youth obese population due to increased daily screen time, also decreased the time participated in sports activities (21). Distance learning, online physical education and sports classes were other obstacles against a healthy childhood development in rare times of a non-school period.

In this perspective, it has been observed that pandemic-related research and publishing process have been faster than the usual period, also production time has been shorter after acceptance (22). For this reason, it would be beneficial to show the priority and tendency of the researchers, consolidate the topics and journals, determine influencer institutions and most cited articles to understand the growing scientific materials. The purpose of this study is to analyze descriptively scientific documents published in the Web of Science in physical activity and sports and reveal an observational overview of the research process in the unexpected pandemic days.

Methods

A key aspect of the quality of scientific publications is the number of citations and publications in leading international indexes such as Web of Science (WoS) (23). WoS is a subscription-based access database run by Clarivate Analytics, on three indexes, namely Science Citation Index (SCI), Social Science Citation Index (SSCI) and Arts & Humanities Citation Index (AHCI) (24). Bibliometric analysis is used to review scientific publications using quantitative methods (25). This analysis provides defining the research trends and developing methods in the field with a structural mapping. Also, it can present a piece of network information from the perspective of researchers and institutes working in the field (26,27).

In this study, we applied a retrospective descriptive analysis from Web of Science within the permission of this database for non-commercial open access data usages. We applied a customized query in the titles and abstracts of WoS indexed materials that contain at least one of "COVID-19" or "SARS-CoV-2" with "Physical activity" or "Sport" keywords (last inclusion

on 03 January 2021). We attained a total of 547 publications with special filtering however only 466 pieces of these materials included in the analysis because of indexed in the core collection. We transferred the gathered materials to the MySQL database and performed all ranking and categorization processes at this platform.

For the bibliometric analysis, we used the WoS parameters such as citations from WoS journals, citation impact, category normalized citation, international collaborations and percentile in subject area. The citation impact is the average number of citations made per each publication in the journal. The category normalized citation is used to normalize the publications according to their average citation rate in the field of study and define an independent of category impact value. The value of being in the 1% zone of the citations made refers to percentile in subject area parameter.

Results

After the filtering WoS index keywords "COVID-19 and SARS-CoV-2" with "physical activity or sport" 466 publications were determined in the core collection. These publications were produced with the contribution of 3254 researchers from 90 countries and 712 different institutions & universities. These 466 studies consist of 322 original research, 3 corrections, 71 editorial materials, 15 letters, 3 abstracts, and 51 reviews published in 224 different journals, the physical activity or sport-related publications in the pandemic process 1045 times cited. The first 25 institutions & universities list presented in Table 1.

Tablo 1 List of scientific production according to universities and institutions.

Rank	Name	WoS Documents	Times Cited	Category Normalized Citation Impact
1	University of Southern Denmark	8	103	16.08
2	Shanghai University of Sport	3	89	36.50
3	Arizona State University	2	88	54.15
3	Willamette University	2	88	54.15
3	Oregon Research Institute	2	88	54.15
3	Shanghai Municipal Education Commission (SHMEC)	2	88	54.15
3	Arizona State University-Downtown Phoenix	2	88	54.15
8	Stanford University	6	63	9.74

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9	University of Rome Tor Vergata	5	45	9.95
10	State University of New York (SUNY) System	2	43	24.24
11	University of Milan	4	42	11.50
11	University of Padua	5	42	11.14
13	University of Naples Federico II	2	41	22.09
13	IRCCS Bambino Gesu	1	41	44.17
15	University of Genoa	6	40	7.61
15	Otto von Guericke University	3	40	14.63
15	University of Munster	3	40	14.63
15	Aspetar Orthopaedic & Sports Medicine Hospital	3	40	15.93
15	Universite de Toulouse	2	40	23.06
15	Universite de Sfax	4	40	10.97
21	York University - Canada	4	39	11.12
21	Catholic University of the Sacred Heart	4	39	10.48
21	Loughborough University	2	39	23.09
24	University of Arkansas Fayetteville	2	38	21.33
24	University of Arkansas System	2	38	21.33

As shown in the Table 2, %25,25 of total articles and %46,60 of citations consolidated in the top 10 journals. The "International Journal of Environmental Research And Public Health" leads the scientific productions within most material publishing (Table 2).

Tablo 2 *The most scientific material published journals in the area of physical activity and sports related to COVID-19 pandemic.*

Rank	Name	WoS Documents	Times Cited
1	International Journal of Environmental Research And Public Health	52	106
2	Journal of Sport and Health Science	6	98
3	Obesity	4	58
4	Nutrients	15	54
5	Journal of Translational Medicine	2	41
6	Journal of Clinical Medicine	4	34
7	Pediatric Allergy and Immunology	1	27
8	British Journal of Sports Medicine	12	24
9	Sustainability	14	23
10	Frontiers in Psychology	10	22

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Total				120	487

Interestingly, 55 different agencies supported 111 publications. The first 10 funding agencies and their granted publications & citations listed in Table 3. When considered the geographical contributions of the WoS materials related to COVID-19 and physical activity & sport, USA was the most active country whereas followed by Italy and UK as second and third. These first three countries donated %55,36 of WoS documents and %69,09 of citations (Table 4).

Table 3. The first 10 funding agencies and their granted publications & citations.

No	Name	Rank	WoS Documents	Times Cited	Category Normalized Citation Impact
1	National Institutes of Health (NIH) - USA	1	14	63	5.31
2	NIH National Institute on Aging (NIA)	2	4	40	10.65
3	National Council for Scientific and Technological Development (CNPq)	3	9	35	5.75
4	Fundacao de Amparo a Pesquisa do Estado de Sao Paulo (FAPESP)	4	6	29	6.54
5	German Research Foundation (DFG)	5	2	28	7.94
6	Medical Research Council UK	6	2	18	9.01
7	Academy of Finland	6	1	18	18.02
8	National Health and Medical Research Council of Australia	8	3	15	8.56
9	NIH National Institute of Mental Health (NIMH)	9	3	13	6.89
10	NIH National Heart Lung & Blood Institute (NHLBI)	10	3	12	4.38

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Table 3. The Geographical contributions of the WoS materials related to COVID-19 and Physical activity & sports.

Rank	Name	WoS Documents	Times Cited	Category Normalized Citation Impact	Impact Relative to World	International Collaborations
1	USA	110	355	3.88	1.44	51
2	Italy	68	325	5.23	2.13	36
3	United Kingdom	80	142	2.17	0.79	47
4	Spain	57	136	2.75	1.06	36
5	England	67	134	2.42	0.89	40
6	China Mainland	27	130	5.88	2.15	18
7	Denmark	12	120	13.43	4.46	12
8	Brazil	43	111	3.07	1.15	17
9	Canada	35	100	3.49	1.27	20
10	Germany	22	80	3.48	1.62	17
11	Australia	35	75	3.00	0.96	19
12	France	26	72	3.10	1.23	19
13	Netherlands	20	51	2.95	1.14	13
14	Qatar	8	49	7.39	2.73	8
15	Portugal	12	46	4.56	1.71	7

The high impact publications presented with detailed information of the source, type, topic, and citation analysis at Table 5. According to this list, the first 25 WoS documents consist of 3 editorial materials, 2 reviews, and 20 original articles. This result showed that most influencer publications focused on physical and mental health and inactivity relationship. The publications also highlighted the recommendations for healthy behavior and overcome the negative effects of pandemic and isolation. Only one study treats that return to the exercise and sport and cardiovascular considerations after the infection.

Tablo 5 The detailed informations and citation analysis of first 25 influencer publications.

No	Article Title	Authors	Source	Research Area	Type	Times Cited	Category Expected Citations	Category Normalized Citation Impact	Percentile in Subject Area	Journal Impact Factor
1	Coronavirus disease (COVID-19): The need to maintain regular physical activity while taking precautions	Chen, P., Mao, L., Nassis, G. P., Harmer, P., Ainsworth, B., & Li, F.	Journal Of Sport And Health Science	Sport Sciences; Hospitality, Leisure, Sport & Tourism	Editorial Material	86	0.81	105.84	0.13	5.20
2	Eating habits and lifestyle changes during COVID-19 lockdown: an Italian survey	Di Renzo, L., Gualtieri, P., Pivari, F., Soldati, L., Attinà, A., Cinelli, G., ... & De Lorenzo, A.	Journal Of Translational Medicine	Medicine, Research & Experimental	Article	41	0.93	44.17	0.16	4.12
3	Effects of COVID-19 Home Confinement on Eating Behaviour and Physical Activity: Results of the ECLB-COVID19 International Online Survey	Ammar, A., Brach, M., Trabelsi, K., Chtourou, H., Boukhris, O., Masmoudi, L., ... & Hoekelmann, A.	Nutrients	Nutrition & Dietetics	Article	35	0.88	39.75	0.04	4.55
4	Effects of COVID-19 Lockdown on Lifestyle Behaviors in Children with Obesity Living in Verona, Italy: A Longitudinal Study	Pietrobelli, A., Pecoraro, L., Ferruzzi, A., Heo, M., Faith, M., Zoller, T., ... & Heymsfield, S. B.	Obesity	Nutrition & Dietetics; Endocrinology & Metabolism	Article	33	0.88	37.68	0.05	3.74
5	People with Suspected COVID-19 Symptoms Were More Likely Depressed and Had Lower Health-Related Quality of Life: The Potential Benefit of Health Literacy	Nguyen, H. C., Nguyen, M. H., Do, B. N., Tran, C. Q., Nguyen, T. T., Pham, K. M., ... & Duong, T. V.	Journal Of Clinical Medicine	Medicine, General & Internal	Article	33	14.53	2.27	2.97	3.30
6	Depression, Anxiety and Stress during COVID-19: Associations with Changes in Physical Activity, Sleep, Tobacco and Alcohol Use in Australian Adults	Stanton, R., To, Q. G., Khalesi, S., Williams, S. L., Alley, S. J., Thwaite, T. L., ... & Vandelanotte, C.	International Journal Of Environmental Research And Public Health	Environmental Sciences; Public, Environmental & Occupational Health	Article	28	0.84	33.37	0.12	2.85
7	The first, holistic immunological model of COVID-19: Implications for prevention, diagnosis, and public health measures	Matricardi, P. M., Dal Negro, R. W., & Nisini, R.	Pediatric Allergy And Immunology	Pediatrics; Allergy; Immunology	Review	27	1.71	15.82	0.35	4.70
8	Considerations for Obesity, Vitamin D, and Physical Activity Amid the COVID-19 Pandemic	Carter, S. J., Baranauskas, M. N., & Fly, A. D.	Obesity	Nutrition & Dietetics; Endocrinology & Metabolism	Article	25	0.88	28.54	0.08	3.74

9	Covid-19 and the Subsequent Lockdown Modified Dietary Habits of Almost Half the Population in an Italian Sample	Scarmozzino, F., & Visioli, F.	Foods	Food Sciences & Technology	Article	21	0.71	29.41	99.02	4.09
10	COVID-19 pandemic: the effects of quarantine on cardiovascular risk	Mattioli, A. V., Puviani, M. B., Nasi, M., & Farinetti, A.	European Journal Of Clinical Nutrition	Nutrition & Dietetics	Article	20	0.88	22.71	0.13	3.29
11	COVID-19 Pandemic: Prevention and Protection Measures to Be Adopted at the Workplace	Cirrincione, L., Plescia, F., Ledda, C., Rapisarda, V., Martorana, D., Moldovan, R. E., ... & Cannizzaro, E.	Sustainability	Environmental Studies; Environmental Sciences; Green & Sustainable Sciences & Technology	Article	19	0.91	20.95	0.10	2.58
12	Lifestyle risk factors, inflammatory mechanisms, and COVID-19 hospitalization: A community-based cohort study of 387,109 adults in UK	Hamer, M., Kivimäki, M., Gale, C. R., & Batty, G. D.	Brain Behavior And Immunity	Neurosciences; Psychiatry; Immunology	Article	18	1.00	18.03	0.23	6.63
13	Glycaemic Control Among People with Type 1 Diabetes During Lockdown for the SARS-CoV-2 Outbreak in Italy	Bonora, B. M., Boscari, F., Avogaro, A., Bruttomesso, D., & Fadini, G. P.	Diabetes Therapy	Endocrinology & Metabolism	Article	17	0.87	19.51	0.35	3.18
14	Social isolation during the COVID-19 pandemic can increase physical inactivity and the global burden of cardiovascular disease	Peçanha, T., Goessler, K. F., Roschel, H., & Gualano, B.	American Journal Of Physiology-Heart And Circulatory Physiology	Physiology; Cardiac & Cardiovascular Systems; Peripheral Vascular Disease	Article	16	1.00	16.03	0.10	3.86
15	The Impact of COVID-19 on Physical Activity Behavior and Well-Being of Canadians	Lesser, I. A., & Nienhuis, C. P.	International Journal Of Environmental Research And Public Health	Environmental Sciences; Public, Environmental & Occupational Health	Article	16	0.84	19.07	0.37	2.85
16	Human needs in COVID-19 isolation	Matias, T., Dominski, F. H., & Marks, D. F.	Journal Of Health Psychology	Psychology, Clinical	Editorial Material	15	1.24	12.08	1.52	2.50
17	Obesity and Outcomes in COVID-19: When an Epidemic and Pandemic Collide	Sanchis-Gomar, F., Lavie, C. J., Mehra, M. R., Henry, B. M., & Lippi, G.	Mayo Clinic Proceedings	Peripheral Vascular Disease	Article	14	1.57	8.94	0.99	6.94

#	Title	Authors	Journal	Category	Type					
18	A Game Plan for the Resumption of Sport and Exercise After Coronavirus Disease 2019 (COVID-19) Infection	Phelan, D., Kim, J. H., & Chung, E. H.	Jama Cardiology	Cardıac & Cardiovascular Systems	Editorial Material	13	0.68	19.02	0.57	12.79
19	15 Smartphone Apps for Older Adults to Use While in Isolation During the COVID-19 Pandemic	Banskota, S., Healy, M., & Goldberg, E. M.	Western Journal Of Emergency Medicine	Emergency Medicine	Review	12	0.87	13.78	1.27	1.81
20	Mental Health and Behavior of College Students During the Early Phases of the COVID-19 Pandemic: Longitudinal Smartphone and Ecological Momentary Assessment Study	Huckins, J., Hedlund, E. L., Rogers, C., Nepal, S. K., Wu, J., Obuchi, M., ... & Campbell, A. T.	Journal Of Medical Internet Research	Health Care Sciences & Services; Medical Informatics	Article	12	0.64	18.85	0.33	5.03
21	COVID-19 Confinement and Health Risk Behaviors in Spain	López-Bueno, R., Calatayud, J., Casaña, J., Casajús, J. A., Smith, L., Tully, M. A., ... & López-Sánchez, G. F.	Frontiers In Psychology	Psychology, Multidisciplinary	Article	11	0.55	20.05	0.28	2.07
22	Impact of the COVID-19 virus outbreak on movement and play behaviours of Canadian children and youth: a national survey	Moore, S. A., Faulkner, G., Rhodes, R. E., Brussoni, M., Chulak-Bozzer, T., Ferguson, L. J., ... & Tremblay, M. S.	International Journal Of Behavioral Nutrition And Physical Activity	Physiology; Nutrition & Dietetics	Article	11	0.75	14.58	0.18	6.71
23	Glycemic Control in Type 1 Diabetes Mellitus During COVID-19 Quarantine and the Role of In-Home Physical Activity	Tornese, G., Ceconi, V., Monasta, L., Carletti, C., Faleschini, E., & Barbi, E.	Diabetes Technology & Therapeutics	Endocrinology & Metabolism	Article	10	0.87	11.48	0.86	4.39
24	Self-quarantine and weight gain related risk factors during the COVID-19 pandemic	Zachary, Z., Brianna, F., Brianna, L., Garrett, P., Jade, W., Alyssa, D., & Mikayla, K	Obesity Research & Clinical Practıce	Nutrition & Dietetics; Endocrinology & Metabolism	Article	10	0.88	11.42	0.69	2.06
25	Mental Health Problems during the COVID-19 Pandemics and the Mitigation Effects of Exercise: A Longitudinal Study of College Students in China	Zhang, Y., Zhang, H., Ma, X., & Di, Q.	International Journal Of Environmental Research And Public Health	Public, Environmental & Occupational Health; Environmental Sciences	Article	10	0.84	11.92	0.75	2.85

Discussion

This study set out with the aim of descriptively analyzing the Web of Science publications in relation to physical activity and sport in unprecedented times due to the COVID-19 pandemic. The finding of the present study indicates that found large volume of scientific documents published in 2020. Therefore, it suggested that a fast research process with analysis, submission, and acceptance. A recent study by Palayew et.al. investigated that COVID-19 related publications in general topics and found enormous number (7155) of published materials (22). Likewise, they argued that fast reviewing and production process challenging the editors and reviewers against the time for peer reviews resulted in a shorter period to first submission and final decision (28).

The first finding of this study was most of the WoS documents focus on health and physical activity topics whereas athletic performance in professional sports to be of secondary importance. Accordingly, the ranking of the journals showed that "International Journal Of Environmental Research And Public Health" takes first place in most published and cited materials.

Moreover, in the time of the COVID-19 pandemic, the increase of fund-raising and being health-related institutions for current physical activity and sport publications support those findings. For example, "National Institutes of Health (NIH)" was the first-ranked agency to give support to researches. When we sort the most productive institutions, Shanghai University of Sport surprisingly took 2nd place as a sport-specific institution. In addition, "Journal of Sport and Health Science" was also 2nd place for journals ranking in the COVID-19 pandemic. In this study, the geographical contribution of the WoS documents was important because the first 3 countries, the USA, Italy, and UK, already experienced the worst pandemic in the perspective of schedule and infection (Table 4). As an expected outcome, number of International Collaborations in these scientific publications founded significantly increase during this worldwide emergency. The current study found that most cited articles published in the high impact factor journals in Table 5. These results showed that topics of these scientific papers were staying healthy with physical

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activity and exercise and the relationship between infection risk and sports (29,30). One of the leading subjects was isolation and inactivity related increase in cardiovascular health risk and defining the relationship between infection and prior exercising. The striking papers also included exercise or nutrition recommendations for mental health and weight management. This also accords with our earlier observations that underlined minimizing the impact of inactivity during lockdown and isolation in the time of pandemic. The conclusions of recent studies were breaking often sedentary habits, reduce sitting time, maintain daily physical activity by household i.e. and exercise regularly (16,29,31). Consistent with the current findings in the literature researchers emphasized the mental health and physical activity during the COVID-19. The study conducted by Brooks et al., indicated that quarantine periods would regard as a high-stress cause and affect negatively the psychological mood of individuals (fear, anger, and anxiety) who disrupted from daily life (32). Similarly, another study highlighted to the negative emotional impacts of COVID-19 outbreak (33). This finding is consistent with that of Hiremath et al. highlighted that importance of physical activity and regular exercise to overcome to adverse consequences of COVID-19 pandemic to mental health (34).

Future studies required to remark and understand the inequalities occurred in the current pandemic, such as labelling coronavirus the 'Chinese Virus' (35). Similarly, there is the same socio-economic inequality in all community for access or afford physical activity and sports resources. Some of the financially secured elite athletes can access the training including facilities and personal trainers. On the other hand, some low-level players form any discipline facing off payment cuts in the competitive area. The importance of the pandemic once again revealed that the question of what the future role and organization of sport (when definition and concept confusion is set aside) should be more discussed (36). In conclusion, it is important to recognize and promote the potential beneficial effects of sport on physical, mental, and social health.

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Acknowledgement

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Oral Presentation No: 12603

Myocardial injury and heart failure after Covid-19; A case report

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Abstract: Covid-19 disease is known about involvement of myocardium and myocardial injury.
Binding of virus to host cells by ACE2 receptors were accused in pathophysiology. In this paper a 31 years old female patient was presented. Patient admitted with chest pain and edema after tenth day of Covid-19 diagnosis. She had rales on thorax auscultation and pretibial pitting +3 edema. Laboratory findings revealed increases in troponin I, transaminases and pro-BNP.
Echocardiography revealed EF as 20%. Coronary angiography was normal. She was diagnosed as myocardial injury and heart failure related to Covid-19. She was treated with ivabradin, metoprolol, and spironolactone/hydrochlorothiazide. Her clinical condition improved and she was discharged. One month later she came for a control visit. Laboratory findings were greatly improved but echocardiography revealed persistently low EF as 20%. Patients who have myocardial injury findings related to Covid-19 disease must be carefully followed and if necessary, early intervention or medication must be considered.

Keywords: Covid-19, myocardial injury, heart failure

SARS-CoV-2 enters in to target cells by angiotensin converting enzyme 2 (ACE2) receptors. ACE2 receptors vastly exist in cardiovascular system and SARS-CoV-2 may target there receptors and cells. ACE2 receptors have important role in myocardial damage in Covid-19 disease (1). Virus may directly show hazardous effects on myocardial cells and may trigger myocarditis. Also cytokine response to viral infection may result in immunity mediated cell injury. Virus may also cause microangiopathic injury and by this way it may cause myocardial injury, usually troponin levels will increase in the process (2). Patients who experience myocardial injury may not disclose symptoms specific to myocardial injury but they may have high fever, cough, dyspnea and myalgia complaints, which are frequent seen in Covid-19. Acute coronary syndromes, stress and sepsis related cardiomyopathy must be taken into account in differential diagnosis and coronary angiography may be extremely beneficial in older people (3). A patient who had acute myocardial injury related to Covid-19 and who developed heart failure meanwhile, will be presented.

Presentation of Case
A 31 years old, female, Caucasian patient admitted to healthcare facility with cough, general myalgia and dyspnea complaints. She had no previous diseases nor drug usage history. Polymerase chain reaction test for SARS-CoV-2 was resulted positive. Thorax computed tomography of patient revealed ground glass opacifications concordant with viral pneumonia. Patient was recommended to use favipiravir tablets 2x1600 mg in first day and 2x600 mg in following 4 days. Since she had no risk factors favoring hospitalization, she was followed at home. On tenth day after diagnosis, patient returned

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to hospital with high fever, severe cough, dyspnea and chest pain and she was hospitalized. Physical examination revealed a blood pressure of 110/70 mmHg, diffuse rales at lower segments of lungs bilaterally and diffuse bilateral peripheral pretibial pitting edema. Laboratory results of patient were shown in Table 1. Electrocardiogram revealed nonspecific ST-T segment changes with sinus rhythm. Chest x-ray revealed pleural effusion bilaterally. Echocardiography revealed ejection fraction as low as 20%, 2. degree mitral insufficiency, 2-3. degree tricuspid insufficiency and pulmonary artery pressure as 50 mmHg. She was prediagnosed as secondary pneumonia, acute coronary syndrome and heart failure. She was given meropenem 2x1 g intravenous (iv), methylprednisolon 1x40 mg iv, furosemide 5x40 mg iv, sprinolactone plus hydrocholorothiazide tablets 1x25/25 mg per oral (po), metoprolol 1x25 mg po, ivabradin 2x5 mg po, enoxaparine 1x6000 IU subcutaneously as treatment. Because of chest pain and increase in troponin I levels, coronary angiography was performed and reported to be normal. HLA-B27, rheumatoid factor, anti nuclear antibody, anti cyclic citrullinated peptide antibody, hepatitis B virüs antigen and anti hepatitis C antibody tests were performed in order to evaluate possible differential diagnoses of pleural effusion and peripheral edema and all were found to be normal. Because of increases in transaminase levels, abdomen ultrasonography was performed and no pathologic finding was reported. Patient was diagnosed as secondary bacterial pneumonia and myocarditis related to Covid-19 disease. Her clinical progress improved remarkably and on ninth day of hospitalization she was discharged with methylprednisolon 1x16 mg po, sprinolactone plus hydrocholorothiazide tablets 1x25/25 mg po, metoprolol 1x25 mg po, ivabradin 2x5 mg po as medications. Patient admitted to hospital for control after one month. Most of complaints, but peripheral edema, of patient was relieved. Laboratory findings of patient in control visit were shown in Table 1. Control echocardiography showed an ejection fraction of 20% persistently. She was advised to continue follow-ups for hearth failure with recommended medications.

Table 1. Laboratory findings of patient on hospitalization day and on control visit.

Test	Hospitalization Day	Control Visit (one month)	Normal Values
Troponin (ng/mL)	5	0.2	0-0.3
ALT[*] (U/L)	2769	34	0-33
AST[†] (U/L)	1012	28	0-32
CRP[‡] (mg/dL)	229	23	0-5
Hemoglobin (g/dL)	12.60	11.50	12.50-16.00
Procalcitonine (ng/mL)	0.65	-	0-0.5
Ferritin (ng/mL)	1129	113	18-200
INR[§]	1.72	1.20	0.80-1.20
ALP[‖] (U/L)	101	84	35-104
GGT[¶] (U/L)	110	32	0-40
Albumin (g/dL)	3.26	4.00	3.50-5.20
ProBNP[**] (pg/mL)	1315	450	<100
D-dimer (µg/mL)	1100	302	0-500

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Kreatinin kinaz (U/L)	636	324	39 - 308

* Alanine aminotranspherase, † Aspartate aminotranspherase, ‡ C-reactive protein, §
Prothrombine time international standardization ratio, ‖ Alkaline phosphatase, ¶
Gammaglutamyl transpherase, ** Pro-brain natriuretic peptide

Discussion

SARS-CoV disease in 2003 was reported to cause myocardial injury in patients. Since SARS-CoV-2 has similar penetration patterns into host cells, myocardial injury mechanism are tought to be same. These mechanisms were reported as; increased cytokine levels promoting destruction of infected host cells, exaggerated immunologic reactions taking place in host, systemic over inflammation, direct toxic effects of virus to myocytes, increase in ACE2 receptors existing in coronary arteries and cardiac tissue and increased hypoxia resulting from diminished blood flow because of unstable plaques in coronary arteries (4-6). Mononuclear cell infiltrations were found in cardiac tissue in autopsy of patients who lost their lives because of Covid-19 (7). SARS-CoV-2 was reported to cause myocarditis and cardiac ischemia so concomitant myocardial injury and elevations in troponin levels are expected (8). A study with reported that 12% of patients had myocardial injury related to Covid-19 (9). Another study reported that 15% of patients had increased troponin levels (10). There were 7% acute myocardial injury in a study from China, and 80% of these patients were followed in intensive care unit (11). In a previous case report, a 47 years old male patient was presented, in whom myocardial injury developed along with Covid-19 disease; he could completely recover from both conditions (12).

In this presented 31 years old female patient, miyocardial injury and heart failure seemed to be prolonged although Covid-19 disease was resolved and laboratory findings showed prominent amelioration. Prognosis of myocarditis resulting from Covid-19 disease is still a mystery. There are still many unclear underlying mechanisms in acute myocardial injury in Covid-19 requiring explanation. Covid-19 patients who have findings of myocardial injury must be carefully followed after hospitalization and if necessary, early intervention or medication must be considered.

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Students', Who Study At First 3 Classes Of Medical Faculties, Perspectives On Distance Education At Covid-19 Term

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ABSTRACT

Aim: Aim of this study is to determine the views of the students studying in the first 3 grades of the medical faculty during the Covid-19 pandemic, regarding their perspective on the pandemic with the distance education system. In line with the aim of the study, a survey was applied to the students studying at the medical faculty of the universities in TRNC.

Methods: The survey, has four parts, was prepared according to the five-point Likert scale, except for first. First has thirteen questions about students' demographic information. Second has five questions about technology. Third has four questions about their self-efficacy and last has seven questions.

The survey was delivered via online forms. Participants read and accept the informed consent form. The survey data were analyzed with descriptive statistics with SPSS.

Analyzes results, the views of the students who studied at the medical faculty during the Covid-19 pandemic, as a result of their experiences with the distance education system during the pandemic period, were determined regarding their perspectives, self-efficacy and distance education courses.

Results and Discussions: As a result, the ability to re-monitor the records related to the continuation of medical education with remote methods, flexible training opportunities and saving time were found to be positive, while the inadequacy of laboratory courses, inability to access the internet and the instructor, and socially isolated feelings were identified as negative aspects. It has been suggested that medical education should be given through a reverse education system that blends traditional education methods with distance education methods.

Keywords: Distance Education, Medical faculty, Pandemic Period, Studentds

INTRODUCTION

After Covid-19 was accepted as a worldwide pandemic in 2019, education in schools was suspended with the first case in all countries(1, 2). In order to prevent the epidemic, distance education began to be implemented instead of face-to-face training. Various methods such as synchronous and asynchronous have been used in distance education(3). The pandemic caught all countries unprepared(4). With the progress of the pandemic, distance education applications started(5). However, distance education posed major problems for both educators and students. These problems are internet infrastructure problems and the lack of devices to connect to the internet. With these

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problems, people's motivation may decrease(6). Therefore, the opportunities and motivations of medical faculty students in distance education should be examined.

Aim of this study is to determine the views of the akademicians lecturing at medical faculty during the Covid-19 pandemic, regarding their perspective on the pandemic with the distance education system. In line with the aim of the study, a survey was applied to the akademicians lecturing at medical faculty of the universities in Turkish Republic of Northern Cyprus.

METHODS

The survey form, consisting of four parts, was prepared according to the five-point Likert scale(7), except for the first part. In the first part, there are thirteen questions about the demographic information of medical faculty students and their general situation regarding distance education. In the second part, there are five questions about technology, systems and applications used in online education. In the third part, there are four questions about the self-efficacy of medical faculty students. In the last part of the questionnaire, there are seven questions aimed at determining the opinions of the medical faculty students about the health sciences courses they give through distance education(2, 8, 9).

The survey was delivered via online forms. Participants read and accept the informed consent form. The survey data were analyzed with descriptive statistics with SPSS.

Analyzes results, the views of the akademicians lecturing at medical faculty during the Covid-19 pandemic, as a result of their experiences with the distance education system during the pandemic period, were determined regarding their perspectives, self-efficacy and distance education courses(7, 10).

Survey(4, 7, 11):

Demographic features

Gender

Male

Woman

Age

30 and below

31 - 40

41 - 50

51 and above

<u>Title</u>

Faculty Member

Teaching staff

<u>University type</u>

State

Foundation

<u>Have you taught Distance before?</u>

Yes

No

<u>Which systems do you use in distance education?</u>

Adobe

Zoom

Skype

Blackboard

Microsoft Teams

Google Classroom

Moodle

Hangouts Meet

Edmodo

Teamlink

I do not know

<u>In which way do you provide interaction in the distance education?</u>

Synchronous

Asynchronous

Mixed

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Which resources are used in your lessons in the distance education environment?

Video recordings taken by the instructor

Video recordings of others

By uploading various documents (PDF, slide, Word, book etc.) prepared by the instructor

By uploading someone else's various documents (PDF, slide, Word, book, etc.)

How were you teaching the lessons before Covid-19?

Using wood in the classical way

Using PDF, Slide

Both methods

Would you like to use distance education methods in your lessons after Covid-19?

Yes

No

I am indecisive

Has the pandemic affected your perspective on your profession?

Yes

No

I am indecisive

If the pandemic affected your perspective on your profession, how?

Positive

Negative

I am indecisive

How did the pandemic affect your competencies in your profession?

Positive

Negative

Did not affect

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For questions, choose the most appropriate Statements.

Strongly Disagree, Disagree, Undecided, Agree, Strongly Agree

Our distance learning center provides adequate technical support when I need it.

Our distance education center has provided sufficient training on the use of the post-Covid-19 distance education system.

The distance education system and applications we use are easy to use.

I had technical problems while using the distance education system (connection, lack of infrastructure, etc.).

I had a hard time getting used to the use of the system.

During the distance education process, I do not have any problems following the course resources and activities and accessing the system used.

I have the necessary knowledge and skills about how to use the distance education software used at my university.

During the distance education process, I started to use internet resources related to my field more effectively.

The distance education process contributed to my professional development.

It is appropriate to use distance education methods in my lessons.

Students are more interested in distance education lessons than in formal education.

Their ability to access lessons regardless of place and time increases their interest in the lesson.

Since there is no face to face communication, I have difficulty interacting with the lesson.

I think face-to-face compensation programs should be done after the Covid-19 period is over.

I think practical lessons should be done face to face.

I think that distance education is not necessary during the pandemic.

Your comments

RESULTS AND DİSCUSSİONS

During the pandemic period, the whole world was closed to their homes(12). For this reason, the distance education method was used. Anadolu University in Turkey is implementing distance education for many years. But this is the first time that such comprehensive distance education has been performed all ower the world(13).

According to the survey data, the medical faculty students who teach at universities in TRNC; under 30 ages, study at foundation universty, first time at distance education, use moodle, perform own synchronous. They want to use online education for some lectures. Medical faculty students improved their ability of distance education. They don't waste their time on the way. Medical faculty students think distance education has both positive and negative effects. First of all medical faculty students want to see students. Because they know whether the student understands the lesson on students face. But some students do not turn on their camera. Medical faculty students think just some practical lectures shoud be perform face to face for better learning.

As a result, it is seen positive that medical education can be taught in any environment related to the distance, providing flexible education opportunities and saving time, while the inadequacy of the laboratory lessons, the inability to make eye contact with the students and the students not following the lessons were determined as negative aspects. It has been suggested that medical education should be given through a reverse education system that blends traditional education methods with distance education methods.

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The Difficulties Experienced by Medical Faculty Intern Students in Practice Due to COVID-19 Pandemic: A Qualitative Study

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Abstract

Purpose: COVID-19 pandemic negatively affected many activities in daily life. Education is also one of the areas negatively affected by COVID-19 pandemic. During pandemic, education is mostly done online, but medical faculty intern students do their internships in the field. In this risky period, while they have to continue their education, they may experience some problems due to pandemic. This study was carried out to determine the problems experienced by the intern students of medical faculty during their clinical practice due to pandemic.

Methods: The research was designed as a qualitative descriptive research. A sample of the study was created with 15 voluntary medical faculty students who are practicing in the hospital. The data were collected by the researchers by using phone call and a semi-structured interview technique with voice recording.

Results: According to the data obtained from students, the most common difficulties that students experience during clinical practice are; fear of infected with COVID-19, not being able to act comfortably during clinical practice, fear of transmitting COVID-19 infection to their families, loneliness due to social isolation and not evaluating adequate cases due to decrease in patient population in hospital. Sub-themes are; concern about themselves, concerns about their family and relatives and concerns about their education.

Conclusion: Medical faculty students experience concerns about the health of both themselves and their families in clinical practices during the pandemic period. It is important to plan appropriate interventions and provide psychological support to students in order to prevent negative emotional effects due to loneliness, especially in this period.

Keywords: COVID-19, medical education, intern students

Introduction

COVID-19 Pandemic caused large-scale infections worldwide and negatively affected many activities in daily life. The rapid spread of COVID-19, easily transmission factor, fatality in severe cases and lack of a specific drug posed a great threat to human health (1). During this pandemic, recommendations made on the closure of educational institutions around the world to minimize contamination were taken into consideration (2). Schools and educational institutions were temporarily closed as of March 25, after the first COVID-19 case was seen in Turkey (11 March 2020) (3).

Education is one of the areas negatively affected by COVID-19 Pandemic. During pandemic, education is mostly done online, but medical faculty intern students do their internships in the field. Internship, which is the transition period from student to health care professional, is an important period of medical education. In this period, unlike the fourth and fifth grade internship periods, students gain competence through the practice of medicine under the supervision of academicians and research assistants by integrating the achievements of the first five years of the medical school education. Students have to complete the internship within 12 months and have to reach the goals of each internship sections. Although the theoretical lectures are performed via online system with great effort of faculties, internship period is outside of this scope (4).

OSHA (Occupational Safety and Health Administration) evaluated healthcare professionals in a very high risk group for COVID-19 infection (5). Intern doctors are also part of the health system. In this risky period, while they have to continue their education, they may experience some problems due to pandemic. This study was carried out to determine the problems experienced by the intern students of medical faculty during their clinical practice due to pandemic.

Methods

Research questions

The following questions were asked to the intern students included in this study:

1. What problems do you experience in practice due to the COVID-19 pandemic?
2. What are your concerns regarding the COVID-19 pandemic?

Research methodology

The research was designed as a qualitative descriptive research to evaluate the problems experienced by the intern medical students during their clinical practice due to pandemic.

Universe of the Research

The universe of the study consists of senior medical faculty students who are interns in a training and research hospital and attend an internship program in the hospital. A sample of the study was created with 15 voluntary medical faculty students who are practicing in the hospital.

Data collection

The data was collected by using semi-structured interview technique with voice recording. Individual interviews held between January 1, 2021 and January 13, 2021 lasted 10 minutes for each participant. Open ended questions created by researchers were used to identify the problems experienced in practice by students due to the COVID-19 pandemic. The students were informed about the purpose of the research and the audio recording process; their consents were obtained. The data was collected individually through face-to-face interview technique and telephone conversation. The answers were recorded with a voice recorder. After the interviews, the students were asked whether there were any topics they would like to add or remove from the interview, and the answers were reviewed again. During the interview, active listening method was used and additional questions were asked for detailed information on the subject when necessary. The interviews recorded on the tape recorder were listened and transcribed in Microsoft Word.

Data analysis

Content analysis method was used to evaluate the data. The data were evaluated independently by the researchers, and the themes and sub-themes that can be derived from each sentence were formed. Later, researchers came together and formed a common theme list. After the created themes, all themes were classified by the researchers and the theme and sub-themes were determined. Then, all interview data were interpreted and made into a report.

Results

10 female and 5 male students participated into the study and all the students are in the sixth grade medical students. According to the data analysis, themes are problems experienced by students about themselves, problems about families and relatives and concerns about the education process (Table 1).

Table 1. Categories, Themes and Sub-Themes Determined Regarding the Problems Experienced by Students in Practice Due to COVID-19 Pandemic

Category	Theme	Sub-theme
Problems experienced by students about themselves	Fear	Covid infection fear Fear of not being able to maintain social distance Fear to take off mask Inability to move freely
	Decrease in social relationship	Lack of social relations Inability to meet friends and family Lack of social shares Approaching people suspiciously
	Emotional symptoms	Distractibility Feeling lonely Anxiety Depression Stay at home Stress Uncertainty Nervousness Irritability Future anxiety
	Physical symptoms	Headache Tiredness Irritation of the hands

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		Dermatologic problems related to wearing mask
Problems experienced by students about their families and relatives	Fear	Fear of infected their family with Covid Fear of infected their friends with Covid Fear about the next term of the period
	Domestic problems	Not having enough individual spaces Increased controversy
Problems experienced by students about their education	Insufficiency in practice	Inability to perform invasive procedures due to the fear of Covid infection Inability to meet a regular patient group Inability to practice adequately Inability to perform effective physical examination Inability to take anamnesis
	Problems related to the learning process	To feel inadequate to practice Distractibility Inability to maintain social distance in libraries Difficulty to understand lectures Decreased desire to attend lectures Lack of motivation

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Discussion

Medical students in our country were affected socially and academically by the pandemic like worldwide. In the first months of the pandemic, actively working in the hospitals in order to decrease the increasing workload of health care professionals, therefore their early graduation has also come into the question (6, 7, 8). On the other hand, the theoretical courses were disrupted both due to the hospital load of academicians and due to the national decisions regarding the interruption of face-to-face education (7). In this study, the problems experienced by intern students during pandemic were investigated. This study shows that intern doctors have various concerns during their trainings.

A study conducted during the COVID-19 pandemic found that the main concerns of healthcare professionals were occupational risk, responsibility to implement social distancing, isolation and worse economy. Interns are also a part of the health care team. In literature, the importance of lecturer counseling for academic support during the pandemic in Medical Faculties and support of the relevant institution psychologist has been emphasized (8, 9).

The strength of this study is, as it is a qualitative research, it can provide the experiences, opinions and thoughts of individuals and determine their needs. Limitation is that the current views and thoughts of the interviewees can change with their family environment and social environment.

Conclusion

Medical faculty students experience concerns about the health of both themselves and their families in clinical practices during the pandemic period. It is important to plan appropriate interventions and provide psychological support to students in order to prevent negative emotional effects due to loneliness, especially in this period.

Keywords: COVID-19, medical education, internship

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Investigation The Knowledge Level On Isolation Measures Of Healthcare Professionals Serving Covid-19 Suspicious / Definitive Patients At A University Hospital

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Abstract

Purpose: To investigate the knowledge levels on isolation measures of the healthcare professionals serving the Covid-19 suspect / definite patient

Materials and Methods: The study was conducted with 651 healthcare professionals working in a university hospital between 09.12.2020 and 16.12.2020. The research data were collected with a data collection form prepared by the researchers, which consisted of 24 questions in total. IBM SPSS Statistics 21.0 program was used to analyze the data. Continuous data were given as mean ± standard deviation, and categorical data as percentage (%). $p < 0.05$ value was accepted as the criterion for statistical significance.

Results: The mean age of the healthcare professionals participating in the study was 35.56 ± 21.23 and the vast majority (63.2%) were nurses. The total knowledge point average of the healthcare professionals was determined as 7.55 ± 0.70. It was determined that the healthcare professionals knew the most (99.5%) precautions to be taken when entering the covid-19 suspect / certain patient room, and the least (83.1%) the order of removing the personal protective equipment. A statistically significant difference was found between the age of healthcare professionals and their knowledge score averages ($p < 0.05$). It was determined that as the age increased, the average knowledge score increased.

Conclusion: The knowledge level of health personnel on isolation measures which participate the study were determined to good.

Keywords: Knowledge, COVID-19, Isolation, Healthcare Professionals

Introduction

The Covid-19 pandemic continues to influence the whole world with the increasing number of cases and deaths day by day. 04.01.2021 dated data reported by WHO was that 83,910,386 people were diagnosed with Covid-19 all over the world and 1,839,660 people died due to Covid-19 (1). In Turkey, the same date as the number of cases was reported by the Ministry of Health data 13 695, while 197 were disclosed to lose their life because of Covid-19 (2).

Healthcare professionals are faced with many risks and dangers originating from the workplace throughout their working lives (3). Therefore, healthcare professionals who are at the forefront of the struggle during the covid-19 pandemic have a higher risk of being infected with the covid-19 virus. In this context, it is essential that healthcare professionals comply with covid-19 infection control and isolation rules in order to prevent the transmission of the virus from infected persons (4). Isolation, which is a protective method, refers to preventing contamination from patients infected with a virus to other patients, their attendants, visitors and healthcare personnel, as well as keeping the individual with an infectious disease separate for protective purposes (5). Isolation

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measures, which are among the important components of infection control, are examined under two main headings. The first of these is standard measures that are applied to all patients regardless of the underlying pathogen of the isolation measures and which form the basis of infection control. These measures are applied to prevent infections that can be transmitted by blood or moist body fluids. Other isolation measures are those for the disease-specific infectious agent. Respiratory isolation, droplet isolation, contact isolation are among the isolation measures depending on the contamination (6, 7).

On the other hand, hand hygiene plays an important role among the components of infection control and prevention in addition to isolation measures (8). Because the hands of healthcare professionals cause pathogenic microorganisms to be transported from source to host (9). For this reason, the importance of hand hygiene, which is also included in WHO's patient safety solutions and Health Quality Standards, should be emphasized in all health institutions, and the compliance of all healthcare personnel should be checked (10,11).

Considering that the Covid-19 virus is transmitted by the way of droplet and contaction, droplet and contact isolation measures should be applied along with hand hygiene, which is one of the standard measures in infection control. In this context, it is recommended to use gloves, gowns (non-sterile, preferably liquid-proof and long-sleeved), surgical masks, face protectors, and goggles for personnel who will be in close contact with suspicious / definitive covid-19 cases. It is emphasized that N95 / FFP2 masks should only be used during procedures that cause aerosolization such as intubation and aspiration. Apart from this, it is stated that it can be used in overalls, bonnets, foot protectors, especially in cases where there may be intense contact with the patient's body fluids and secretions. In the same guide, besides the issues to be considered when entering and exiting the patient's room, there is the order that the healthcare professionals should follow while putting on and taking off personal protective equipment (PPE). Compliance with the order of dressing and removing, which is as important as the use of PPE in healthcare professional, is among the key rules in preventing infection transmission (12).

Isolation measures for patients infected with pathogenic microorganisms should be followed not only in the clinic where the patient is hospitalized, but also during the transfer of the patient to another unit or the use of the patient's radiological imaging departments. In the covid-19 infection control and isolation guide of the Ministry of Health dated 01.06.2020, it is explained that the personnel should comply with hand hygiene and use PPE in cases where the distance with the covid-19 suspect / definite diagnosis patient should exceed one meter. In addition, the guide explains how to clean the areas and devices used (12).

In addition to taking all these measures in health institutions, it is stated critical importance in the literature that improving and evaluating the knowledge and perceptions of healthcare professionals regarding covid-19, which continues as a global threat (13,14).

In line with all these information and results, the purpose of this research is to investigate the levels of knowledge of the healthcare professionals serving the covid-19 suspect / definitive patient on isolation measures.

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MATERIAL AND METHODS

The research, designed in a descriptive type, was conducted in Eskişehir Osmangazi University (ESOGU) Health, Practice and Research Hospital between 09.12.2020 - 16.12.2020. The population of the study was composed of the healthcare professionals (N = 1047) working at ESOGU Health, Practice and Research Hospital. No sample selection method was used in the study. The sample of the study consisted of 651 healthcare professionals, including nurses, assistant healthcare professionals (nursing staff, cleaning personnel) and other healthcare professionals (technicians, technicians) who volunteered to participate in the study. Physicians were not included in the study.

Data Collection Tools

In the study, a questionnaire form prepared by the researchers by scanning the literature (6, 7, 8, 12) was used as the data collection tool. The questionnaire form consists of 24 questions in total. With this form, the sociodemographic characteristics of the participants (9 questions), the transmission status of any infectious agent (3 questions), the education status about the isolation measures (2 questions), the compliance with the isolation measures (2 questions) and the knowledge level on isolation measures to be taken in the patient with covid-19 suspect / definite diagnosis was questioned.

Collection of Data

In the university hospital where the study was conducted, issues related to infection control and isolation measures are included both in the general education plan and in the in-service trainings organized by the departments. Infection control and isolation measures are explained to the newly appointed healthcare professionals in the orientation training program. In addition, from the moment that covid-19 cases started to appear in the international arena, studies were initiated within the scope of the pandemic plan existing in the institution where the study was conducted. In this context, the directors of the institution in also whom includes the researchers of the study, activated all department managers in order to hold information meetings for Covid-19. Subsequently, the researchers summarized all guidebooks (16, 17) in the literature regarding the covid-19 pandemic, especially the guidebooks (12, 15) of the Ministry of Health, General Directorate of Public Health, and distributed the guides and posters to all units of the institution. Researchers continued to regularly share information updates on the covid-19 pandemic with all unit officers via remote access tools (whatsapp, e-mail). Thus, the awareness of all employees was increased by updating information on the subject.

After the information updates, remote access methods were used to collect data. Data collection period was determined as seven days. The data collection form prepared by the researchers by adding informed consent information and contact information was created by the remote access tool (https://docs.google.com). The data collection form, which was thought to take 7-10 minutes to answer, was delivered to the target group via remote access tools (whatsapp) and they were asked to fill it. The data collection process was completed within the planned 7 days.

Each of the correct answers given to a total of 8 questions which questioning the level of knowledge about isolation measures in the covid-19 suspect / definite diagnosis patient was evaluated with "1" point and each of the wrong answers with "0" points.

Data Analysis

Continuous datas are given as Mean ± Standard Deviation. Categorical datas are given as percentage (%). Shapiro Wilk's test was used to investigate the compatibility of the data for normal distribution. For the comparison of groups showing normal distribution, independent sample t-test analysis was used for cases with two groups, and one-way analysis of variance (One-Way ANOVA) for cases with three or more groups. Pearson Exact Chi-Square analysis was used in the analysis of the cross tables created. IBM SPSS Statistics 21.0 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.) program was used to apply the analyzes. For statistical significance, a value of $p < 0.05$ was accepted as the criterion.

Ethical Aspect of the Research

Before starting the research, T.C. Scientific research permission from the Ministry of Health General Directorate of Health Services Scientific Research Assessment Commission dated 14.07.2020, ethics committee approval dated 01.09.2020 from ESOGÜ Non-Invasive Ethics Committee, E-25403353-050.99-101423 from ESOGÜ Health, Practice and Research Hospital on 08.12.2020, an institution permission numbered E- 31568761-804.01-119632 was obtained. In addition, in the study, which was completed with the remote access tool, written consent was obtained from the participants by asking to fill in the informed consent form before filling the data collection form.

Limitations of the Study

Although the researchers shared their contact information via the data collection form in order to answer the questions of the participants for the research, the fact that the data collection forms could not be filled in face to face due to the Covid-19 pandemic is the limitation of this study.

RESULTS

74.8% of the healthcare professionals participating in the study are women, 63.3% are married, 57.8% are undergraduate, 63.2% are nurses and their average age is 35.56 ± 21.23. It was determined that approximately half of the participants (51.4%) served in clinics, 26.6% worked in the profession for 6-10 years, and 47.5% worked both night and day shifts. In addition, it was determined that 7.8% of the healthcare professionals were exposed to infection from the patient (Table 1).

Table 1: Socio-Demographic Characteristics of Healthcare Professionals

Socio-Demographic Characteristics			
The Average Age		**X ± SS**	
		35.56 ± 21.23	
		n	**%**
Gender	Female	487	74.8

	Male	164	25.2
Martial Status	**Married**	412	63.3
	Single	239	36.7
Education Status	**High school**	236	36.3
	Undergraduate	376	57.8
	Graduate	39	6.0
Occupational group	**Nurse**	412	63.2
	Auxiliary Healthcare Professional	146	22.4
	Other Healthcare Professional	93	14.2
Working Departmant	**Clinics**	335	51.4
	Critical Care Units	143	21.9
	Laboratory	69	10.5
	Other Departmants	104	15.9
Working Period in Occupation	**0-1 year**	48	7.4
	2-5 year	118	18.1
	6-10 year	173	26.6
	11-15 year	100	15.4
	16-20 year	90	13.8
	21 year and over	122	18.7
Working Period in Unit	**0-1 year**	170	26.1
	2-5 year	221	33.9
	6-10 year	146	22.4
	11-15 year	47	7.2
	16-20 year	32	4.9
	21 year and over	35	5.4
Working Shift	**Day Shift**	319	49.2
	Night Shift	23	3.5
	Day and Night Shift	309	47.5
	Yes	51	7.8

Exposure to Infection Transmission	No	600	92.1
Situation of Exposure to infected Diseases by Type of Isolation *	Respiratory İsolation	12	15.7
	Droplet İsolation	32	42.1
	Contact İsolation	3	3.9
	Standard Measures	29	38.1
TOTAL		651	100

* Healthcare personnel who exposed to tranmission (n = 51) marked more than one option.

It was determined that 90.8% of the healthcare professionals participating in the study received training for isolation measures, and 75.3% received this training within the scope of the in-service training program organized in the institution. In addition, it was determined that 21.5% of the healthcare professionals did not think that they were complying with the isolation measures, and 9.8% stated that the reason for not adapting was excessive workload (Table 2).

Table 2: Healthcare Professionals' Training and Complying Situation About İsolation Measures

Training and Complying Situation About İsolation Measures			n	%
Training About İsolation Measures	Training Situation About İsolation Measures	Yes I received training	585	90.8
		No I haven't received training	59	9.2
	Training for Insulation Measures	During vocational education	314	48.8
		In-service training in the institution	485	75.3
		In the orientation training in the institution	154	23.9
		In programs such as certificates / symposiums	35	5.4
		Other	20	3.1
Comply to İsolation Measures	Comply Situation to İsolation Measures	Yes I think I'm complying to isolation measures	596	91.5
		No I think I'm not complying to isolation measures	55	8.4
		Long working time	57	8.9

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		Excessive workload	63	9.8
		Situations requiring emergency ıntervention	37	5.8
		Difficulty about accessing to equipment	47	7.3
	Reasons Not complied to ısolation measures*	**Difficulty about putting on and off equipment**	39	6.1
		Caring for many patients	45	7.0
		Insufficient of ınstitutional standards / ınstructions	24	3.7
		Inadequate communication with the ınfection control committee	16	2.5
		Other	5	0.8

* Multiple options are marked

When the distribution of correct answers given by the healthcare professionals to the questions regarding the isolation measures was examined; the most (99.5%) correct answered question was the measures to be taken when entering the room of the covid-19 suspect / definitive patient, the least correct answer (83.1%) is the order of removing personal protective equipment.

Table 3: Distribution Of Correct Answers Given By Healthcare Professionals To Questions About Isolation Measures

Questions	Correct Answers Distribution	
	n	**%**
1. Isolation method specific to Covid-19 transmission.	613	94.1
2. Isolation of Covid-19 suspected / definitive patient in clinics.	590	90.6
3. Management of medical supplies used for Covid-19 suspected / definitive patient.	644	98.9
4. 4. Measures to be taken in medical imaging methods of Covid-19 suspected / definitive patient.	642	98.6
5. Measures to be taken in the transfer of Covid-19 suspected / definitive patient.	633	97.2

6. Measures to be taken when entering the Covid-19 suspected / definitive patient room.	648	99.5
7. Wearing order of personal protective equipment.	609	93.5
8. Removing order of personel protective equipment	541	83.1

According to the sociodemographic characteristics of the healthcare professionals, whose total knowledge score averages for isolation measures were determined as 7.55 ± 0.70, the BPO was examined in table 4.

When the age and knowledge scores of the healthcare professionals were examined, it was determined that the knowledge scores increased as the age increased, and a statistically significant difference was found between age and knowledge scores ($p < 0.05$).

When the knowledge score averages of health professionals was examined by gender, it was determined that the knowledge score averages of female health professionals was 7.55 ± 0.71 and that of male healthcare professionals was 7.56 ± 0.68. There was no statistically significant difference between gender and knowledge score averages of healthcare professionals ($p > 0.05$).

When the educational status and the knowledge score averages of healthcare professionals were examined, it was determined that the knowledge score averages of high school (7.59 ± 0.68) and undergraduate (7.59 ± 0.69) graduates were higher than the knowledge score averages (7.30 ± 0.86) of healthcare professionals graduated from a master's degree. However, there was no statistically significant difference between educational status and knowledge score averages of healthcare professionals ($p > 0.05$).

When the working period in the occupation (years) and the knowledge score averages of the healthcare professionals are examined; It was determined that the knowledge score averages (7.67 ± 0.60) of the healthcare professionals with a working period of 11-15 years are higher than the other working period groups. When the working time and knowledge score averages of healthcare professionals were compared, no statistically significant difference was found ($p > 0.05$).

Considering the knowledge score averages of healthcare professionals by working unit; it was determined that the average knowledge score of the healthcare professionals serving in the laboratory (7.63 ± 0.64) was higher than the healthcare professionals serving in intensive care, clinic and other fields. When the knowledge point averages of the healthcare professionals were compared, there was no statistically significant difference ($p > 0.05$).

Considering the knowledge score averages according to the occupational group, it was determined that the auxiliary healthcare professionals' knowledge score averages (7.68 ± 0.63) were higher than the knowledge score averages of the health personnel in the nurses and other healthcare professionals groups.

A statistical significance was found when the knowledge score averages of occupational groups and healthcare professionals knowledge score average were compared ($p < 0.05$). It was determined that this difference stems from auxiliary healthcare professionals and nurses (t: 2.73; p: 0.01).

Table 4: Knowledge Score Averages of Healthcare Professionals According to Sociodemographic Characteristics

Sociodemographic Characteristics	Knowledge Score Averages	
The Average Age (X±SS)	**p**	
35.56 ± 21.23	0.01	
	X±SS	**p**
Gender		
Female	7.55 ± 0.71	0.85
Male	7.56 ± 0.68	
Education Status		
High Scholl	7.59 ± 0.68	0.06
Undergraduate	7.59 ± 0.69	
Graduate	7.30 ± 0.86	
Working Period in Occupation (year)		
0-1 year	7.56 ± 0.68	0.19
2-5 year	7.54 ± 0.72	
6-10 year	7.45 ±0.77	
11-15 year	7.67 ± 0.60	
16-20 year	7.60 ± 0.66	
21 year and over	7.59 ± 0.68	
Working Departmant		
Clinics	7.57 ± 0.67	0.57
İntensive Care Units	7.51 ± 0.74	
Laboratory	7.63 ± 0.64	
Other Departmants	7.51 ± 0.80	
Occupational Group		
Nurse	7.50 ± 0.74	0.01
Auxiliary Healthcare Professional	7.68 ± 0.63	
Other Healthcare Professional	7.61 ± 0.59	
Total Knowledge Score Avarage	7.55 ± 0.70	

DISCUSSION

Transmission of the infectious agent from infected patients to other patients, visitors and healthcare professionals can be prevented with disease-specific isolation measures, especially standard measures (5, 18). Although every health institution has instructions and procedures for isolation measures, it is extremely important for healthcare professionals to know in which situations isolation is applied and which isolation covers what (19). In this context, in the study we conducted to investigate the knowledge level of the healthcare professionals serving the Covid-19 suspect / definitive patient on isolation measures, it was determined that 90.8% of the healthcare professionals received training to isolation measures, and 8.4% did not think they comply the isolation measures. In the study conducted by Tanyeri (2018) to determine the compliance of nurses to isolation measures in preventing hospital infections, which is similar to our study results, the status of receiving training for isolation measures was determined as 94.5%. In the same study, it was found that 50.9% of the participants stated that they were not adequately comply to the isolation measures (19). In the study conducted by Güleç Şatır et al. (2019) with 333 nurses to determine the factors affecting the compliance and compliance of nurses with isolation measures, it was determined that 88.3% of the nurses had difficulties in complying the isolation measures (20). Unlike the results of other studies, it is thought that the reason for the high rate of healthcare professionals who think that they comply with isolation measures in our study may be due to the fact that the healthcare professionals expressed their own opinions about compliance with isolation measures.

In our study, it was found that the order of removing the personal protective equipment (PPE) of healthcare professionals is less known (83.1%) compared to other isolation measures. In the study of Zelmer et al., In which they systematically evaluated the differences between PPE removal procedures, they found that only about half of the healthcare professionals (43%) removed PPE correctly (21). The correct order of wearing and removing instructions for PPE not only provides individual protection but also prevents cross infections (22). For this reason, healthcare professionals who are face to the with a highly contagious virus such as SARS-CoV-2 during procedures such as treatment or care should use PPE correctly, comply with the wearing and removing procedure (23). The reason the order of removing PPE is the least known procedure in our study was that the healthcare professionals thought that infectious agent would be less contaminate during removal of PPE equipment.

In our study, the mean total knowledge score of healthcare professionals about isolation measures was determined as 7.55 ± 0.70, and a statistically significant difference was found between age and occupational groups and total knowledge score ($p < 0.05$). In the study by Olum et al. (2020) to determine the knowledge, attitudes and practices of healthcare professionals working in a university hospital towards covid-19, the knowledge score averages of the participants were determined as 82.4 ± 11.2. In the study of Zhang et al., 89% of the healthcare professionals had sufficient knowledge about covid-19 and their knowledge score averages were determined as 37.71 ± 3.58 (25). The reason for the good level of knowledge of the healthcare professionals in our study and other study results that are similar to our study results is due to the continuity of information sharing and protection measures for the covid-19 pandemic both by health institutions and at national and international platforms.

CONCLUSİON

As a result of our study, it was determined that the level of knowledge of the healthcare professionals about isolation measures was at a good level, and it was effective on the knowledge points of the age and occupational group. In line with these results, it is recommended to organize training programs on infection control at regular intervals in health institutions, as well as to audit information and practices regarding isolation measures.

THANK: Thanks to all healthcare professionals who contributed to the study.

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Examination of Nurses' Mood and Psychological Resilience Regarding the COVID-19 Pandemic

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ABSTRACT

Purpose: To examine the mood and psychological resilience of nurses regarding the COVID-19 pandemic.

Methods: A total of 382 nurses who actively work in Turkey, between July and September 2020 were involved in the study. This research was conducted in a descriptive and cross-sectional type. The data was collected by using Questionnaire Forms and Resilience Scale for Adults.

Results: 84.6% of the participants are women, 15.4% are men, 46.6% are married, 35.1% have children, and 32.5% have a working period of 6-10 years. It was determined that the nurses felt that 83.8% of stress, 81.2% of anxiety, and 54.2% of fear, 62.3% helpless due to the pandemic (multiple options were used). It was found that the psychological resilience levels of married nurses, having children, have postgraduate degrees, and those with a long period of work as years are higher than other nurses.

Conclusion: As a result of the study, it was determined that the pandemic, the mood of nurses affected negatively, and the descriptive characteristics such as marital status, educational status, and having children affected psychological resilience.

Keywords: COVID-19, mood, nurses, psychological resilience

INTRODUCTION

COVID-19, which emerged in Wuhan, for the first time in 2019, affected the whole world. World Health Organization was declared a pandemic in March 2020 due to the increasing number of cases and deaths (1). Studies have reported that pandemics can cause mood changes such as anxiety, stress, and severe consequences such as trauma in healthcare professionals who play an important role in caring for patients and preventing the spread of infectious disease (2). The pandemic's rapid spread, increasing shift length, and separation from their families or loved ones lead to psychological issues in nurses (3). Psychological resilience is defined as the ability to coping skills and adapts to the conditions by focusing on solutions in an unexpected event (such as pandemics and earthquakes) (4,5). To psychological resilience, it is important to find protective factors such as determining possible risks in the face of traumatic events such as pandemics, reducing or eliminating the negative effects of these risk factors, good mental health, and self-efficacy (6–9). Psychological resilience varies according to people. Although genetic factors are thought to play a role in this issue, the ability to establish interpersonal relationships, to reach social support networks

and the absence of any physical disease affect psychological resilience during the traumatic event process (10,11).

As a result of many studies, it has been reported that individuals with high levels of psychological resilience overcome a traumatic experience, have high self-esteem and self-perception, and are optimistic about the future (12). In this traumatic process, individuals are ensured to improve their professional conditions, to have sufficient knowledge, equipment, protective equipment, social support opportunities about epidemic diseases and ways of protection from these diseases, and to use effective and solution-focused coping strategies; it is observed that individuals get away from moods such as anxious, loneliness, sadness, nervousness, guilt that may occur during and after traumatic events and increase their psychological resilience (13,14). The purpose of this study was to examine nurses' mood and psychological resilience related to the COVID-19 pandemic. It is thought that the study will enable nurses to make attempts to improve their coping skills and increase their psychological resilience by providing awareness of their mood during the pandemic process, and thus, the society will have uninterrupted access to health services.

METHODS

A total of 382 nurses who actively work in Turkey, between July and September 2020 were involved in the study. This research was conducted in a descriptive and cross-sectional type. The data were collected by using questionnaire forms and the Resilience Scale for Adults. They were used online. The questionnaire forms consist of 54 open-ended questions such as gender, age, marital status, educational status, and questions such as mood regarding the COVID-19 pandemic.

The Resilience Scale for Adults was developed by Friborg et al. in 2003. The scale's adaption to Turkish as well as the reliability and validity works were completed by Basim ve Cetin in 2011 (15). The scale consists of 33 items; item-response ranges from one to seven; higher scores reflect higher levels of protective factors of resilience. It is a self-report instrument for evaluating six protective dimensions of resilience in adults: perception of the self, perception of future, social competence, family cohesion, social resources, structured style (16).

The data were analyzed with the NCSS (Number Cruncher Statistical System). The descriptive statistics of the continuous variables were given as the mean and standard deviation, in addition, the descriptive statistics of categorical data were given as the frequency and percentage. The Shapiro-Wilks test was used to determine whether the data showed a normal distribution or not, in cases of the data showing abnormal distributions, the nonparametric methods were used in the statistical analysis. Student-t test was used to compare normally distributed variables between two groups. One-way analysis of variance and Bonferroni were used to compare more than two groups of quantitative variables with a normal distribution. Pearson correlation analysis and Spearman correlation analysis were used to evaluate the relationships between quantitative variables. If there were more than two groups; the Kruskal-Wallis test and Dunn-Bonferroni test were used. In the statistical analysis, the significance level was accepted as $p < 0.05$.

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The study design was approved by the Istanbul Yeni Yuzyil University Ethics Committee (No: 2020/06-468). Consent form was filled out by all participants for this study.

RESULTS

Among the total number of 382 nurses who actively work at hospitals were accepted to participate in this study. Among 382 individuals, 84.6% of nurses were females, 15.4% of nurses were males. It is seen that 46.9% of the participating patients are between 26-33 years of age, 46.6% are married, 70.4% are bachelor 35.1% have children, and 32.5% have a working period of 6-10 years, 20.7% have a chronic disease. 19.6% of nurses do not like their profession, 25.4% of people work in the pandemic intensive care unit, 36.6% of them must work mandatory in the pandemic clinic, and her/his symptoms that 41.5% of nurses with chronic diseases are getting worse during the pandemic. Although 15.4% of the nurses did not use it before the pandemic, any antidepressant, anxiolytic, etc. and 74.6% of the nurses using medication stated that they used the drug without consulting a physician. 22.3% of the nurses stated that they could not stay at their own homes during the pandemic process, and 15.2% of the nurses who were not able to stay at their own home them feel anxious to be separated from their families. It was determined that 45.5% of the nurses were exposed to mobbing during the pandemic. The nurses stated that they were exposed to mobbing by the manager nurses and by physicians was 66.1% and 48.9%, respectively (multiple options were used).

Nurses' mood regarding the COVID-19 pandemic is described in table 1. According to table 1, the nurses stated that they felt stressed (83.8%) and anxious (81.2%) due to the pandemic. In Table 2, the nurses' mood about the events they experienced in the pandemic process is given. It was stated that 81.9% of the nurses provided care to patients with suspected/diagnosed COVID-19 and 63.6% of the nurses feel anxious to care for these patients; it has been determined that 65.7% of them follow COVID-19 related programs, and 64.4% of those who followed the programs made them feel anxious. It was found that 73.3% of nurses encountered non-compliance with social distancing during the nursing intervention, and 72.9% of nurses were angry with these patients. 16.8% of the nurses stated that they lost their relative/colleague due to COVID-19 and the nurses who lost a relative or colleague felt desperation (89.1%) and felt anxious (65.7%); however, 87.7% of the nurses stated that they felt anger towards people who do not comply with isolation and social distance in the society (Table 2).

Table 3 includes the evaluation of the relationship between sub-dimension and total scores of the resilience scale and the nurses' mood scores. It was found that as the nurse's mood scores in the study increased during the pandemic process, their "perception of future", "perception of the self", "social competence" scores decreased and the relationship between them was statistically significant (p = 0.001, p = 0.001, p = 0.046, respectively).

When the scale scores of according to the nurses' descriptive characteristics are evaluated; it was found that the psychological resilience levels of nurses aged between 18-25, married, have postgraduate degrees, and having children was statistically significantly higher than other nurses (p = 0.043, p = 0.003, p = 0.002, p =

0.001, respectively), (Table 4). However, it is statistically found that the psychological resilience level of nurses between the ages of 16 and 20 and nurses who love their professions is significantly higher than that of other nurses (p = 0.029, p = 0.001, respectively).

DISCUSSION

In this study, sub-dimensions and total scores for the scale by gender did not show statistically significant differences. In the literature, most research results indicate that psychological resilience does not differ according to gender (17–19). While some studies show that women have lower psychological resilience than men (19–21); other studies show that women have higher levels of psychological resilience (19,22). Since the studies were conducted before the COVID-19 outbreak, it is thought that there is no difference between psychological resilience and the gender of participants during this period.

In the study, the self-perception score of nurses between the ages of 18-25 was found to be significantly lower than other nurses. Some studies are shown that the psychological resilience level increases as increasing age (18,23). It can be thought that the perception of self develops with the increasing age and experience in nursing.

The psychological resilience level of nurses with has postgraduate education was found to be significantly higher than other nurses. In some studies, it has been observed that participants with a higher education level have a higher level of psychological resilience than those with a lower education level (24,25). It is thought that the increase in the level of education in the nursing profession increases the knowledge level of nurses, changes their perspective, and positively affects psychological resilience.

The psychological resilience of married nurses is significantly higher than single nurses, in this study. In Kımter's study (2020), it was stated that married participants have a higher level of psychological resilience than singles (26). In a study conducted on oncology nurses, it was found that the psychological resilience level of married nurses was higher than singles (27). In a similar study, it was stated that participants who lived with two people had a higher level of psychological resilience than participants who lived alone, but it did not reach statistical significance (26). In a study conducted by Soylu (2018) with 319 divorced women living in Izmir, it was stated that social support was an important factor in terms of psychological resilience (28). It can be considered that during the pandemic, single nurses felt more lonely due to social decline and other reasons, and the psychological resilience of married nurses was positively affected by the social support they received from their spouses (29). In the process of quarantine or isolation lack of physical contact and the inability to socialize can lead to emotional loneliness and negatively affect psychological resilience.

In this study, the psychological resilience levels of nurses with children were found significantly higher than nurses without children. In a study performed by Mo et al. (2020), it was determined that having children and excessive working hours are the most important sources of stress and anxiety for nurses (30).

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In the study of Bettinsoli et al. (2020), it was found that the mental health status of female healthcare workers during the COVID-19 pandemic was worse than before the pandemic (31). It is thought to be due to women's responsibilities in the home and childcare (32).

81.2% of the nurses who participated in the study stated that they were worried due to the pandemic. In the study conducted by Liu et al. (2020), nurses stated that they were exhausted due to heavy workloads and protective equipment, that they were afraid of becoming infected and infect others, that they felt powerless to deal with their patients, and that they had difficulty managing relationships in this stressful situation reported that they determined their social support and used self-management strategies (33). In a study evaluating the psychological well-being of healthcare professionals, it was stated that they had physical difficulties due to protective equipment, they felt tired, and they had difficulty falling asleep due to a long time in the hospital and staying in different places (relatives'/friends' home, the hotel, etc.) (32,34). The results of some studies have shown that people with low psychological resilience are more affected by their sleep patterns (19). Due to the active work of nurses during this period, it was observed that their mood fluctuates and their situations such as sleep and nutrition were disrupted.

In order to increase the psychological resilience of nurses during the pandemic process; it is recommended to make the necessary arrangements for married women and women with children, to increase the number of personnel, to address the attempts to issues such as relaxation exercises, coping strategies in in-service training and to provide adequate psychosocial support.

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TABLES

Table 1. Findings of Nurses' Mood Regarding the COVID-19 Pandemic

	Expressions	n	%
Nurses' emotions due to the pandemic*	Confusion	95	24,9
	Anxious	310	81,2
	Fear	238	62,3
	Stress	320	83,8
	Insufficiency	106	27,7
	Loneliness	96	25,1
	Desperation	207	54,2

*Multiple options were used.

Table 2. The Nurses' Mood About the Events They Experienced in the Pandemic Process *

	Expressions	n	%
Providing care to a patient with suspected/diagnosed COVID-19	Yes	313	81,9
	No	73	18,1
Nurses' Feelings about caring for a COVID-19 suspected/diagnosed patient	Anger	35	11,2
	Anxious	199	63,6
	Fear	42	13,4

	Stress	37	11,8
Following programs related to COVID-19	Yes	251	65,7
	Partially	131	34,3
Emotions felt by following programs related to COVID-19	Confusion	138	36,1
	Anxious	246	64,4
	Fear	203	53,1
	Stress	229	59,9
	Desperation	143	37,4
Patients' situations of noncompliance with social distance during their nursing interventions	Yes	280	73,3
	No	102	26,7
Emotions caused by patients' non-compliance with social distance during nursing interventions	Anger	204	72,9
	Anxious	59	21,1
Losing a relative or colleague due to COVID-19	Evet	64	16,8
	Hayır	318	83,2
Emotions caused by the loss of a relative or colleague due to COVID-19	Anger	26	40.6
	Anxious	42	65.7
	Fear	32	50
	Stress	31	48.4
	Desperation	57	89.1
Feelings of nurses towards those who do not comply with isolation and social distance in society	Anger	335	87,7
	Anxious	137	35,9
	Fear	98	25,7
	Stress	135	35,3

*Multiple options were used.

Table 3. Evaluation of the Relationship between Resilience Scale Sub-Dimension and Total Scores and the Nurses' Mood Scores

		Resilience Scale for Adults						
		Structured Style	**Perception of Future**	**Family Cohesion**	**Perception of the Self**	**Social Competence**	**Social Resources**	**Total Score**
Mood score of the pandemic process	[a]r	-0,054	-0,191	-0,086	-0,167	-0,102	-0,076	-0,162
	p	*0,296*	*0,001***	*0,093*	*0,001***	*0,046**	*0,139*	*0,001***
Mood score of the risk of transmission of infection	[a]r	-0,056	-0,160	-0,051	-0,106	-0,126	-0,069	-0,135
	p	*0,275*	*0,002***	*0,320*	*0,039**	*0,014**	*0,179*	*0,008***
	[b]r	-0,121	-0,192	-0,018	-0,176	-0,186	-0,091	-0,185

Mood score of the risk of infecting the family	p	0,018*	0,001**	0,727	0,001**	0,001**	0,076	0,001**
Mood score of following-up on COVID-19 programs	^br	-0,005	-0,150	-0,028	-0,120	-0,063	-0,018	-0,095
	p	0,926	0,003**	0,580	0,019*	0,217	0,728	0,063
Mood score for contacting healthcare workers diagnosed with COVID-19	^br	-0,066	-0,135	0,033	-0,081	-0,071	-0,073	-0,071
	p	0,345	0,054	0,633	0,248	0,310	0,298	0,308
Mood score of relative/colleague loss due to COVID-19	^br	-0,123	-0,350	0,169	-0,093	-0,028	-0,133	-0,069
	p	0,332	0,005**	0,181	0,463	0,826	0,295	0,588
Mood score of the pandemic process	^br	-0,098	-0,117	-0,090	-0,045	-0,119	-0,049	-0,109
	p	0,056	0,022*	0,079	0,385	0,020*	0,342	0,034*

[a]r= Pearson's correlation coefficient [b]r= Spearman's Correlation Coefficient   *p<0,05   **p<0,01

Table 4. Evaluation of Adult Resilience Scale Scores According to Descriptive Characteristics

			Structured Style	Perception of Future	Family Cohesion	Perception of the Self	Social Competence	Social Resources	Total Score
					Resilience Scale for Adults				
Age group	**18-25 (n=126)**	Min-Max (Median)	1,8-5 (3,5)	1,5-5 (3,6)	1,3-5 (3,8)	1,8-5 (3,5)	2,2-5 (3,5)	2,3-5 (4)	2,7-4,9 (3,7)
		Avg±Ss	3,49±0,72	3,59±0,78	3,83±0,74	3,58±0,63	3,6±0,7	3,89±0,62	3,69±0,46
	26-33 (n=179)	Min-Max (Median)	2-5 (3,5)	1-5 (3,8)	1,3-5 (4)	1-5 (3,8)	1,7-5 (3,7)	2,1-5 (4)	2,7-4,9 (3,8)
		Avg±Ss	3,49±0,67	3,65±0,87	3,92±0,71	3,76±0,71	3,62±0,68	3,99±0,64	3,77±0,48
	34-41 (n=59)	Min-Max (Median)	1,8-5 (3,8)	2-5 (3,8)	2,3-5 (4,3)	1,7-5 (3,8)	2,3-5 (3,7)	3-5 (4,1)	2,6-4,9 (4)
		Avg±Ss	3,63±0,67	3,83±0,71	4,03±0,67	3,86±0,69	3,76±0,69	4,1±0,51	3,89±0,49
	≥ 41 (n=18)	Min-Max (Median)	2-4,8 (3,3)	2,8-5 (3,3)	3-5 (3,5)	2,5-5 (3,6)	2,7-4,7 (3,3)	2,9-4,9 (3,9)	3-4,6 (3,6)
		Avg±Ss	3,4±0,7	3,56±0,72	3,73±0,57	3,67±0,73	3,54±0,61	3,84±0,72	3,65±0,51
		p	^{c}0,495	^{c}0,283	^{c}0,245	^{c}0,048*	^{c}0,420	^{c}0,111	^{c}0,041*
Gender	**Female (n=323)**	Min-Max (Median)	1,8-5 (3,5)	1-5 (3,8)	1,3-5 (4)	1-5 (3,7)	1,7-5 (3,7)	2,1-5 (4)	2,7-4,9 (3,8)
		Avg±Ss	3,52±0,66	3,65±0,81	3,9±0,71	3,68±0,66	3,62±0,66	3,97±0,6	3,75±0,46
	Men (n=59)	Min-Max (Median)	1,8-5 (3,5)	2-5 (3,8)	2,3-5 (3,8)	1,7-5 (3,8)	2,3-5 (3,5)	2,1-5 (4,1)	2,6-4,9 (3,8)
		Avg±Ss	3,43±0,83	3,7±0,84	3,88±0,7	3,88±0,81	3,7±0,8	3,97±0,7	3,79±0,59
		p	^{d}0,439	^{d}0,615	^{d}0,846	^{d}0,074	^{d}0,469	^{d}0,959	^{d}0,578
Marital Status	**Married (n=178)**	Min-Max (Median)	1,8-5 (3,6)	1-5 (3,8)	1,3-5 (4)	1-5 (3,8)	2-5 (3,7)	2,6-5 (4)	2,6-4,9 (3,9)
		Avg±Ss	3,58±0,69	3,74±0,8	4±0,64	3,84±0,72	3,67±0,66	4,02±0,58	3,83±0,46
	Single (n=204)	Min-Max (Median)	1,8-5 (3,3)	1-5 (3,5)	1,3-5 (3,8)	2-5 (3,5)	1,7-5 (3,5)	2,1-5 (4)	2,7-4,9 (3,7)
		Avg±Ss	3,44±0,68	3,58±0,81	3,81±0,76	3,6±0,64	3,6±0,7	3,92±0,64	3,69±0,49
		p	^{d}0,058	^{d}0,054	^{d}0,008**	^{d}0,001**	^{d}0,364	^{d}0,142	^{d}0,003**
Educational Status	**High School (n=25)**	Min-Max (Median)	2-5 (3,5)	1,5-4,5 (3,8)	2,8-5 (3,7)	2-5 (3,5)	2,8-5 (3,3)	2,7-4,9 (3,9)	3-4,4 (3,7)
		Avg±Ss	3,45±0,78	3,48±0,8	3,8±0,67	3,52±0,83	3,55±0,61	3,81±0,62	3,63±0,39
	Associate Degree (n=24)	Min-Max (Median)	1,8-5 (3,5)	2-5 (3,5)	2,8-5 (4)	2,5-5 (3,8)	2,5-5 (3,9)	2,7-5 (4)	2,8-4,9 (3,7)
		Avg±Ss	3,35±0,81	3,61±0,85	3,98±0,62	3,85±0,61	3,79±0,78	3,94±0,67	3,79±0,52
	Bachelor's Degree (n=269)	Min-Max (Median)	1,8-5 (3,5)	1-5 (3,5)	1,3-5 (4)	1-5 (3,7)	1,7-5 (3,7)	2,1-5 (4)	2,6-4,9 (3,7)
		Avg±Ss	3,47±0,68	3,58±0,81	3,91±0,72	3,66±0,69	3,58±0,67	3,94±0,62	3,71±0,49
	Postgraduate (n=64)	Min-Max (Median)	2,3-5 (3,8)	2,3-5 (4,3)	1,3-5 (3,8)	2,5-5 (4)	2,7-4,8 (3,8)	2,9-5 (4,1)	3-4,8 (4)
		Avg±Ss	3,74±0,61	4,04±0,71	3,88±0,72	3,96±0,58	3,84±0,68	4,17±0,53	3,95±0,42

		p	^c0,025*	^c0,001**	^c0,831	^c0,004**	^c0,023*	^c0,024*	^c0,002**
Having a Child	Yes (n=134)	Min-Max (Median)	1,8-5 (3,5)	2,3-5 (3,8)	2,3-5 (4,2)	2,5-5 (3,8)	2-5 (3,7)	2,7-5 (4,1)	2,8-4,9 (3,9)
		Avg±Ss	3,57±0,73	3,8±0,72	4,04±0,62	3,9±0,62	3,68±0,63	4,06±0,61	3,87±0,46
	No (n=248)	Min-Max (Median)	1,8-5 (3,5)	1-5 (3,8)	1,3-5 (3,8)	1-5 (3,7)	1,7-5 (3,6)	2,1-5 (4)	2,6-4,9 (3,7)
		Avg±Ss	3,47±0,66	3,58±0,85	3,82±0,75	3,61±0,7	3,61±0,71	3,92±0,62	3,69±0,48
		p	^d0,159	^d0,010*	^d0,002**	^d0,001**	^d0,312	^d0,033*	^d0,001**
Having a Chronic Illness	Yes (n=79)	Min-Max (Median)	2-5 (3,3)	1-5 (3,3)	1,7-5 (4)	2,5-5 (3,7)	2,3-4,8 (3,5)	2,9-5 (4)	2,9-4,8 (3,7)
		Avg±Ss	3,39±0,66	3,53±0,82	3,88±0,78	3,67±0,65	3,62±0,6	3,97±0,62	3,71±0,48
	No (n=303)	Min-Max (Median)	1,8-5 (3,5)	1-5 (3,8)	1,3-5 (4)	1-5 (3,7)	1,7-5 (3,7)	2,1-5 (4)	2,6-4,9 (3,8)
		Avg±Ss	3,54±0,69	3,69±0,81	3,9±0,69	3,72±0,7	3,64±0,7	3,97±0,62	3,76±0,48
		p	^d0,096	^d0,141	^d0,754	^d0,550	^d0,809	^d0,995	^d0,374

[c]Oneway ANOVA   [d]Student-t Test   *p<0,05   **p<0,01

Oral Presentation No: 17052

Opinions of parents on distance higher education in the period of COVID-19

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This study was presented as a verbal statement at the 'Covid-19 pandemisinde araştırma yayın ve eğitim süreçlerine bakış kongresinde'.

Abstract

Objective: This study aims to investigate the opinions of the parents of higher education students who used distance education in the period of COVID-19 on distance education.

Methods: In this quantitative study, the subjects were reached using the convenience sampling method, and the snowball sampling technique was used. The criterion was set for parents to have children in the higher education program. Five-hundred-twelve subjects evaluated. Study data were collected through the Opinion Questionnaire on Distance Education (OQDE). Parents' children majors were divided into 2 groups as clinical sciences and non-clinical sciences.

Results: Of the 469 parents included in the study. There was no significant difference between the OQDE score according to the gender of the parents ($p>0.05$). The total OQDE score was 18.52 ± 8.74 (0-40). Among the sub-dimensions, the education-quality score was 4.47 ± 3.85 (0-16), the technical-adequacy score was 7.15 ± 3.76 (0-12), and the general-satisfaction score was 6.89 ± 3.28 (0-12). Of the parents who completed the questionnaire, 227 (48.4%) were clinical sciences students, while 242 (51.6%) were non-clinical sciences students. There was no significant difference in terms of OQDE score between the groups ($p>0.05$).

Conclusion: It was understood that parents generally have negative opinions about distance education. While the parents stated that they were most worried about the quality of education in distance education, they expressed more positive opinions about technical adequate. Besides, in our study, it was understood that there was no difference between the parents of students studying in clinical sciences and non-clinical sciences in terms of distance education.

Keywords: Covid-19, Education, Quality, Learning

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Introduction

The Covid-19 pandemic that emerged towards the end of 2019 affected the whole world. Although the disease is generally characterized by fever, cough, headache, loss of smell and taste, it can also cause fatal consequences such as acute respiratory distress syndrome and cytokine storm in some individuals (1,2). For this reason, governments have taken some measures to prevent the spread of the epidemic and to contain the death rates. The first Covid-19 cases were reported in Turkey on March 11 and the first death due to Covid-19 took place on 17 March. From this date in Turkey, similarly to other countries, to prevent the spread of the disease began to apply some of the prohibitions and rules. Wearing masks and curfews were imposed. Restaurants and cafes were closed. Flexible and home working was introduced in official institutions and some private companies. Besides, the distance education method started to be applied in all educational institutions (pre-school, primary school, secondary school, high school, higher education). Although the epidemic approached for 1 year, there was no exact treatment method for the disease. Therefore, measures are taken and rules continue in Turkey as in many other countries (3).

Education is a phenomenon that should be given importance under all conditions for the development and progress of societies. Societies that could raise their level of education have been more successful and have developed their economies. For this reason, some methods have been developed to ensure the continuity of education. For the continuity of education, more bussed education or boarding school methods were used in the past, nowadays, especially with the development of technology, distance education methods have gained importance. Distance education is a technological education system that takes place completely in virtual environments, independent of place and time, where teachers and students do not have to come together. The Covid-19 outbreak has once again demonstrated the importance of the distance education method. Methods of distance education in all educational institutions in Turkey has started to be implemented by March 23, 2020. Education can be prepared according to the level of students at all degrees with the distance education method applied by many countries due to the Covid-19 pandemic (4). These lessons can be reinforced by watching over and over again. However, distance education method has disadvantages in some areas such as health sciences and applied sciences. Sufficient internet and infrastructure materials should be provided to students to eliminate the disadvantages of distance education and to increase the quality of education (5). These lessons can be reinforced by watching over and over again. However, distance education method has disadvantages in some areas such as health sciences and applied sciences. Sufficient internet and infrastructure materials should be provided to students to eliminate the disadvantages of distance

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education and to increase the quality of education. In particular, clinical courses and practical internships in the field of health sciences cannot be offered at a sufficient level with distance education method. Besides, the inadequacy of the education quality of the departments that train students in the field of health sciences and especially the uncertainty of the curriculum may lead to the training of unqualified health personnel (6). For this reason, the distance education method is still discussed by experts.

This study aims to investigate the opinions of the parents of university students, who used distance education in the COVID-19 period, on distance education.

Methods

In this quantitative study, the subjects were reached using the convenience sampling method, and the snowball sampling technique, which is one of the qualitative research techniques, was used. While selecting the sample, the criterion was set for parents to have children in the higher education program. Five hundred twelve subjects evaluated in the study. Forty-three of these subjects (8.39%) were not included in the study since they did not have children studying in higher education programs. As a result, 469 (91.61%) parents participated in the study. Parents participating in the study were asked which department their children studied, and the Opinion Questionnaire on Distance Education (OQDE). was applied to all parents to evaluate the parents' views on distance education.

The departments where the children of the parents participating in the survey study at the university are divided into 2 groups as clinical sciences and non- clinical sciences. Audiology, Physiotherapy and Rehabilitation, Midwifery departments are accepted as clinical sciences, Health Management, Emergency Aid and Disaster Management, Law, Teaching, Management of Health Institutions departments as non-clinical sciences.

Opinion Questionnaire on Distance Education (OQDE)

OQDE consists of 10 questions in total (Table 1). The questionnaire has 3 sub-dimensions: education quality, technical competence and general satisfaction. Four questions in the questionnaire evaluate the quality of education, 3 questions evaluate technical competence, and 3 questions evaluate general satisfaction. All questions can be answered in 3 different ways: yes, sometimes and no. Except for the 4th question, yes means 4 points, sometimes 2 points and no

means 0 points. Scoring in question 4 is done in reverse. The total score is calculated over 40. The high score indicates that the parents' views on distance education are positive.

Statistical analysis

IBM SPSS 21 (Chicago, IL, USA) program was used for statistical analysis. Descriptive statistics were presented with mean ± standard deviation (sd), percentage (%) and median (minimum-maximum). The normality distribution of the data was analyzed using the Shapiro Wilk test. To compare the groups, Student T-test, one of the parametric tests, was used in cases where the assumptions of normality and homogeneity of variances were provided, and the Mann Whitney-u test, one of the nonparametric tests, was used when these assumptions were not met. P <0.05 was considered statistically significant.

Results

Of the 469 parents included in the study, 310 were mothers and 159 were fathers. The mean age of the parents included in the study was 46.55 ± 5.52 (range 36-65). The mean age of the mothers was 43.43 ± 5.40 (36-65) and the mean age of the fathers was 48.72 ± 5.11 (36-64). There was no significant difference between the OQDE score and subscale scores according to the gender of the parents (p> 0.05).

According to the answers of the parents, the total OQDE score was 18.52 ± 8.74 (0-40). Among the sub-dimensions, the education quality score was 4.47 ± 3.85 (0-16), the technical competence score was 7.15 ± 3.76 (0-12), and the general satisfaction score was 6.89 ± 3.28 (0-12).

Students of parents who completed the questionnaire, 63 Emergency Aid and Disaster Management, 64 Midwifery, 28 Physiotherapy and Rehabilitation, 25 Law, 25 Teaching, 135 Audiology, 88 Health Management, 41 Management of Health Institutions Management student. While 227 students from these departments were clinical sciences students, 242 students were non-clinical sciences students (Figure 1). There was no significant difference in terms of OQDE score between students studying in clinical departments and non-clinical departments (p: 0.480).

Discussion

In this study, the views of higher education students' parents about the distance education method in the COVID-19 period were investigated in 3 sub-dimensions (education quality, technical competence and general satisfaction). As a result of the study, it was understood that the parents were most concerned about education quality for distance education. Besides, in our study, it was

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understood that the parents' views did not change with the type of departments (clinical or non-clinical).

The distance education method offers lecturers the opportunity to use different activities and techniques. In this way, it can be easier for students to understand, interpret and make inferences. It has been reported that the use of auditory stimuli is important for successful distance education (7). For this reason, lecturer's use of audio materials can increase the success of students. Karakaya et al (8) investigated teachers' views on distance education. It has been stated that distance education increases positive thinking, empathy, use of technology and positive thinking about lessons. However, it was stated that there were some problems arising from technical infrastructure and lack of information. In another study (9), students 'and lecturers' opinions on distance education were investigated. As a result of the study, it was stated that distance education has both advantages and disadvantages. Besides, as a suggestion, it was stated that support training should be given to students and teaching staff, the obligation to attend classes and lessons should be held face to face for at least 2 hours a week. Distance education provides students with extra time saving, listening to the lessons again and freedom of the environment. However, these issues, which are seen as advantages, have some disadvantages. Teaching lessons in the classroom with face-to-face education strengthens students' belonging to the learning environment and learning process (10). In the distance education method, this sense of belonging may not be fully formed. In addition, the perception of operational distance weakens the communication between student and teacher and causes a psychological distance (11). Additionally, media freedom is open to abuse by students, and students can listen to lectures while dealing with different tasks. This situation may cause dual task cost in students (12). In the dual task cost, attention is split between two tasks happening at the same time. As a result, the error rate increases and cognitive skills decrease (12, 13).

In our study, we investigated the views of higher education students' parents on distance education. Unlike the studies in the literature, it was understood that parents were most concerned about the quality of education (insufficient education). This may be due to the fact that distance education is a new method and parents are used to more traditional methods. Therefore, in the future, these negative thoughts may change with the parents getting used to distance education and getting successful results in distance education method. On the other hand, parents expressed more positive opinions on technical issues such as distance education infrastructure of universities, internet infrastructure and course environment. In our study, it was also found that parents' opinions about the distance education method did not differ according to the departments students studied. Similar

to the education quality sub-dimension, this may be an indication that parents are used to more traditional methods and that parents' thoughts are not based on departments.

As a result, in our study, it was understood that parents generally had negative opinions about the distance education method. While the parents stated that they were most worried about the quality of education in the distance education method, they expressed more positive opinions about technical competence. Besides, in our study, it was understood that there was no difference between the parents of students who study clinical sciences and non-clinical sciences in terms of distance education. This may be an indication that parents' thoughts about distance education are not formed according to departments, and they find distance education less inadequate than face-to-face education.

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Table 1. Opinion Questionnaire on Distance Education

Number	Questions	Yes	Sometimes	No
1	I think distance education is efficient for my child in the Covid-19 period.			
2	In the Covid-19 period, I think clinical courses can be given by distance education.			
3	I think my child's school grades increased during the distance education period.			
4	I think that distance education in the Covid-19 period will negatively affect my child's future professional life.			
5	During the Covid-19 period, I was able to provide my child with sufficient equipment to participate in distance lessons.			
6	During the Covid-19 period, I was able to provide a suitable environment for my child to participate in distance lessons.			
7	I think the distance education infrastructure is sufficient at the university where my child is studying.			
8	I am happy to be home with my child during the Covid-19 period.			
9	I would prefer to implement distance education for my child in the upcoming education periods.			
10	Distance education implemented in the Covid-19 period has reduced the education costs I have allocated for my child.			

Figure 1. Clinical and Non-clinical departments.

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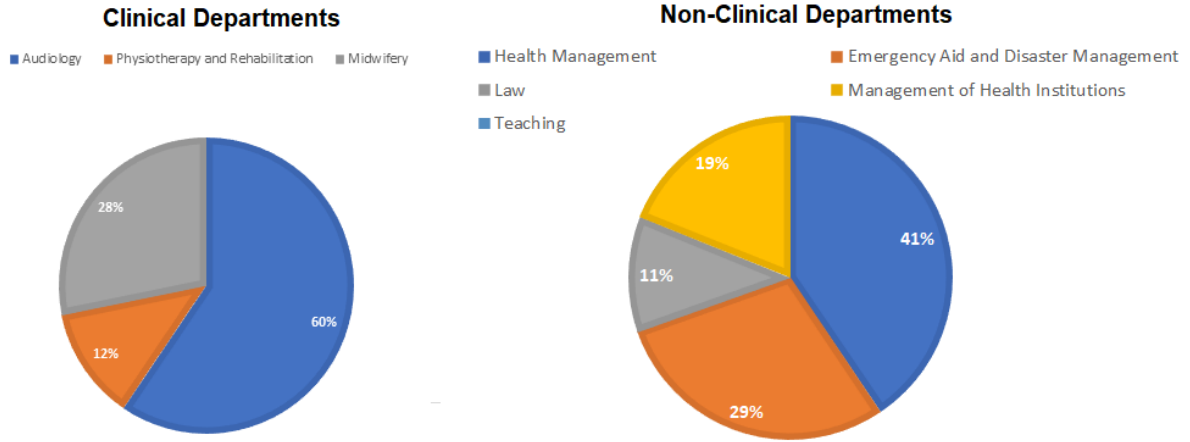
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Personal Protection Management in the COVID-19 Pandemic

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ABSTRACT

Throughout history, humanity has faced and struggled with many pandemic outbreaks. Today, the latest pandemic outbreak that humanity has faced is the new type of Coronavirus (COVID-19) pandemic that spread from Wuhan in China to all over the world. This pandemic has become a common threat that concerns all nations. This infection, affecting individuals of all age groups, was declared as a pandemic by the World Health Organization in March. Incidence and mortality rates are increasing day by day in the world. Among these cases are healthcare workers who are at the forefront of combating this pandemic. To provide a better service, healthcare workers must first protect themselves and intervene in the direction of the available scientific data during the pandemic. The first step of this approach is to increase the awareness of healthcare workers. In case of any pandemic outbreaks, ensuring the safety of healthcare workers is one of the precautions that should be implemented first. Because infections are the most common and most important cause of illness and death among healthcare workers. Healthcare workers are more frequently exposed to infectious microorganisms as a result of the characteristics of the environment that they work in and the health service that they provide. The infection risk of healthcare workers varies depending on the level and content of protective precautions in the work environment. This review aims to demonstrate personal protection management for healthcare workers in the COVID-19 pandemic.

Keywords: COVID-19, health workers, outbreak, pandemic

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INTRODUCTION

COVID-19 (SARSCoV2 Infection), which belongs to the same group of viruses that cause Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS), started in China in December 2019. As a result of the rapid spread of the disease due to its transmission from person to person, the World Health Organization (WHO) evaluated the situation in March and declared a pandemic (1). Morbidity and mortality rates increased rapidly after The virus was detected officially in Turkey on March 11, 2020 (2). Although coronavirus infects individuals of all age groups, it is seen that the elderly population is more affected, considering both the transmission and spread rate and mortality (3).

The rate of transmission and spread of the infection is much faster than other viral infections encountered so far. The mortality rate varies according to age groups. Also, intensive studies are needed on COVID-19 because it progresses very quickly and affects the whole world in a short period (4). This rapid increase in the number of patients and mortality rates also requires healthcare professionals to learn to protect society, and themselves while responding to affected patients (2). The fact that asymptomatic or mildly symptomatic patients can more easily contact healthcare workers increases both the spread of the disease and the risk of healthcare workers (5).

Protection against virus transmission is a top priority for healthcare professionals (6). Healthcare professionals use personal protective equipment to protect from infected patients through droplets (coughing, sneezing), other body fluids, and contaminated surfaces that can infect them. Aprons, overalls (one-piece suit), gloves, masks (N95 et al.), goggles, and face shields make up personal protective equipment. Personal protective equipment must wear properly and place for full protection (7). For healthcare professionals, wearing equipment can often be uncomfortable and they can contaminate themselves when they remove the equipment. For this reason, applying the correct procedures while putting on and taking off personal protective equipment is the point to be focused on precision.

This review aims to demonstrate personal protection management for healthcare workers in the COVID-19 pandemic.

General Characteristics of COVID-19 Infection

SARS-COV-2 is a new type of Coronavirus and causes COVID-19 (8). Coronaviruses are non-compartmentalized single-stranded and positive-strand RNA viruses. Coronaviruses belong to the Coronavirus genus of the Coronaviridae family. It has been named coronavirus because of the garland-shaped projections on the envelope of the virus (9). This family of viruses is zoonotic and can infect humans from animals (8). SARS-COV-2 infection first started with cases of pneumonia

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of unknown etiology seen in some adults in Wuhan, China's Hubei province. Later, it was observed that person-to-person contact was the main route of propagation (10). In February 2020, WHO identified COVID-19 disease, which means the 2019 Coronavirus disease, and the virus that causes COVID-19 was named severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) (11). COVID-19 is also contagious during the incubation period, and initial symptoms are not specific. Therefore, the widespread of the virus and the increasing number of confirmed cases is greater than the rate of severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) (12).

COVID-19 is a different respiratory illness from the Ebola virus disease which is transmitted through infected body fluids. Based on the available evidence, the COVID-19 virus is most commonly transmitted through close contact and droplets, but can also be spread fecal-oral route. The incubation period of the virus is between 1-14 days. Infection can progress from asymptomatic, mild pneumonia, acute respiratory failure to death. It can be severe and fatal. (9, 13).

Personal Protective Equipment Management in Protection from COVID-19 Infection

In these difficult days of the COVID-19 pandemic, the most valuable resource of every country is healthcare workers (14). Healthcare workers are more frequently exposed to infectious microorganisms as a result of the characteristics of the environment in which they work and the natural consequence of health care (15). Hence, healthcare workers who are in close contact with COVID-19 patients or caring for COVID-19 patients are the people most at risk of infection (16). Evidence from past outbreaks suggests that the risk of infection among clinical workers is much higher than in the general population (17). Infections are the most common and most important cause of illness and death among healthcare professionals (15). Therefore, the safety of healthcare workers in a global framework is an important issue (14). The infection risk of healthcare workers varies depending on the level and extent of protective preventions taken in the work environment. For this reason, the use of personal protective equipment has an important place among the protective preventions to be taken (15). Each country, especially WHO, and the organizations belonging to that country have developed various procedures and made recommendations by preparing guidelines about the correct use of personal protective equipment and protection from contamination by healthcare professionals. In this context, some of the procedures developed by organizations are:

World Health Organization

Additional preventions are required for healthcare professionals to protect themselves and to prevent contamination in the health field. WHO has made various recommendations for

healthcare professionals to prevent exposure to the COVID-19 virus and to minimize the need for personal protective equipment in pandemic outbreaks. These recommendations:

- Consider using telemedicine to evaluate suspected cases of COVID-19, thus minimizing the need for these persons to go to health care facilities for evaluation.
- Use physical barriers to reduce exposure to the COVID-19 virus, such as glass or plastic windows. This approach can be implemented in areas of the health care setting where patients will first present, such as triage areas, the registration desk at the emergency department, or at the pharmacy window where medication is collected.
- Restrict health care workers from entering the rooms of COVID-19 patients if they are not involved in direct care. Consider bundling activities to minimize the number of times a room is entered (e.g. check vital signs during medication administration or have food delivered by health care workers while they are performing other care) and plan which activities will be performed at the bedside.
- Health care workers involved in the direct care of patients should use the following PPE: gowns, gloves, medical masks, and eye protection (goggles or face shield).
- Specifically, for aerosol-generating procedures (e.g. tracheal intubation, non-invasive ventilation, tracheostomy, cardiopulmonary resuscitation, manual ventilation before intubation, bronchoscopy) health care workers should use respirators, eye protection, gloves, and gowns; aprons should also be used if gowns are not fluid resistant.
- Respirators (e.g. N95, FFP2 or equivalent standard) have been used for an extended time during previous public health emergencies involving acute respiratory illness when PPE was in short supply. This refers to wearing the same respirator while caring for multiple patients who have the same diagnosis without removing it, and evidence indicates that respirators maintain their protection when used for extended periods. However, using one respirator for longer than 4 hours can lead to discomfort and should be avoided.
- Among the general public, persons with respiratory symptoms or those caring for COVID-19 patients at home should receive medical masks. For additional information, see Home care for patients with COVID-19 presenting with mild symptoms and management of their contacts (16).

The Republic of Turkey, Ministry of Health

Healthcare workers who are at high risk of exposure to infection should wear gloves, aprons, face shields, goggles, and masks on their job duties and exposure risks (9). Proper wearing

and removing of protective equipment will minimize the risk of contamination to healthcare workers, as well as prevent the risk of contamination from this equipment. About this issue according to the guidelines prepared by The Republic of Turkey, Ministry of Health (18):

Wearing Personal Protective Equipment: Hand hygiene must be ensured before personal protective equipment is worn.

1. Wearing the apron
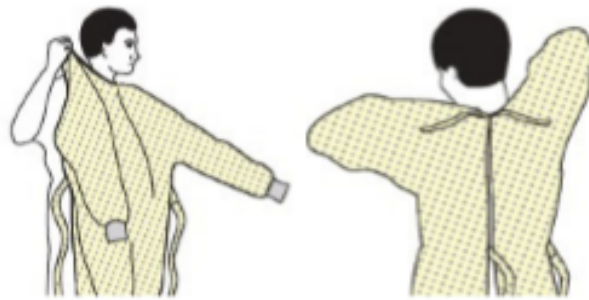
Figure 1. Wearing the apron

• Wrap your body with an apron covering the arms from the neck to the knees and the ends of the wrists.
• Tie the apron behind the neck and waist (Figure 1).

2.Wearing a mask or N95 / FFP2 mask

Figure 2. Wearing a mask or N95 / FFP2 mask

• Secure the strings or elastics in the middle of the head and neck of the mask.
• Fit the flexible tape of the mask to the bridge of the nose (Figure 2).

3. Putting on goggles or face shield

Figure 3. Putting on goggles or face shield

- Place the goggles or face shield over the face and eyes and adjust for a snug fit (Figure 3).

4. Putting on gloves
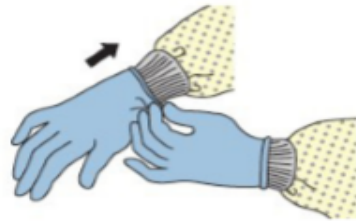
Figure 4. Putting on gloves

- Wear gloves to cover the ankles of the insulating apron (Figure 4).

Removal of personal protective equipment safely: Except for the mask N95 /FFP2 mask, external surfaces of all personal protective equipment are dirty and remove before leaving the patient room. After leaving the patient room and closing the door, remove the mask N95/FFP2 mask.

1. Removing the glove

Figure 5. Removing the glove

• If your hands are contaminated while removing the gloves, wash your hands immediately or use an alcohol-based hand sanitizer.

• Using the gloved hand, hold the palm of the other gloved hand and remove the glove.

• With your gloved hand, hold the glove removed from your other hand.

• Put your fingers around the wrist of your gloved hand and remove the glove onto the glove you first took off.

• Throw the gloves in a closed medical waste bin (Figure 5).

2. Removing the goggles or face shield

Figure 6. Removing the goggles or face shield

• If your hands are contaminated when removing glasses or face shield, immediately wash your hands or use an alcohol-based hand sanitizer.

• Remove the goggles or face shield, holding the headband or earpieces from the back upwards.

• If it is reusable, place it in an enclosure arranged for processing. If not, throw it in a sealed medical waste bin (Figure 6).

3. Removing the apron

Figure 7. Removing the apron

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• If your hands are contaminated while removing the apron, wash your hands immediately or use an alcohol-based hand sanitizer.

• Unravel the ropes of the apron, taking care not to touch your arms while reaching the ropes. • Just touch the inside of the apron and pull it off the neck and shoulders.

• Turn the inside of the apron outside.

• Roll up and dispose of in a closed medical waste bin (Figure 7).

4. Removing the mask or N95 / FFP2 mask
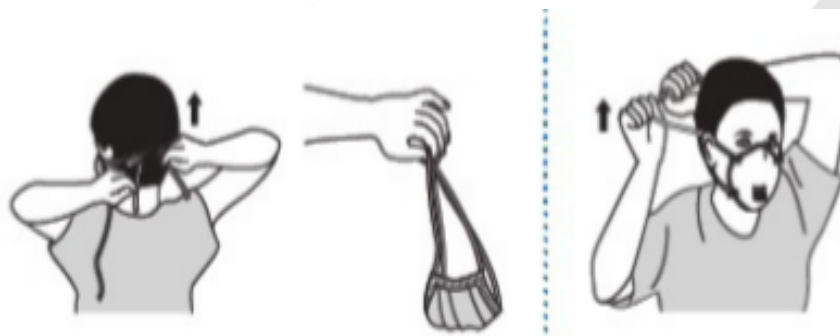
Figure 8. Removing the mask or N95 / FFP2 mask

• If your hands are contaminated while removing the mask N95/FFP2 mask, immediately wash your hands or use an alcohol-based hand sanitizer.

• Hold the middle strings or elastics of the mask N95 /FFP2 mask then grab the upper ones and remove without touching the front.

• Throw in a closed medical waste bin (Figure 8).

5. Clean hands

• Wash hands or use an alcohol-based hand sanitizer after removing all personal protective equipment.

Figure 9. Clean hands

- Keep your hands away from your face.
- Limit the touched surfaces.
- Change gloves when torn or heavily contaminated.
- Maintain hand hygiene (Figure 9) (18).

CONCLUSION

As a result, to provide a better service in the face of pandemic outbreaks, healthcare professionals must first protect themselves and approach the patient in line with the current scientific data. Using personal protective equipment appropriately and in place by healthcare professionals through prepared guides and scientific procedures in the literature will contribute to minimizing the risk of infection.

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Thorax CT findings of Patients with COVID-19 Pneumonia: Comparison of the Initial and Mid-term Follow-up Changes

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Abstract

Purpose

We aimed to retrospectively analyze imaging changes detected in the follow-up of patients with COVID-19 (coronavirus disease) pneumonia on the thorax CT (computed tomography).

Methods

From March 28,2020 to December 4,2020, the initial and follow-up thorax CT findings of 17 patients with RT-PCR (real-time polimerase chain reaction) test positive COVID-19 pneumonia were analyzed. We were evaluated CT images in terms of disturbutions of lesions and imaging findings.

Results

Ten (58.8 %) males and 7 (41.2%) females, of 17 patients with COVID-19 pneumonia were evaluated for initial and follow-up CT images. Their ages ranged from 31-86.On follow-up CT lung findings were seen to be completely resolved in 1 patient (5.8 %), 6 patients (35.5 %) had progression, and 10 patients (58.8 %) had residual disease. While the lesions were in the lower lobes (50.8 %) and bilateral (88.2 %). While the most common finding on initial CT was ground-glass density, the residual disease finding on follow-up CT was fibrous stripe.While max. lesion density increased compared to initial CT in patients with progression, it decreased in residual disease.

Conclusion

In patients with COVID-19 pneumonia, the most common CT finding was ground-glass density at the beginning while fibrous stripe in residual disease, ground-glass density in patients with progression and incresased consolidation to the fibrous stripe were observed. Thorax CT is an important diagnostic tool for showing residual disease and progression.in the COVID-19 pneumonia.

Keywords: Thorax CT, COVID-19 pneumonia, Follow-up

Background and Aim: COVID-19 is a coronavirus-2 (SARS-CoV-2) disease that causes severe respiratory failure. After it was first identified in Wuhan, China in December 2019, it quickly spread all over the world (1). Specific diagnostic tools were required for COVID-19 pneumonia because of the non-specific symptoms and findings. Viral nucleic acid detection using RT-PCR (real-time polymerase chain reaction) is still the standard test in the diagnosis of COVID-19. Since RT-PCR may be false-negative and may cause a delay in diagnosis, radiological evaluation, especially thorax CT (computed tomography), gains importance (2). We aimed to retrospectively analyze imaging changes detected in the follow-up of patients with COVID-19 pneumonia on the thorax CT

Methods: The initial and follow-up thorax CT findings of 17 patients with PCR test positive COVID-19 pneumonia from March 28, 2020, to December 04, 2020, were analyzed retrospectively. The time between baseline and follow-up CTs varied between 17-74 days. Thoracic CT examinations were performed with Toshiba Aquilion 64 multidetector CT. Contrast material was not used. The tube voltage was determined as 120 kV with automatic tube current modulation. The matrix size was 512x512. Thin reformat images with a slice thickness of 2 mm were created from the images taken with a slice thickness of 5 mm in the axial plane. Initial and follow-up CTs were evaluated by 2 radiologists (12 and 16 years of experience) in terms of the distribution of lesions and imaging findings. The distribution of the lesions (unilateral-bilateral), the lobes involved (right lung upper-middle-lower and left lung upper-lower), the location of the lesions (subpleural or subpleural-peribronchovascular) were determined. Imaging findings were as follows; ground glass density, maximum (max.) lesion density, consolidation, fibrous stripe, periarterial enlargement, air bronchogram, mediastinal lymphadenopathy, and pleural effusion.

Results: 10 (58.8%) male and 7 (41.2%) female of 17 patients with COVID-19 pneumonia whose initial and follow-up CT images were available, were included in the study. Their ages ranged from 31-86, and the mean age was 53.1 year. On follow-up CTs, lung findings were seen to be completely resolved in 1 patient (5.8%), while 6 patients (35.5%) had progression and 10 patients (58.8%) had residual disease. In the initial thorax CT, most of the patients had involvement in lower lobes (83.3%) and bilateral lesions (88.2%). Lesions were often subpleural (88.2%). The most common finding was ground-glass density (100%) (Figure 1). The comparison of the initial thorax CT findings in patients with the progressive and healing-residual disease is presented in Table 1. In follow-up thorax CT, lesions in most of the patients were bilateral (100%) (Figure 3). Although all lobes were involved, the lower lobes were most frequently involved (100%). Lesions were located in subpleural (66.7%) and subpleural-peribronchovascular (33.3%) areas. In those

with residual disease, the most common finding was ground-glass density and fibrous stripes (Figure 2). In patients with progressive consolidation the fibrous stripe and ground-glass density were observed (Figures 3, 4). The comparison of the detected follow-up thorax CT findings with those with the progressive and healing-residual disease is presented in Table 2. While lesion density increased compared to initial CT in patients with progression, it was decreased in remitting-residual disease (Table 3). Pleural effusion was not detected in any patient. Mediastinal LAP was found to be excessive in the group showing progression.

Table 1. Comparison of initial CT findings between progression and recovery group			
	Progression group n=6 (%)	Recovery group n=11 (%)	Total n=17 (%)
Bilateral lung	5 (83.3)	10 (90.9)	15 (88.2)
Unilateral lung	1 (16.7)	1 (9.1)	2 (11.8)
Left upper lobe	5 (83.3)	9 (82.8)	14 (82.4)
Left lower lobe	5 (83.3)	10 (90.9)	15 (88.2)
Right upper lobe	3 (50.0)	5 (45.5)	8 (47.1)
Right middle lobe	4 (66.7)	5 (45.5)	9 (52.9)
Right lower lobe	5 (83.3)	9 (81.8)	14 (82.4)
Subpleural	5 (83.3)	10 (90.9)	15 (88.2)
Subpleural-peribronchovasular	1 (16.7)	1 (9.1)	2 (11.8)
Ground -glass density	6 (100)	11 (100)	17 (100)
Fibrous stripe	2 (33.3)	0 (0.0)	2 (11.8)
Consolidation	1 (16.7)	2 (18.2)	3 (17.7)
Air bronchogram	1 (16.7)	0 (0.0)	1 (5.9)

Periarterial enlargement	2 (33.3)	3 (27.3)	5 (29.4)
Pleural effusion	0 (0.0)	0 (0.00)	0 (0.00)
Lymph nodes change [1]	3 (50.0)	3 (27.3)	6 (35.3)

[1] Lymph nodes change means mediastinal lymph nodes number ≥5 or short-axis diameter ≥1 cm

Table 2. . Comparison of follow-up CT findings between progression and recovery group			
	Progression group n=6 (%)	Recovery group n=11 (%)	Total n=17 (%)
Bilateral lung	6 (100)	7 (63.6)	13 (76.5)
Unilateral lung	0 (0.0)	3 (27.3)	3 (17.7)
Left upper lobe	3 (50.0)	7 (63.6)	10 (58.8)
Left lower lobe	6 (100)	6 (54.6)	12 (70.6)
Right upper lobe	5 (83.3)	3 (27.3)	8 (47.1)
Right middle lobe	4 (66.7)	5 (45.5)	9 (52.9)
Right lower lobe	6 (100)	7..(63.6)	13 (76.5)
Subpleural	4 (66.7)	7 (63.6)	11 (64.7)
Subpleural-peribronchovascular	2 (33.3)	0 (0.0)	2 (11.8)
Ground-glass density	6 (100)	8 (72.7)	14 (82.4)
Fibrous stripes	6 (100)	6 (54.6)	12 (70.6)
Consolidation	4 (66.7)	0 (0.0)	4 (23.5)
Air bronchograms	4 (66.7)	1 (9.1)	1 (5.9)
Periarterial enlargement	0 (0.0)	1 (9.1)	1 (5.9)

| Pleural effusion | 0 (0.00) | 0 (0.00) | 0 (0.0) |
| Lymph nodes change | 5..(83.3) | 3 (27.3) | 8 (47.1) |

Table 3. Comparison of max. lesion density (HU) between progression and recovery groups			
	Progression group	Recovery group	Total
Initial thorax CT	-459	-424	-883
Follow-up thorax CT	-235	-756	-991
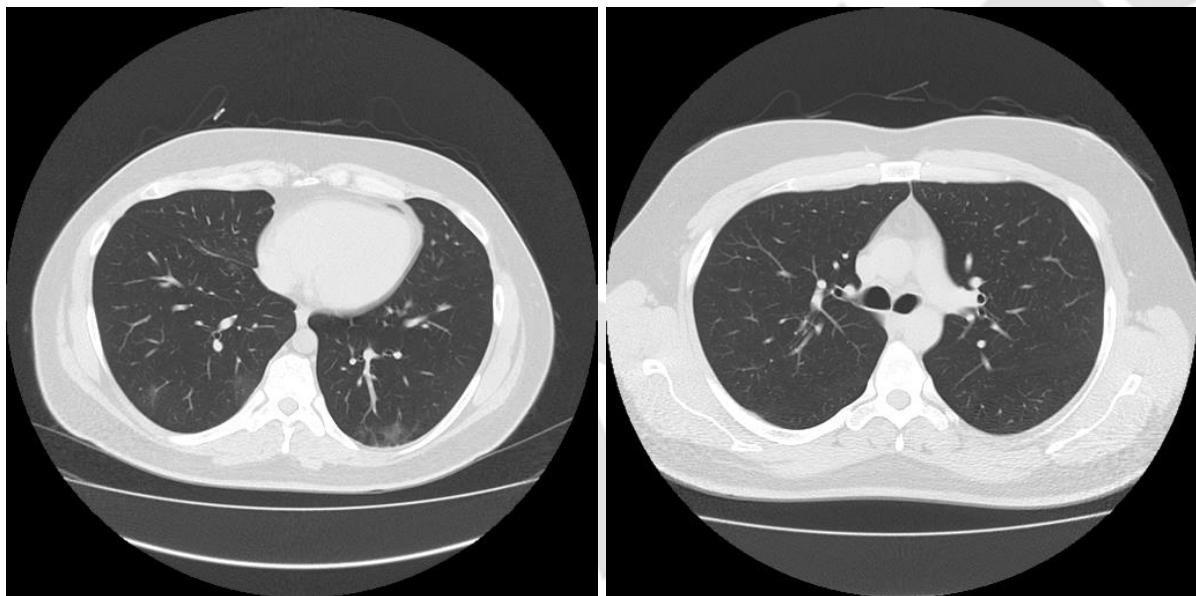
A   B.

Figure 1: A 31-year-old male with COVID-19 pneumonia in the recovery group. Thorax CT images were in the parenchymal window (W: 1600-L: -600). Initial CT images show ground-glass densities in the subpleural areas of the upper lobe posterior segment of both lungs (A). 46 days later the ground glass densities disappeared completely on follow-up CT (B).
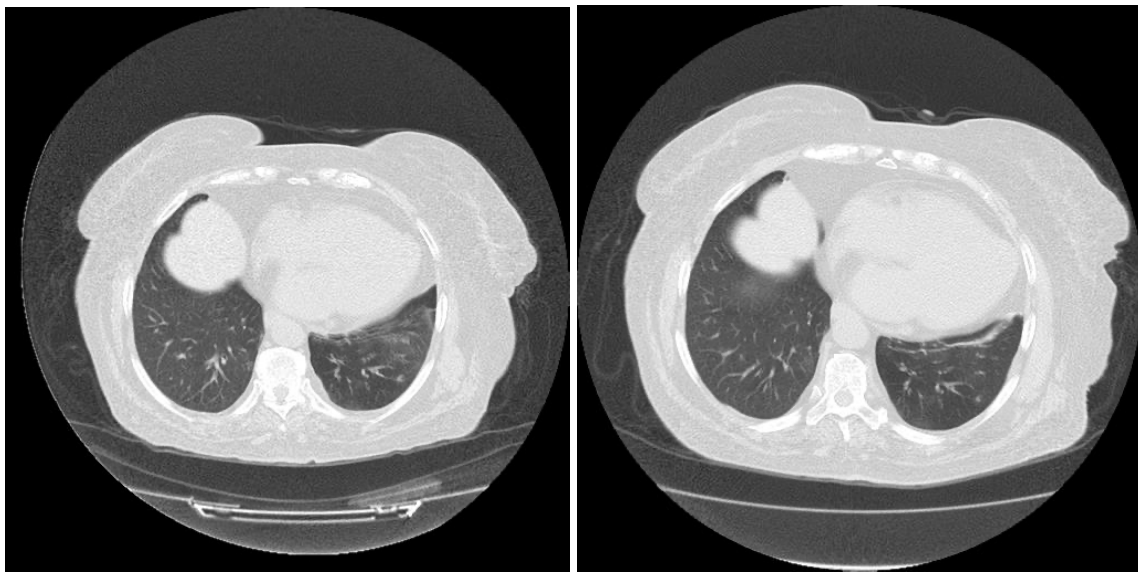
A   B

Figure 2: A 72-year-old male patient with COVID-19 pneumonia, in the recovery group. Thorax CT images were in the parenchyma window (W: 1600-L: -600). Ground-glass density is observed in the basal anterior segment of the lower lobe of the left lung on initial CT (A). Follow-up CT taken 18 days later shows a fibrous stripe as a residual disease sign (B).
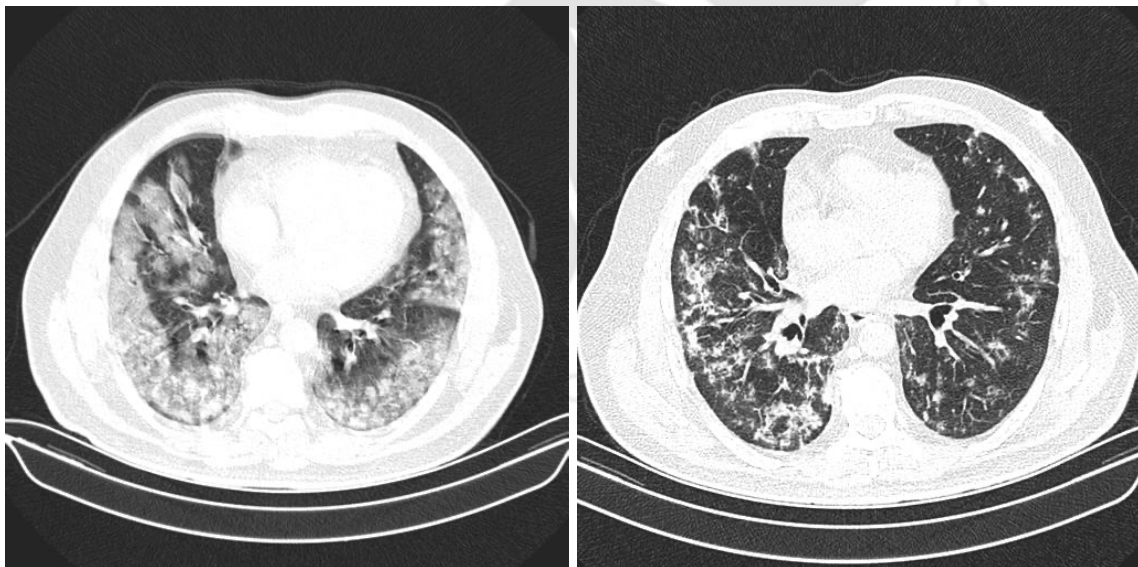
A   B

Figure 3: A 55-year-old male patient with COVID-19 pneumonia, in the progression group. Thorax CT images were in the parenchymal window (W: 1600-L: -600). Initial CT images show diffuse ground glass densities and millimetric areas of consolidation in the subpleural and

peribronchovascular areas in both lung parenchyma (A). The disease progressed in the follow-up CT images taken 17 days later.
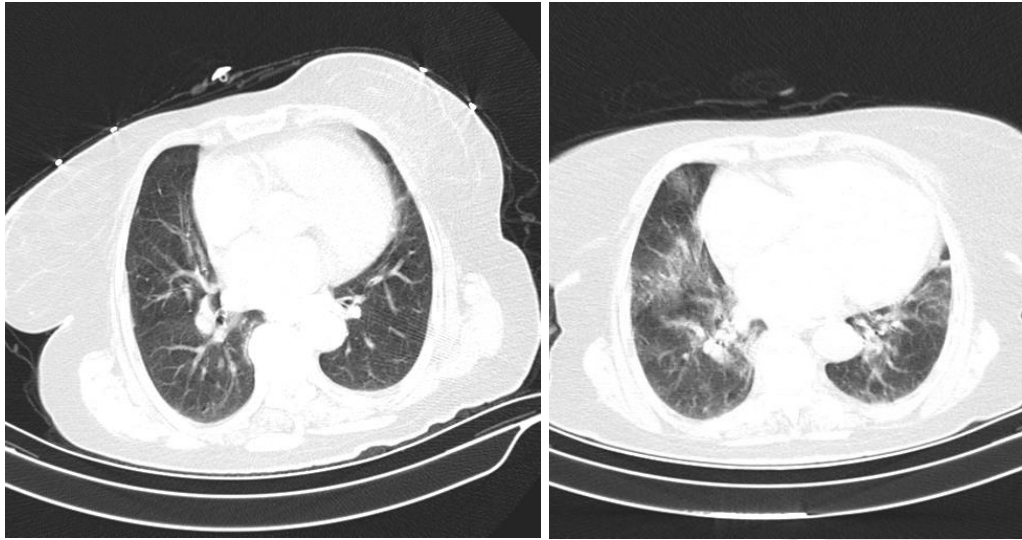
C   D

Figure 4: An 80-year-old female patient with COVID-19 pneumonia in the progression group Thorax CT images were in a parenchyma window (W: 1600-L: -600). Initial CT shows a millimeter diameter ground glass density in the middle lobe of the right lung and the lingula segment of the left upper lobe (A). Follow-up CT performed after 23 days shows that the disease has progressed with diffuse ground-glass densities and fibrous stripes in both lungs (B)

Discussion: COVID-19 is a newly identified viral disease that causes severe respiratory failure. Thorax CT is frequently used in the diagnosis of COVID-19 pneumonia, in the course of the disease, showing progression and residual disease. Radiological recovery stages in patients with COVID-19 pneumonia have been reported by Akçay et al. (3). The main CT finding in the initial stage (0-4 days) is ground-glass density in the bilateral or unilateral subpleural area. Bilateral multilobar distribution, diffuse ground-glass densities, crazy-paving pattern and consolidation are common CT findings in the progressive phase (5-8 days). In the peak phase (9-13 days) consolidation, crazy-paving pattern, diffuse ground-glass density, and residual parenchymal fibrous stripe are the CT findings seen. In the absorption phase (14 days), ground-glass densities and consolidations are regressed. Patients with at least 15 days between initial and follow-up CT examinations were included in the study to investigate the presence of residual disease in the absorption phase. In this study, lesions were in the lower lobes and bilateral in most patients in the initial thoracic CT. They were frequently subpleural and the most common finding was ground-

glass density. In follow-up thorax CT, lesions were bilateral in most patients. Although all lobes were involved, the lower lobes were the most common. Lesions were located in the subpleural and subpleural-peribronchovascular areas. In those with residual disease, the most common finding was ground glass density and fibrous stripe. In patients with progression, progressive consolidation was observed in addition to the fibrous stripe and ground-glass density. The findings detected in the baseline and follow-up thorax CT supported the studies in the literature (4,5). Pleural effusion was not detected in any patient on initial and follow-up CTs. Guan et al. found no pleural effusion in a study they conducted (6). This study has some limitations. The first is the low number of patients. Longer-term follow-up results with more patients may be the subject of future studies. The other is the difficulty in differentiating parenchymal fibrous stripe and atelectasis from the dependant. At that point, a CT scan in the prone position can provide differentiation.

Conclusion: In patients with COVID-19 pneumonia, the most common CT finding in the beginning was ground-glass density; while in residual disease, ground-glass density and fibrous stripe were present. In those with progression, ground-glass density and additional consolidation to the fibrous stripe were observed. Thorax CT is an important diagnostic tool to show residual disease and progression in COVID-19 pneumonia.

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Determining the Effect of Distance Education During The Covid 19 Pandemic on The Learning Motivation of Students in The Nursing Department

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Abstract

Purpose: This study was planned to determine the effect of distance education due to the COVID-19 on the learning motivation of students.

Design and Methods: The research was planned as a cross-sectional study. All year students in the nursing departments of two universities, participated online. Data were collected from 500 students using a personal information form and the Academic Motivation Scale.

Findings: The mean age of the participants was 21.43±4.77 years. A significant difference was observed between the genders in the intrinsic motivation to know subdimension, with women registering a higher mean score. Analysis of correlation between the Academic Motivation Scale and age revealed significant negative correlation with mean intrinsic motivation to know and identified extrinsic motivation scores. Significant positive correlation was also determined between mean amotivation subdimension scores and age.

Practice Implications: The study results revealed lower motivation in male students compared to female students, and also that motivation decreased with age.

Keywords: COVID-19; distance education; motivation; student.

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1 INTRODUCTION

Technology is an inseparable part of every area of modern life. It is also frequently employed in the field of education. The concept of distance education assumed particular importance during the extraordinary period of the COVID-19 pandemic, with online education becoming an essential educational technique.

Distance learning is a system that brings instructors and students together around an educational program despite their being physically separated from one another. There are three components to this method – what is learned, the instructor, and communication (Souza, et al., 2018). Despite offering the ability to repeat subjects and to reach large numbers of students, the method can also have adverse effects, such as lack of interaction, communication problems, and an inability to immediately identify problems arising.

In terms of professional nursing education, there is a need to adapt to changing knowledge, skills, attitudes, and behaviors. It is therefore important to be aware of learning styles and to evaluate the current process in the context of education. Considering nursing education in the light of learning models, the importance of touch, concrete/abstract perception, and conceptualization are particularly significant; however, it has also been emphasized that both academic and clinically-based applications are of vital importance in education (Balakas & Smith, 2016; Kaya & Akçin, 2002). At the same time there is a reported need for a system that is not solely learning-based, that does not rely solely on rote learning, that promotes active/effective participation at every stage, and that encourages inquiry and research in the modern conception of professional nursing education. Despite its benefits when employed effectively, distance learning for nursing is more recommended for postgraduate education (Brown & Wilson, 2016; Kozlowski-Gibson, 2018; Thompson, 2017). It has also been reported to be capable of leading to problems such as a lack of basic interaction, the possibility of inadequate existing program content, the lack of an objective

assessment criterion, and encouraging a competitive atmosphere (Horne & Sandmann, 2012; Kozlowski-Gibson, 2018). Studies have emphasized the importance of face-to-face education, and particularly the need for interaction, to nurse education (Bilgiç & Tüzün, 2015; Falowo, 2007; Karataş, 2003).

Distance education has also been adopted and is still continuing in Turkey following the COVID-19 period. There are advantages and disadvantages to distance education, and it is thought to be important that nursing students, who occupy an important place in the health field, should be evaluated by direct observation. The purpose of the present study was therefore to determine the effect of distance education during the COVID-19 pandemic on the learning motivation of students in the nursing department.

2 MATERIALS AND METHODS

2.1 Type of the Study

This descriptive, cross-sectional study was planned in order to determine the effect of distance education during the COVID-19 pandemic on the learning motivation of bursing department students.

2.2 Universe and Sampling

First, second, third, and fourth-year students in the nursing departments of Kırklareli and Gümüşhane universities participated online. Data were collected from 500 students consenting to take part. The response rate was 66.84%.

Inclusion criteria were willingness to take part, the ability to complete the online questionnare, and being a student in the nursing departments of the reevant universities. Non-compliance with the inclusion criteria was adopted an an exclusion criterion.

2.3 Data Collection Tools and Data Collection

The study was performed using an information form and the Academic Motivation Scale. The information form contained 12 questions, eight investigating sociodemographic characteristics such as age, sex, academic year, and marital status, two questions concerning the presence of COVID-19 in the family and whether precautions against the risk of infection were taken, and two questions about distance education.

2.3.1. The Academic Motivation Scale was developed in Canada (Vallerand et al., 1992). The validity and reliability of the Turkish-language version were subsequently confirmed by Hülya Ünal Karagüven (Karagüven, 2012). It consists of seven different subscales of four items each, evaluating three types of intrinsic motivation, three types of extrinsic motivation, and amotivation. This seven-point Likert-type scale contains a total of 28 questions. Scores from the subtests range between 4 and 28. Since the subscales are evaluated separately, higher scores from each subscale indicate higher motivation assessed by that subscale. Items are scored between 1 and 7 (1: does not correspond at all, 7: corresponds exactly). The scale's Cronbach alpha values are between 0.67 and 0.87.

2.4 Evaluation of the Data

Descriptive statistics, means, median, frequencies, and percentage were used to show the socio-demographic characteristics of the student. Comparisons were made using Mann-Whitney Test, Pearson's Correlation and Spearman's Correlation for all statistical analyses and a two-sided p value of less than 0.05 was considered as statistically significant.

2.5 Ethical considerations

Ethics committee approval was obtained from XXX University Scientific Research and Publication Ethics Committee in order to conduct the study (2020 / 04). The requisite permission was also granted by the Ministry of Health. Students were informed about the study online, and also consented to participate online, before completing the study form.

3 RESULTS

The mean age of the participants was 21.43±4.77 years, and 72% were women. The group with social security constituted 64.4% of the participants, and chronic disease was present in 6%. Two participants were married, and both had children. Analysis showed that 97.6% of the participants took protective measures against the risk of COVID-19 infection, and that 2.8% of the participants had a family members diagnosed with COVID-19. In addition, 58.2% of the respondents thought that distance education was not beneficial (Table 1).

The principal perceived deficiencies of distance education were difficulty in understanding lessons, reported by 67.0% of participants, while 47.2% reported difficulty in establishing communication, 29.0% experienced difficulties with exams, 12.6% reported electricity outages, and 60.6% reported feeling academic inadequacy.

A statistical comparison of some variables in the seven subscale Academic Motivation Scale is shown in Table 2. A significant association was found between intrinsic motivation to know and gender, with women recording higher mean scores on this subscale (p<0.001). Statistical analysis of the intrinsic motivation to succeed subscale and gender also revealed significantly higher scores among women (p=0.002). Women also recorded significantly higher scores on the intrinsic motivation for stimulation subscale (p=0.001). Significantly higher scores were also observed among women on the identified extrinsic motivation subscale (p<0.001). Women also achieved significantly higher scores on the introjected external motivation subscale (p=0.008). A significant difference was also detected between the genders in terms of amotivation, with significantly higher scores being determined among men (p<0.001). A significant association was also found between taking protective measures against the risk of COVID-19 infection and the identified extrinsic motivation subscale, with higher scores being observed among participants taking such precautions (p=0.003). Higher amotivation subscale scores were also determined

among individuals not taking precautionary measures against infection (p=0.015). Mean intrinsic motivation for stimulation subscale scores were also determined among individuals with a relative diagnosed with COVID-19 (p=0.028) (Table 2).

Correlation analysis between the Academic Motivation Scale and age revealed significant negative correlation between mean intrinsic motivation to know (r=-0.108; p=0.016) and identified extrinsic motivation (r=-0.118; p=0.008). Significant positive correlation was determined between mean amotivation subscale scores and age (r=0.207; p<0.001). Accordingly, intrinsic motivation to know and identified extrinsic motivation subscale scores decreased with age. Additionally, mean amotivation subscale scores increased with age (Table 3).

4 DISCUSSION

Distance education was regarded as not beneficial by 58.2% of the students taking part in this study. In a study from the Australia (Reid-Searl et al., 2011), nursing students received theoretical education in two forms, face-to-face and web-based distance education. At the end of that study, no significant difference was observed between the student groups, and both reported being satisfaction with the education provided. Another study of nursing students also compared face-to-face and distance education, and determined no difference between knowledge levels at the end of the research (Horiuchi et al., 2009). However, studies have also reported that distance education is beneficial when the necessary equipment of nursing training is provided (Dos Santos, 2020; Gazza, 2017). Another study between health disciplines reported that distance education lagged behind the traditional method in terms of self-efficacy while the variable of time has been reported to result in problems such as coping with technology (Cannistraci et al., 2018; Silva, dos Santos et al., 2015). No other study against which the present research can be compared has yet been performed in Turkey. The differences between the studies may derive from differences in the educational contents.

The most commonly perceived deficiencies during distance education were difficulty in understanding lessons, reported by 67.0% of participants, difficulty in establishing communication, reported by 47.2%, difficulty in exams in 29.0%, electricity outages reported by 12.6%, and lack of academic adequacy reported by 60.6%. There is no explicit guideline concerning distance education for either schools or instructors in Turkey (Bilgiç & Tüzün, 2015). Falowo, reported that students experienced difficulties, in decreasing order, regarding interaction, technical equipment, feedback, and internet-technology (Falowo, 2007). In another study, students described distance education as complex and difficult (Bloomfield et al., 2008). Şenyuva, emphasized that both students and instructors perceived a loss of social communication in particular. Consistent with the previous literature, we also think that distance learning has adverse impacts on students (Şenyuva, 2012).

In the present study, female students exhibited higher intrinsic motivation for success and stimulation than men. In Hackney's study of the motivation and performance of nursing (Hackney, 2017). students, no association was determined between motivation and demographic variables Lee et al., investigated self-directed learning and professional values in nursing students and found that male students exhibited higher motivation, than women (Lee et al., 2020). Another study of experiences of e-learning among nursing and health care students described motivation as an important factor in learning and found that motivation was affected by limited computer access, and skills and technical problems (Moule et al., 2010). The discrepancies between the studies may have resulted from the existing conditions.

Higher extrinsic motivation was determined in the present study among students taking precautionary measures against the risk of COVID-19 infection compared to those not adopting such measures. Dos Santos' study of nursing students' decision-making and sense of belonging during the COVID-19 pandemic reported that students did not lose motivation due to financial resource difficulties and therefore wished to continue their education by taking precautionary

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measures (Dos Santos, 2020). Extrinsic affects can impair motivation. Since the current COVID-19 pandemic may affect motivation by creating stress in individuals, it may be expected that stress levels in those who take precautionary measures against the risk of infection will decline, so their extrinsic motivation will be high.

In the present study, higher intrinsic motivation for stimulation was determined in students with relatives diagnosed with COVID-19 than in those with no such family members. Similarly to the above analysis, the presence of a family member diagnosed with COVID-19, perceived as a negativity, may result in motivation to comply with the existing conditions.

Motivation decreased with age in the present study. A study of nursing students in Japan reported higher motivation levels in third- and fourth-year students than in those in their first and second years (Kudo et al., 2013). In their cross-sectional comparative study of nursing and engineering student, McComb & Kirkpatrick, reported the highest level of motivation in the second years, while levels were similar in the other years (McComb & Kirkpatrick, 2016). They also found that motivation was most affected by variety of lessons. Another study comparing motivation and performance in second- and fourth-year nursing department students reported no association between motivation and age (Rejnö et al., 2017). The variation between studies may be due to differences in education and curricula.

4.1 Limitations of the study

The principal limitations of the study are that it was performed over a specific period and online. We recommend that further qualitative studies perform a deeper examination of dissatisfaction in education and so effective measures can be adopted against this.

5 CONCLUSION

In conclusion, the study findings indicate lower motivation among male students than among women, and that motivation decreased with age.

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Author contributions

All authors made substantial contributions to all of the following: (1) the conception and design of the paper, (2) drafting and critically revising the article's intellectual content, (1,2) final approval of the version as submitted.

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Table 1: Study participants' sociodemographic characteristics

	n	%
University attended		
Gümüşhane	287	57.4
Kırklareli	213	42.6
Sex		
Female	386	77.2
Male	114	22.8
Academic year		
1	129	25.8
2	117	23.4
3	142	28.4
4	112	22.4
Do you have social security?		
Yes	323	64.6
No	177	35.4
Presence of chronic disease		

Yes	30	6.0
No	470	94.0
Have you taken precautionary measures against the risk of COVID-19 infection?		
Yes	488	97.6
No	12	2.4
Has anyone in your family been diagnosed with COVID-19? **(Mother-Father-Spouse-Child-Sister-Brother)**		
Yes	14	2.8
No	486	97.2
Was distance learning beneficial for you?		
Yes	209	41.8
No	291	58.2

Table 2: A comparison between the Academic Motivation Scale and different variables

		Sex		Have you taken precautionary measures against the risk of COVID-19 infection?		Has anyone in your family been diagnosed with COVID-19	
		Female	**Male**	**Yes**	**No**	**Yes**	**No**
Intrinsic motivation to know	mean	266.33	196.89	252.31	176.75	272.21	249.87
	p	**<0.001**		0.072		0.574	

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Intrinsic motivation for success	mean	261.42	213.53	251.89	193.88	282.75	249.57
	p	**0.002**		0.168		0.396	
Intrinsic motivation for stimulation	mean	262.68	209.27	251.59	206.29	334.07	248.09
	p	**0.001**		0.282		**0.028**	
Identified extrinsic motivation	mean	265.62	199.30	253.45	130.54	231.32	251.05
	p	**<0.001**		**0.003**		0.611	
Introjected extrinsic motivation	mean	259.82	218.94	251.42	213.25	234.50	250.96
	p	**0.008**		0.365		0.674	
External extrinsic motivation	mean	250.40	250.83	252.24	179.92	241.64	250.76
	p	0.978		0.086		0.815	
Amotivation	mean	235.10	302.65	248.09	348.38	209.29	251.69
	p	**<0.001**		**0.015**		0.266	

Table 3: Correlation analysis between the Academic Motivation Scale and age

	Age	
	R	**p**
Intrinsic motivation to know	-0.108	**0.016**
Intrinsic motivation for success	-0.045	0.320
Intrinsic motivation for stimulation	-0.006	0.892
Identified extrinsic motivation	-0.118	**0.008**
Introjected extrinsic motivation	0.047	0.291
External extrinsic motivation	-0.025	0.580
Amotivation	0.207	**<0.001**

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Figure 1: The areas in which most deficiencies were perceived during the distance learning process

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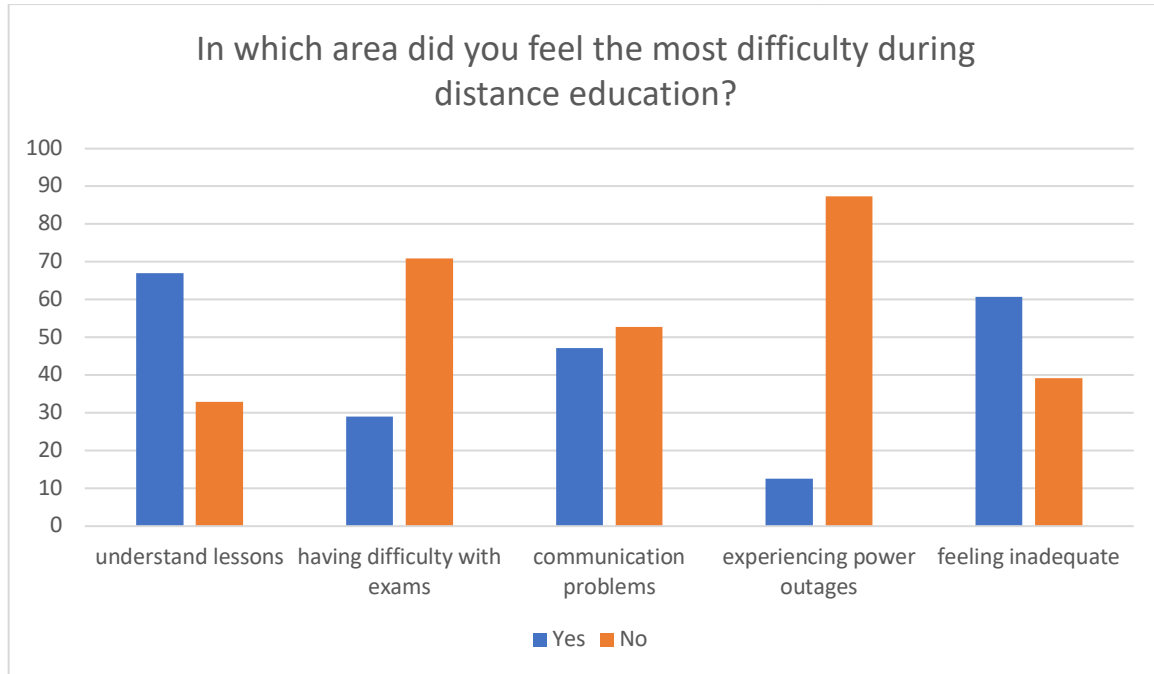
Oral Presentation No: 19669

Do the patients with obstructive sleep apnea syndrome experience more serious COVID-19 disease

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Purpose: OSAS (Obstructive sleep apnea syndrome) is a common disease in world. COVID-19 is now storming world as pandemic. The aim of this study is to inspect severity of COVID-19 disease in patients with OSAS. Blood parameters and thorax computed tomography findings of patients who had OSAS and who were diagnosed as COVID-19 were inspected.

Method: Retrospectively, out of 400 patients who were diagnosed as OSAS between January 2018 and March 2020; 29 patients who experienced COVID-19 disease and whose complete records could be obtained, were enrolled in the study. Patients who were diagnosed as COVID-19 but who were below 18 years of age and whose complete study data parameters could not be obtained were excluded. Laboratory findings in the first 24 hours after diagnosis of COVID-19 and thorax computed tomographies in first five days after diagnosis were evaluated. Lymphocyte and platelet counts, ALT (alanine aminotransferase), AST (aspartate aminotransferase), creatinine, lactate dehydrogenase, creatinine kinase, CRP (C-reactive protein), ferritine and D-dimer results were recorded.

Results: Mean ALT, CRP and ferritine results of patients were higher than normal. In fourteen patients (48%) thorax computed tomography revealed pneumonia. Mean age was 48.79±10.77. In patients with AHI (apnea-hyponea index) values lower than 30, five (35.7%) patients had pneumonia and in patients with AHI greater than 30, nine (60%) patients had pneumonia.

Conclusion: In course of COVID-19 disease, acute phase reactant indicators; CRP and ferritine and ALT levels in patients with OSAS are found higher than normal in this study. Nearly half of patients had pneumonia shown in thorax computed tomography. Under light of these findings it can be concluded that patients having OSAS may experience serious course of COVID-19 disease.

Key Words: Obstructive sleep apnea syndrome, COVID-19, thorax computed tomography, ferritine, C-reactive protein

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INTRODUCTION

OSAS (Obstructive sleep apnea syndrome) is a pulmonary disease affecting more than nine hundred billion people worldwide. In some countries prevalence is as high as 50% (1). OSAS results in intermittent airway obstruction and interruption of airflow to lungs. This will cause hypoxia in affected individual (2). Intermittent hypoxia causes parenchymal changes in lung tissues and severely disrupts pulmonary function, therefore patients suffering from OSAS will experience more severe course of disease in COVID-19 (3).

Community acquired pneumonia risk was reported to be increased in OSAS patients (4). There are a few studies inspecting severity of COVID-19 in OSAS patients. COVID-19 disease was thought to cause illness through some pathophysiologic mechanisms. Angiotensin converting enzyme receptors are reported to be increased in OSAS patients, which a binding point for pandemic coronavirus to enter into cell (5). Pro-inflammatory cytokines were found to be increased in patients who have OSAS, thus these patients are reported to be in greater risk for severe disease course for COVID-19 (6). Furthermore, pathophysiologic changes seen in OSAS may worsen cytokine storm and hypoxia in COVID-19 disease (7). Overall, existence of OSAS is reported to be aggravating risk factor for mortality in COVID-19 (3)

Considering aforementioned issues, a study was designed to inspect effects of concomitant existence of OSAS in patients suffering COVID-19 with a more severe course of disease. For this reason, laboratory and thorax computed tomography findings of patients who had COVID-19 together with OSAS were analyzed, retrospectively.

METHOD

Four hundred patients who were diagnosed to have OSAS between January 2018 and March 2020 were inspected; of those, 29 patients who experienced COVID-19 disease and whose complete medical records could be obtained, were enrolled in the study. Patients who were diagnosed as COVID-19 but who were below 18 years of age and whose complete study data parameters could not be obtained were excluded. Polysomnographies of all patients were analyzed, and AHI (apnea-hypopnea index) levels were

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recorded. Laboratory findings in the first 24 hours after diagnosis of COVID-19 and thorax computed tomographies in first five days after diagnosis were evaluated. Lymphocyte and platelet counts, ALT (alanine aminotranspherase), AST (aspartate aminotranspherase), creatinine, lactate dehydrogenase, creatinine kinase, CRP (C-reactive protein), ferritine and D-dimer results were recorded.

Embla N7000 (Natus Neurology, Embla Systems, Ontario, Canada) instrument were used for polysomnographies. Diagnostic criteria declared in 2012 by AASM (American Academy of Sleep Medicine) were considered. Addition of apnea and hypopnea attacks in one hour constituted AHI. Whole blood counts were performed by Sysmex XN-1000 (USA). ALT, AST, creatinine, LDH, creatinine kinase, CRP, ferritine and D-dimer tests were performed by Roche Hitachi Cobas 501 (Switzerland). Thorax computed tomographies were performed by Siemens Emotion 16 Scanner (Siemens Healthineers; Erlangen, Germany, 2010). Tomography imagings were obtained after deep inspiration in supine position, without using intravenous contrast media.

All data were analyzed in computer software, SPSS version 25.0 (SPSS Inc., Chicago, IL, USA). Distribution of data was analyzed by Kolmogorov-Smirnov test. Data with normal distribution were given as mean±standard deviation and discrete data were given as medium (minimum-maximum). A p value lesser than 0.05 was accepted as statistically significant.

RESULTS

Mean ALT, CRP and ferritine results of patients were higher than normal. In fourteen patients (48%) thorax computed tomography revealed pneumonia.

Nineteen (65.5%) of participants were male, where ten (34.5%) were female. Ages of participants were ranging from 30 to 77 and mean age was 48.8±10.8 (Males 47.7±11.2, females 51.3±10.0. Laboratory findings of participants and normal values were shown in Table 1.

Six patients (20.7%) had mild OSAS (AHI; 5 to 15), eight patients (27.6%) had moderate OSAS (AHI; 15 to 30) and 15 patients (51.7%) had severe OSAS (AHI; more than 30). In patients with AHI values lower than 30, five (35.7%) patients had pneumonia and in patients with AHI greater than 30, nine (60%) patients had pneumonia (p=0.272).

DISCUSSION

In course of COVID-19 disease, acute phase reactant indicators; CRP and ferritine and ALT levels in patients with OSAS are found higher than normal in this study. Nearly half of patients had pneumonia shown in thorax computed tomography.

Existence of concomitant OSAS was reported to aggravate seriousness of disease in COVID-19. In a study, frequency of OSAS were found to be higher in the patients who were hospitalized for COVID-19 compared to patients treated at home. Besides this, OSAS was more frequent in patients who developed respiratory failure (8). Risk for COVID-19 was reported to be eight times increased in patients who had OSAS when compared to similar age group patients who did not have OSAS (8). OSAS may worsen hypoxia seen in COVID-19 (10). Also OSAS increase mortality of COVID-19 (3). Continuous positive airway pressure treatment in OSAS patients may regulate renin-angiotensin-aldosterone system and reduce risk of development of COVID-19 (9).

A study reported pulmonary involvement of COVID-19 only in 34% of patients in thorax computed tomography. This presented study reports pulmonary involvement of COVID-19 in thorax computed tomography nearly in half of participants. Since more of COVID-19 patients exhibited positive tomography findings if they had OSAS, it may be projected that these patients experience a more serious course of disease.

There are some limitation in this presented study. Number of participants is relatively low and change in course of complaints could not be followed since the study was designed retrospectively.

Under light of these findings it can be concluded that; patients having OSAS may experience serious course of COVID-19 disease. Effect of OSAS in prognosis of COVID-19 could not be elucidated, yet. Further studies with greater number of participants are required to clarify this subject.

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Table 1. Laboratory values of patients having COVID-19 disease, shown as means (ranging from minimum to maximum) and normal values for tests

Parameter	Normal value	Mean (Min-Max)
Apnea hypopnea index	<5	34.17±21.7 (9-92)
Lymphocyte count (10^9/L)	1.2-3.5	2.06±1.01 (0.51-4.6)
Platelet count (10^9/L)	150-450	281.11±104.87 (142-541)
Alanine aminotranspherase (U/L)	0-41	**44.13±24.90** (12-101)
Aspartate aminotranspherase (U/L)	0-40	38.27±19.69 (14-89)
Creatinine (μmol/L)	0.7-1.2	0.93±0.23 (0.5-1.35)
Lactate dehydrogenase (U/L)	135-225	220.5±76.34 (128-391)
Creatinine kinase (U/L)	39-308	84.18±52.96 (30-230)
C-reactive protein (mg/L)	0-5	**29.18±31.22** (2-118)
Ferritine (μg/L)	18-250	**257.06±58.23** (25-1072)
D-dimer (nmol/L)	0-500	428.32±235.45 (169-963)

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The Relationship Between Nursing Students' Attitudes Towards Information And Communication Technologies And Their Digital Literacy

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ABSTRACT

Objectives: In COVID-19 pandemic, students were assessed through classes, homework, projects, application files and similar activities with distance education method. Thus, information and communication technologies (ICT), which are used and which have become an indispensable element in many areas of our lives, have also shown their effect in the field of education during the pandemic. The present study was conducted to examine the association between nursing students' attitudes towards information and communication technologies and their digital literacy levels.

Methods: This descriptive study was conducted between September 10-20, 2020. The data were collected by using "Personal Information Form", "Information and Communication Technology Attitude Scale (ICTAS)", "Digital Literacy Scale (DLS)". Data collection forms were sent to nursing students online. 330 students who provided feedback to data collection forms were included in the study.

Results: DLS total mean score was 61.02±11.18. Total mean score of DLS sub-dimensions were 25.04±5.3 attitude, 22.03±4.34 technical, 7.39±1.67 cognitive and 6.55±1.7 social sub-dimensions. ICTAS mean score was found as 3.4±0.62. Mean scores for sub-dimensions of ICTAS were found as 3.7±0.67 "General ICT tendency", as 3.96±0.68 "Accessing information in virtual environment", as 2.44±1.13 "computer hardware", as 3.53±0.85 software use and as 3.37±0.87 "communication factor in virtual environment". Positive and moderate association was found between DLS and ICTAS.

Conclusions: Nursing students were found to have positive attitude towards information and communication technologies and high digital literacy levels. It was found that as the attitudes of students towards information and communication technologies increased positively, their digital literacy levels also increased.

INTRODUCTION

Coronavirus (COVID-19) pandemic first appeared in Asia in December 2019 and turned into a pandemic affecting the whole world in a short period of time like four months (1). According to the theory of chaos, an event that occurs in another region of the world can trigger another event (2). In this context, COVID-19 pandemic that started at the end of 2019 began to be a storm in the whole world. Without a doubt, education was caught in the middle of this storm (3).

The flow and rhythm of life that started with pandemic changed in the whole world (4); in order to decrease the effects of pandemic and to slow down the spread of the disease due to COVID-19's high contagiousness, precautions were taken such as partial or full-time curfew, quarantine processes, individuals' isolating themselves and keeping the social distance (2). In these precautions, the places where there could be human to human contact were shut down and schools and universities were also included in this scope (3). Following the date March 11, 2020 when the first case was detected in Turkey, Institutions of Higher Education (YÖK) announced that education was suspended in universities (5). With the closure of educational institutions and the break in face to face education, education of approximately 7.5 million students in higher education was interrupted in Turkey. Due to the uncertainty of the epidemic process, it was announced by YÖK on March 26, 2020 that there would be no face-to-face classes in the spring semester of 2019-2020 academic year. Thus, distance education became a current issue in Turkey (5). In line with the principle that education is a basic human right, in order to compensate for the education that was interrupted due to pandemic, emergency remote education (ERE) practices were started by universities with the guidance of YÖK (2, 5). In this process, students were assessed through classes, homework, projects, application files and similar activities with distance education method (5). Thus, information and communication technologies (ICT), which are used and which have become an indispensable element in many areas of our lives, have also shown their effect in the field of education during the pandemic (3, 6).

ICT, which has developed rapidly and entered our social lives in some way, has also influenced the education sector. Today, many technologies are used in education environments and a rich

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and permanent learning experience can be provided to students with the effective use of these technologies (7). Information and communication technologies are all kinds of visual and auditory printed and written tools enabling access and creation of information. It is the whole that includes communication and computer technologies which enable information to be collected, processed, stored and transferred from one place to another through webs. The most known benefits of ICT are reducing cost, increasing efficiency, facilitating data entry, decreasing repetitions, decreasing use of physical space and efficiency in document management (8). It is becoming more and more important for university students, who will form the qualified manpower of the future, to adopt ICT. ICT will help students to adapt to constantly improving technologies in their future working environments and other activities and this they will develop the skills to think creatively, to produce and to create permanent solutions (9). Although ICT is necessary and inevitable or an effective and efficient education, students' positive attitudes towards ICT are also as important (10). However, it is found that some students resist the use of computers and therefore technology, do not follow developments about ICT closely and do not like to use computer (10). Increasing the use of safe internet by using different technologies and having skills to make decisions about whether the information learned is correct/incorrect requires students to have digital literacy (11). The emergence of easy access to information and sharing information over the internet has also revealed the concept of "Digital literacy", which is defined as the skills to use ICT correctly, to access, produce and share correct information (12). Digital literacy has been defined as accessing, understanding, evaluating and using comprehensive information presented by computers or derivatives, especially the internet, and using it in accordance with needs (13). Competences about digital literacy have been defined as solving problems, communicating, managing information, cooperating, creating and sharing content; the knowledge, skills and attitudes (including abilities, strategies, values and awareness) required to use information and communication technologies and digital media in an effective, suitable, critical, creative, autonomous, flexible and ethical way for work, leisure, participation, learning, socialization and consumption (14). Individuals have to be aware of these competences. Indeed, it has been stated that individuals who are not digitally literate lack basic skills, understanding and applications in the changing world (15). In today's world where information is spreading rapidly, misinformation which has low reliability, which is not proven and which is spread for provocation can cause misleading information for individuals and the society   (11). This situation increases the significance of individuals' digital literacy skills (16). Individuals with digital literacy are individuals

who have their feet firmly on the ground while moving from one environment to another and who can access information they want quickly in today's world which is experiencing an intense digitalization. They are individuals who know which expressions are suitable for which information, in short, they are individuals who can comprehend the different tools used, the information presented with these tools and the points this information can reach (15, 17). In studies conducted on education by using digital technologies, it has been stated that digital literacy is important in higher education (18, 19). Sönmez and Gül (2014) emphasized that in digital age, individuals should have digital literacy cognitive skills to be able to solve the digital problems they come across (20). It has been stated that digital literacy has begun to be more important than even known literacy (12).

With the help of ICT, care services are constantly renewed, and new information obtained is reflected in care. For this reason, it is also important for health institutions to have employees who have positive attitudes towards ICT use (21). Enabling nursing students to get the habit of using information and communication technologies will contribute to increasing quality in patient care and improving patient safety (22). Today, the graduates of nursing departments are expected to have many technological competences. Technological adaptations such as smart devices like computers, tablets and telephones, digital communication, data processing, multimedia presentations and computer software required to create professional documents have already become the task area of nurses today (23). Technology supported education is also a necessity for learning and sharing information and for cooperation with colleagues around the world (24). It is of great importance to determine nursing students' attitudes towards information and communication technologies so that nursing profession does not lag behind technological advancements and so that students can develop their skills for using technology (25). In addition, effective and proper use of computer and internet during the education process is associated with students' attitudes towards ICT use (26)

ICT, which affects nursing education, is accepted to be one of the most important developments and changes (6). The new sociotechnical reality requires not only having skills and abilities about the use of technological tools, but also having information about their appropriate use and applications (15). Universities aiming to create the generation of qualified manpower of the future have to train students who can easily use and absorb ICT (27). In the 21st century of digital transformation, digital literacy skills such as accessing reliable information, safe internet use and

conscious internet use are considered important for students (11). With the development of technology, the realization of lifelong learning has made the concept of digital literacy more important. The fact that technology has become an integral part of human life has brought the question of why, how and when it will be used (28). When the literature was reviewed, no studies were found on the determination of nursing students' digital literacy levels and their attitudes towards ICT. In parallel with the changes in modern education systems structured with different and innovative technologies, prospective nurses' digital literacy levels and their attitudes towards ICT have an important place. Positive attitudes towards ICT and a good digital literacy level will be an important factor in nursing students' getting a place for themselves easily in digital age and in being successful (29). In this context, the present study was conducted to examine the association between nursing students' attitudes towards information and communication technologies and their digital literacy levels.

METHODS

Sample and Population of the Study

The data of the descriptive study were collected online in Health Sciences Faculty Nursing department of a state university in Turkey between 10 and 20 September 2020. Total sample size found with G-POWER program with an effect size of 0.197, 95% power and 0.05 margin of error based on the percentage measurement values of the methods to be studied was calculated as n=330. The population of the study consisted of 640 nursing students studying in the Health Sciences Faculty Nursing department, where the study was to be conducted. 330 (51% participation) nursing students who answered the questionnaire forms were included in the study.

Dependent variables of the study are students' attitudes towards information and communication technologies and their digital literacy levels. Independent variable was the students' socio-demographic features.

Data Collection Instruments

The data were collected by using "Personal Information Form", "Information and Communication Technology Attitude Scale (ICTAS)" and "Digital Literacy Scale (DLS)".

Personal Information Form

This form prepared by the researchers includes questions such as the students' age, gender, year of study, place of residence, skills for using the internet and social web use.

Information and Communication Technology Attitude Scale (ICTAS)

The scale developed by Günbatar (2014) measures the participants' attitudes towards ICT. The scale consists of 23 items and 5 sub dimensions (30). Each of the expressions in the 5-Liket type scale is scored as "1=Totally Disagree" and "5=Totally agree". High scores taken from the subscales of the scale mean positive attitude towards ICT. There are 6 items (1-6) in the general ICT tendency sub-dimension. There are 5 items (7-11) in the access to information in virtual medium sub-dimension. There are 4 items (12-15) in the computer hardware sub-dimensions. There are 5 items (16-20) in the software use sub-dimension. There are 3 items (21-23) in the communication factor in virtual medium sub-dimension. Cronbach Alpha coefficient of the scale is 0.91 Cronbach Alpha coefficients of the sub-dimensions are 0.89 for general ICT tendency, 0.88 for access to information in virtual medium, 0.88 for computer hardware, 0.82 for software use and 0.76 for communication factor in virtual medium (30). In the present study, Cronbach Alpha coefficient of the scale was found as 0.60 Cronbach Alpha coefficients of the sub-dimensions were 0.88 for general ICT tendency, 0.88 for access to information in virtual medium, 0.93 for computer hardware, 0.83 for software use and 0.67 for communication factor in virtual medium.

Digital Literacy Scale (DLS)

The scale developed by Ng (2012) consists of 17 items and 4 sub-dimensions. Each of the expressions in the 5-Liket type scale is scored as "1=Totally Disagree" and "5=Totally agree" (31). Turkish validity and reliability of the study was conducted by Hamutoğlu et al. (2017). The scale has four sub-dimensions as attitude, technical, cognitive and social. Attitude sub-dimension has 7 items (1-7). Technical sub-dimension has 6 items (8-13). Cognitive sub-dimension has 2 items (14-15). Social sub-dimension has 2 items (16-17) (11). High scores from sub-dimensions of DLS and the scale in general mean high digital literacy. Cronbach Alpha coefficient of the scale is 0.98 Cronbach Alpha coefficients of the sub-dimensions are 0.89 for attitude sub-dimension, 0.90 for technical sub-dimension, 0.87 for cognitive sub-dimension and 0.79 for social sub-dimension. In the present study, Cronbach Alpha coefficient of the scale was found as 0.93 Cronbach Alpha coefficients of the sub-dimensions were 0.87 for attitude sub-dimension, 0.88 for technical sub-dimension, 0.63 for cognitive sub-dimension and 0.60 for social sub-dimension.

Data Collection

Data collection tools prepared with GoogleDocs program were sent online to nursing students and they were asked to fill in the forms.

Data Assessment

SPSS version 22.00 was used in the analysis of the data. Descriptive statistics (percentage, mean, standard deviation) and Spearman's correlation analysis was used in data assessment. Level of significance was accepted as $p<0.05$.

Ethical Considerations of the Study

Approval was taken from the Ethics Committee (2020/08 numbered) of a university before starting the study. The form containing the information required about the aim and application method of the study was sent online to students and their consents were taken. This study was conducted in accordance with the ethical standards of the Declaration of Helsinki. Volunteering participants were included in the study and personal identity information was kept confidential.

RESULTS

Mean age of the students was 21.43±2.83, 79.4% were female, 37.6% were in their third year, 62.9% were staying with their families, 61.3% described their internet use skill as moderate and 93.9% were found to use a social network (Table 1).

Table 1. Sociodemographic Features of The Students

		Mean±Sd	*Min-Max (Median)*
Age		21.43±2.83	2-40 (21)
		n	%
Gender	Female	262	79.4
	Male	68	20.6
Year of study	1st year	84	25.5
	2nd year	56	17.0
	3rd year	124	37.6
	4th year	66	20.0
Place of residence	With family	207	62.9

	Dormitory	86	26.1
	Student house	36	10.9
Internet use skills	Amateur	8	2.4
	Moderate	201	61.3
	Advanced	102	31.1
	Expert	17	5.2
Social Network Use	Yes	310	93.9
	No	20	6.1

Table 2 includes the mean scores of the scale and sub-dimensions used in the study. DLS total score mean was 61.02±11.18. Mean total scores of DLS sub-dimensions were found as 25.04±5.3 for attitude, as 22.03±4.34 for technical, as 7.39±1.67 for cognitive and as 6.55±1.7 for social. ICTAS score average was 3.4±0.62. Mean scores of ICTAS sub-dimensions were found as 3.7±0.67 for general ICT tendency, as 3.96±0.68 for accessing information in virtual environment, as 2.44±1.13 for computer hardware, as 3.53±0.85 for software use and as 3.37±0.87 for communication factor in virtual environment.

Table 2. Mean Digital Literacy Scale and Sub-Dimension Scores and Information and Communication Technologies Attitude Scale and Sub-Dimension Scores of Students

		Mean±Ss	Min-Max (Median) Scores taken	Min-Max scores that should be taken
Digital Literacy Scale (DLS)		61.02±11.18	17-85 (62.5)	17-85
DLS Sub-dimensions	Attitude	25.04±5.3	7-35 (26)	7-35
	Technical	22.03±4.34	6-30 (23)	6-30
	Cognitive	7.39±1.67	2-10 (8)	2-10

	Social	6.55±1.7	2-10 (6)	2-10
Information and Communication Technologies Attitude Scale (ICTAS)		3.4±0.62	1.1-5 (3.42)	1-5
ICTAS Sub-dimensions	General Information and Communication Technologies Tendency	3.7±0.67	1-5 (3.83)	1-5
	Access to information in virtual environment	3.96±0.68	1-5 (4)	1-5
	Computer hardware	2.44±1.13	1-5 (2.25)	1-5
	Software use	3.53±0.85	1-5 (3.6)	1-5
	Communication factor in virtual environment	3.37±0.87	1-5 (3.33)	1-5

Table 3 shows the correlation analysis of the scales used in the present study. Positive and moderate significant association was found between Digital Literacy Scale attitude sub-dimension and ICTAS and general ICT tendency and access to information in virtual environment sub-dimensions (r=.515, r=.519, r=.539; p=.000). Positive and very weak significant association was found between attitude sub-dimension and computer hardware sub-dimension (r=.154; p=.000). Positive and weak significant association was found between attitude sub-dimension and software use (r=,448, p<0,01). Positive and weak significant association was found between attitude sub-dimension and communication factor in virtual environment (r=.448, r=.404; p=.000). Positive and moderate significant association was found between DLS technical sub-dimension and ICTAS general ICT tendency, access to information in virtual environment and software use sub-dimensions (r=.644, r=.563, r=.528, r=.582; p=.000). Positive and weak significant association was found between technical sub-dimension and computer hardware and

communication factor in virtual environment (r=.317, r=.435; p=.000). Positive and weak significant association was found between cognitive sub-dimension of Digital Literacy Scale and ICTAS general ICT tendency, access to information in virtual environment, software use and communication factor in virtual environment sub-dimensions (r=.443, r=.475, r=.450, r=.421; p=.000). Positive and moderate significant association was found between social sub-dimension of Digital Literacy Scale and ICTAS software use sub-dimension (r=.632, r=.517; p=.000). Positive and weak significant association was found between social sub-dimension and ICTAS general ICT tendency, access to information in virtual environment, computer hardware and communication factor in virtual environment sub-dimensions (r=.498, r=.413, r=.421, r=.465; p=.000). Positive and moderate significant association was found between DLS and ICTAS general ICT tendency, access to information in virtual environment and software use sub-dimensions (r=.677, r=.628, r=.590, r=.601; p=.000). Positive and weak significant association was found between DLS and computer hardware and communication factor in virtual environment sub-dimensions (r=.288, r=.486; p=.000).

Table 3. Correlation Analysis of Digital Literacy Scale and Sub-Dimension with Information and Communication Technologies Attitude Scale and Sub-Dimension

		Attitude	Technical	Cognitive	Social	Digital Literacy Scale
General Information and Communication Technology Tendency	r	.519	.563	.475	.498	.628
	p	.000	.000	.000	.000	.000
Access to information in virtual environment	r	.539	.528	.450	.413	.590
	p	.000	.000	.000	.000	.000
Computer hardware	r	.154	.317	.103	.421	.288
	p	.005	.000	.063	.000	.000
Software use	r	.448	.582	.421	.517	.601
	p	.000	.000	.000	.000	.000
Communication factor in virtual environment	r	.404	.435	.325	.465	.486
	p	.000	.000	.000	.000	.000

| Information and Communication Technologies Attitude Scale | r | .515 | .644 | .443 | .632 | .677 |
| | p | .000 | .000 | .000 | .000 | .000 |

DISCUSSION

This study was conducted to examine the relationship between nursing department students' attitudes towards information and communication technologies and their digital literacy levels. The data obtained were discussed in line with the literature.

In the study, it was found that nursing students had positive attitudes towards information and communication technologies. In their study conducted on nursing students, Gündoğdu et al. (2018), Şahin et al. (2019) and Tatlı et al. (2018) found that the students had positive attitudes towards information and communication technologies(25, 32). In their study conducted on prospective teachers, Bakırcı and Günbatar (2017) and Özarslan et al. (2013) found that prospective teachers had positive attitudes towards information and communication technologies (7, 33). Yirci and Aydoğdu (2017) found in their studies on university students that students had positive attitudes towards information and communication technologies (34). When the studies conducted are examined, it can be seen that today undergraduate students have very positive attitudes towards using technology.

When the sub-dimensions of ICTAS were examined in our study, it was found that sub-dimension mean scores were moderate. In their study on nursing students, Şahin et al. (2019) reported that ICTAS sub-dimension mean scores were moderate (25). In this study, general ICT tendency and access to information in virtual environment sub-dimension scores were found to be higher. When studies conducted are examined, it can be seen that undergraduate students' skills for using computer and other technologies are significant predictors of their attitudes towards ICT. It is thought that in general higher computer skills stimulate a positive attitude and lower computer skills restrict students' acceptance of technology (35, 36) Students' positive attitudes and behaviours towards technology use can be turned into positive attitudes in nursing education. Implementation of technology-based nursing education and nursing care plans for new generation young people will make education more permanent, continuous, strong and fun (37).

In the study, digital literacy levels of nursing students were found to be high. In a study conducted by Özerbaş and Kuralbayeva (2018), digital literacy levels of prospective teachers in Turkey and Kazakhstan were analysed (28). As a result of the study, digital literacy levels of prospective teachers in both countries were found to be high. In their study conducted on 979 prospective science teachers, Üstündağ, Güneş and Bahçivan (2017) found that digital literacy skills of prospective science teachers were good (38). In their study conducted on prospective teachers, Çetin (2016), Akgün and Akgün (2019) and Güngör and Kurtipek (2020) found that prospective teachers had high levels of digital literacy (39-41). The results of this study were found to be similar to the results of studies conducted. When these results are examined, it is an expected situation for undergraduate students of our day to have very good skills in terms of finding, understanding, analysing, producing and sharing information through web devices such as smart phones, tablets, laptops, in other words, to have very good digital literacy skills, since they are mostly from Z generation.

In the study, when nursing students were analysed in terms of the sub-dimensions of DLS, it was found that mean sub-dimension scores were moderate and while the highest score was in "Technical" sub-dimension, the lowest score was in "Social" sub-dimension. In their study conducted on health sciences faculty students, Yılmaz et al. (2019) reported the highest score in cognitive sub-dimension and the lowest score in social sub-dimension (42). According to Ng who developed the sub-dimensions of digital literacy in 2012, "Technical sub-dimension" was defined as having technical and online skills to use computer communication technologies in daily activities; while "Cognitive sub-dimension" was defined as having the skill to think critically and evaluate digital information in studies and "Social sub-dimension" was defined as using the internet responsibly during the processes of communication, socializing and learning (safety and privacy) (31). When all these are considered, it can be said that in the present study, nursing students had significant skills in terms of sub-dimensions of digital literacy and that they were especially better in terms of technical sub-dimension. When especially the pandemic period is considered, it can be thought that the need for connecting classes for online education and continuing classes like this have caused students to focus more on technical skills.

In the present study, positive and significant association was found between ICTAS and all sub-dimensions and Digital Literacy Scale and all sub-dimensions. Jan (2017) found a positive association between attitudes towards information and communication technologies and digital

literacy levels (35). With the digitalization of life during the COVID-19 period, digital education process was started in Turkey so that educational institutions could continue to function. Digital education is a system which does not have a physical or time limit and in which the instructor and the student are not in the same place and everyone with internet access can be educated with tools such as smart phone, tablet, computer or smart television in a place of their choice. In this process, students were assessed with lessons, homework, project, portfolio and similar activities through distance education (43) Thus, ICT, which is used in many areas of our lives and which has become an indispensable factor of our lives, has shown its effects in the field of education during the pandemic period (3, 6) Considering all these, it can be said that nursing students showed positive attitudes towards ICT and thus increased their digital literacy levels during this period.

CONCLUSION

It was found that nursing students had positive attitudes towards information and communication technologies and high digital literacy levels. It was found that as students' attitudes towards ICT increased positively, their digital literacy levels also increased. According to these results, it is thought that it can be useful to include digital literacy course in the nursing curriculum to enable nursing students to be informed, to participate in and to be safe in digital world, to increase nursing care and to provide the society with evidence based quality health information.

Acknowledgements

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Breastfeeding Management in the COVID-19 Pandemic

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Abstract

The new type of Coronavirus (COVID-19) infection has caused increasing morbidity and mortality rates worldwide since it was declared as a pandemic by the World Health Organization. Pregnant women according to the health problems faced by society; they are more vulnerable in female-specific periods such as pregnancy, delivery, and postpartum. This situation can lead to partial suppression of the immune system by making pregnancy more vulnerable to viral infections. Many viral infections, from seasonal flu to pneumonia, cause an increase in morbidity and mortality rates during pregnancy. Pregnant women are more vulnerable and sensitive to respiratory pathogens and severe pneumonia due to physiological and immunological changes such as increased oxygen consumption, decreased functional residual capacity, and breast capacity. Studies show that COVID-19 infection does not increase negative pregnancy outcomes, the course of infection is similar to non-pregnant individuals and it is not transmitted to the newborn through breastfeeding. Breastfeeding mothers should be supported and necessary isolation preventions should be taken. A woman with suspected, probable, or confirmed COVID-19 can contact her baby skin-to-skin and breastfeed in the delivery room. If the mother's general health conditions directly prevent breastfeeding, she should be encouraged and supported to express breast milk and feed her baby and always follow infection precautions. During the pandemic, taking precautions for protection from infection and providing qualified care to maintain and increase the health of the mother and newborn in the postpartum period are important issues. This review aims to reveal breastfeeding management in the COVID-19 pandemic.

Keywords: Breastfeeding, COVID-19, newborn, pandemic

INTRODUCTION

Coronavirus disease is a respiratory disease that can infect animals and humans and can spread from person to person. While human coronaviruses show mild symptoms similar to the common cold, virus derivatives such as SARS (Severe Acute Respiratory Syndrome) and MERS (Middle East Respiratory Syndrome) can be more severe (1). As a result of the rapid spread of the disease due to its transmission from person to person, the World Health Organization (WHO) evaluated the situation in March and declared a pandemic (2). Morbidity and mortality rates increased rapidly after The virus was detected officially in Turkey on March 11, 2020 (3). The new coronavirus disease (COVID-19) affects all stages of life, starting from birth (4). Children of all age groups, including a one-day-old newborn, can be infected with this virus (5). In infants and children, COVID 19 is less common than adults and is often asymptomatic or with mild symptoms (4). It appears to affect both genders equally in children. The mortality of COVID-19 infection in children has been much lower than in adults so far (5).

The World Health Organization (WHO) recommends that babies should be fed with breast milk alone for the first 6 months after birth and that breastfeeding should be continued until at least 2 years of age by starting additional foods for the health of the society, and states that breastfeeding should be continued even in extraordinary situations such as pandemics. (6). The first step a baby can take to get the best start in life is breastfeeding. It is a natural way of feeding that provides breast milk to the baby (7). While breastfeeding improves maternal and newborn health, it also contributes economically to the family and society (8). Breastfeeding decreases newborn, infant, and child mortality. There is good quality evidence that breastfeeding improves health and child development throughout life in all economic and geographical conditions (4).

Infecting the newborn baby; It is thought that newborns are in contact with their mothers, caregivers, visitors, or healthcare personnel with COVID-19 in the postnatal period and primarily with respiratory droplets (9). Until now, a virus that could cause COVID-19 or another coronavirus infection (SARS-CoV) has not been detected in breast milk. There is no available evidence that COVID-19 is transmitted through breastfeeding (10). Breast milk is the best nutritional source, especially for babies within the first 6 months, including babies with suspected or proven COVID-19 disease. A mother with proven COVID-19 disease can breastfeed her baby as long as she takes the appropriate precautions. Breast milk contains many antibodies and immunological agents that can help and protect against respiratory diseases, as well as many diseases. Increasing evidence supports that breastfeeding is the best way for a child's growth, development, and health (6).

This review aims to reveal breastfeeding management in the COVID-19 pandemic.

The Importance of Breast Milk and Breastfeeding

Breast milk is a natural food that reduces the morbidity and mortality rates of the newborn, contains all the fluid, energy, and nutrients necessary for physical, spiritual, and mental development, has high bioavailability, and is easily digested (11). Breast milk has a unique nutritional feature in newborn nutrition in all ages and cultures. In Ebers Papirus, the oldest known source in history, it was emphasized that the only food for baby nutrition is breast milk and the necessity of breastfeeding up to the age of three. In Yakut Turks, it was believed that the maternity goddess Ayzıt died by dropping milk into her baby's mouth (12).

Breast milk protects the baby from infections by many different mechanisms and strengthens the immune system thanks to its IgA, IgG, and IgM content. Thus, it is protective against many diseases such as type 1 diabetes, celiac disease, inflammatory bowel disease, metabolic syndrome. There is a low renal solute load. Omega-3 fatty acids are high. It is protective against the development of necrotizing enterocolitis and late sepsis since it contains anti-infective factors. Provides brain development (13). Children who are breastfed for a long time have advantages such as less infectious morbidity and mortality, less dental malocclusion, and higher intelligence than children who receive breast milk for a shorter term or who do not receive breast milk at all. This inequality due to breast milk intake continues until later in life. Increasing evidence shows that breastfeeding can protect individuals against overweight and diabetes later in life (14). Studies show that breastfeeding also has significant and far-reaching effects on cognitive, behavioral, and mental health in children, and mothers (15). Every mother produces the most suitable milk for her baby. The importance of breastfeeding in laying the foundations of a healthy life is indisputable (16).

COVID-19 and Breastfeeding Management

Due to limited data concerning the maternal-infant transmission of Covid-19, there are varying guidelines on how to manage delivery and immediate newborn care of mothers with or suspected of Covid-19. Many centers have chosen to universally screen mothers given the high rates of asymptomatic disease in the community along with the need to cohort Covid positive and negative patients. American Academy of Pediatrics (AAP) and Centers for Disease Control and Prevention (CDC), although strongly supporting breastfeeding and breastmilk, has taken the approach of recommending to temporarily separate infants from infected mothers in the hospital (17). According to WHO, in infants, the risk of COVID-19 infection is low, the infection is typically mild or asymptomatic, while the consequences of not breastfeeding and separation between mother and child can be significant. At this point, it appears that COVID-19 in infants and

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children represents a much lower threat to survival and health than other infections that breastfeeding is protective against. The benefits of breastfeeding and nurturing mother-infant interaction to prevent infection and promote health and development are especially important when health and other community services are themselves disrupted or limited. Adherence to infection prevention and control measures is essential to prevent contact transmission between COVID-19 suspected or confirmed mothers and their newborns and young infants (18).

Mothers with suspected or confirmed COVID-19 should be encouraged to initiate or continue to breastfeed and informed about breastfeeding the newborn, colostrum, and expressing breast milk. It is known that an infected mother can transmit the COVID-19 virus to her baby through droplets while breastfeeding. Therefore, mothers should comply with the standard, contact, and droplet precautions during breastfeeding in cases where COVID-19 is diagnosed or suspected (8). In COVID-19-positive mothers who breastfed, a few newborns subsequently tested positive for SARS-CoV-2 after mothers had skin-to-skin contact and breastfed without face masks. It is imperative to adopt infection control measures (e.g., wearing facemask and hand hygiene) during breastfeeding. There is, however, one reported case of a neonate acquiring COVID-19 despite the mother breastfeeding with a face mask (19). If the mother is COVID-19 positive or suspicious, she should wash her hands with soap and water for 20 seconds or use an alcohol hand sanitizer before touching her baby. The mother should use a medical mask while breastfeeding her baby. When the mask is moist, it should be changed and used masks should be discarded immediately. Masks should be used only once, and should not be touched on the front and detached from the back. Handkerchiefs should be available for sneezing and coughing and should be disposed of immediately after use. Afterward, hands should be washed with soap and water for 20 seconds or alcohol hand sanitizer should be used. Contact surfaces should be cleaned regularly. The mother continues breastfeeding without a maternal mask (4).

If mothers with COVID-19 prefer to express milk, they should use a special breast pump or teach the mother to express manually. Mask should be used during milking and hands should be washed before expressing breast milk. If the mother is expressing her milk with a manual or electric breast pump, she should wash her hands before touching any pump or material. All parts that come into contact with breast milk should be thoroughly washed after each use and the pump should be disinfected according to the manufacturer's instructions. If possible, expressed breast milk should be given to the baby by a healthy caregiver living in the same household who is not at risk of COVID-19 (10). The mother, whose treatment continues at home, is positive for COVID-19 infection and should not be separated from her baby. It is sufficient to pay attention to hand and breast hygiene rules. Clothes of the newborn baby and breastfeeding mother should be washed at

60-90°C with normal detergent. (20). If the mother coughs into the breast, it is recommended to gently wash with soap and water for 20 seconds before breastfeeding or expressing. Other than that, washing is not recommended. Milk should be given primarily by the mother or the person is known not to be infected. In cases where breastfeeding and milking are not possible, a milk bank or a nursing mother may be recommended if culturally and socially accessible. According to WHO, the mother should start breastfeeding as soon as she feels well (21).

CONCLUSION

Mothers should be counseled that the benefits of breastfeeding substantially outweigh the potential risks for transmission. Mother and infant should be enabled to remain together while rooming-in throughout the day and night and to practice skin-to-skin contact, including kangaroo mother care, especially immediately after birth and during the establishment of breastfeeding, whether they or their infants have suspected or confirmed COVID-19.

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Effect Of Nicotine On Endothelial Cells In COVID-19 Pandemia

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Abstract:

Object: Coronavirus disease 19 (COVID-19) is an infectious viral disease that infects vascular endothelial cells, especially the lungs. It is also a known fact that smoking is a risk factor increasing disease severity for non-communicable diseases such as cardiovascular diseases, cancer, respiratory diseases, and diabetes mellitus. In this presentation, we aimed to shed light on future studies by mentioning the explanations about the effects of nicotine on the COVID 19 pandemia.

Methods: We make extensive research in Pubmed, ISI Web of Science, and Cochrane library to determine the relationship between nicotine, covid 19, and endothelial cells.

Results: COVID is known to use angiotensin-converting enzyme 2 (ACE2) as a receptor for cell entry. ACE2 is part of the renin-angiotensin-aldosterone (RAAS) system. There is a complex and ambiguous interaction between COVID-19 and RAAS. Nicotine, one of the thousands of chemicals in a cigarette, is undoubtedly the most researched. There are controversial publications that nicotine upregulates or downregulates ACE2 expression on organ surfaces. It is also unclear which one is beneficial. Recently, the possibility of nicotine to slow the spread of coronavirus in cells has been emphasized.

Conclusion: Information about the relationship between smoking and COVID can be confusing and should never encourage people to continue or start smoking. It appears that administering nicotine preparations as a treatment for COVID-19 may have some possibilities to address this dire pandemic in the trial. Therefore, researchers should investigate the effect of nicotine on endothelial functions and the covid 19 triangle.

Keywords: nicotine, COVID-19, ACE 2 receptor, endothelial cell

Introduction:

There is an extensive vascular system in the human body. There are endothelial cells on the inner surface of this vascular system. These endothelial cells are specific structures that protect the vessels, prevent blood clotting, and support the immune system. Although the new corona virus disease called COVID-19

is a disease that affects the lungs, it is a virus that can also affect endothelial cells. It does this by binding to Angiotensin Converting Enzyme 2 (ACE2) receptors (1).

Normally, healthy endothelial cells behave to keep the blood flowing. In other words, they have significant roles in providing homeostasis. They protect the vessels with blood-thinning compounds they secrete. However, in cases where damage occurs in endothelial cells, this protective effect is eliminated. Factors such as hypertension, high cholesterol, diabetes, stress, and smoking, damage the blood vessels by disrupting the structure of the endothelial cell (2). People with endothelial damage and infectious disease are at increased risk of cardiovascular diseases. Although Covid-19 is a disease that affects the lungs, it is more severe and fatal in patients with endothelial damage than with chronic lung disease (3).

ACE2 receptors provide the conversion of ACE2 to ACE (1-7) as a member of rennin angiotensin aldosterone system (RAAS). Although it is thought that the prognosis of COVID-19 will be more severe in smokers, there are different speculations on this issue. Nicotine affects the ACE2 receptors, changing the rate at which the virus enters the cell. With this review article, we aimed to shed light on future studies by addressing the explanations of the endothelial effects of nicotine on the COVID 19 pandemic.

Methods:

A literature search was conducted on PubMed, using the terms "(SARS-CoV-2 OR COVID-19 OR 2019-nCoV) and nicotine and endothelium" . We examined the literature from March to the present while doing this research and the articles, which full texts were available, included in the study.

Results

We found hundreds of articles as a result of the resource search on the internet. Twenty-seven of them contained information that nicotine may be a factor slowing down the progression rate of the COVID 19. This issue first came to the fore with the article published by Jean-Pierre Changeux et al. from France. Accordingly, the rate of smoking activity in Covid 19 patients was lower than the total population (4). After this article, articles from Italy and China with similar results to this article were published (5,6). Many scientists began to investigate the relationship between nicotine, one of the thousands of chemicals in cigarettes, and covid 19.

Nicotine shows its effect by binding to the nicotinic receptors of the acetylcholine mediator. Alpha 7 nicotinic receptor, one of the nicotinic receptors, prevents inflammation and reduces the allergic response. During inflammation, neutrophils bind to the endothelium to form oxidant molecules and increase vascular permeability. With endothelial dysfunction, the bioavailability of vasodilators such as nitric oxide is impaired. Also, proinflammatory and procoagulant changes occur. This situation is closely related to diseases such as diabetes, preeclampsia, hypertension, and uremia (7). In COVID-19 patients,

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advanced age, male gender, and the presence of comorbid diseases aggravate the prognosis of infection. Therefore, the strength of the endothelial structure is very significant.

In our previous study on rats, we determined that long-term dose-dependent nicotine administration had no severe effect on endothelial vasodilator functions and low/high dose nicotine does not change protein expression of NOS or Nox enzymes (8). Similarly, there are studies in the literature that nicotine does not have serious side effects on the endothelium (9). The endothelial cells surrounding the blood vessels have ACE 2 receptors. There is a complex and ambiguous interaction between COVID-19 and the renin-angiotensin-aldosterone system (RAS). ACE2 is a membrane-bound ACE homolog and functions as a carboxypeptidase. ACE2 converts Angiotensin II (Ang II) to Ang 1-7 in the RAS. When the ACE2 receptor downregulates, Ang II decreases, and Ang (1–7) binds to the Mas receptor. So the vasoconstrictor effect is replaced by a vasodilator / anti-inflammatory effect. Ang II has two receptors. The first receptor (AT1R) is functional for vasoconstriction, water, and salt absorption, while the second receptor (AT2R) acts as a compensator with NO release and antigrowth properties against AT1R-mediated effects. At low Ang II levels, AT1r's coexist with ACE2 to form a cell membrane complex. However, this complex does not occur at high Ang II levels (adrenergic stimulation, metabolic stress, acute inflammation, absence of ACE inhibitor, etc.). ACE2 is taken into the cell by lysosomal ingestion. Then, angiotensin stimulates only AT1r, and vasoconstriction, inflammation, vascular permeability increases (Figure 1) (10).
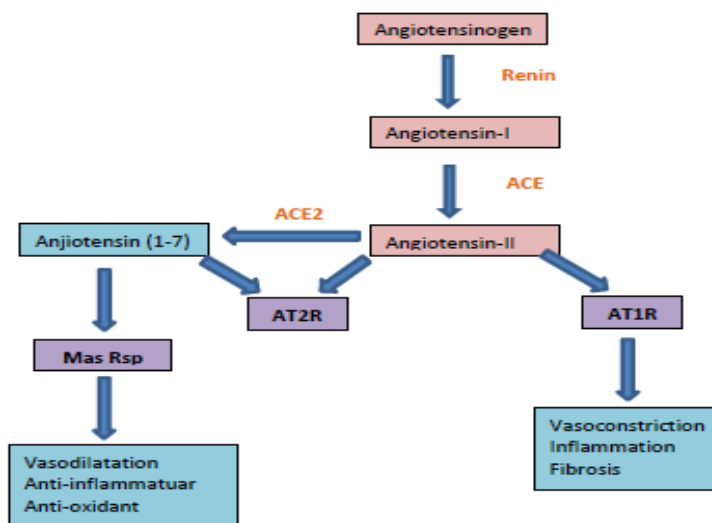

Figure 1: Rennin Angiotensin Aldosterone System (RAAS)and Angiotensin Converting Enzyme 2 (ACE2)

Until recently, researchers showed that cigarettes and nicotine downregulate ACE2 expression in lung and other tissues. In recent studies, it has been reported that the up-regulation of ACE2 may be protective

against disease severity [11]. If ACE2 function is reduced due to high levels of viral attack and binding, this causes endocytosis with proteolytic cleavage; these events can cause an increase in respiratory distress (12). With the downregulation of ACE2 receptors by nicotine, the binding sites of the virus will be reduced, thus restricting its entry into the cell.

Nicotine regulates the host's immunity and inflammatory response by limiting inflammation through cholinergic receptors. In this way, it can have an auxiliary effect in suppressing macrophage activated syndrome. Besides ACE2 receptors, lung macrophages also contain α4 / α7 nicotinic ACh receptors (nAChRs) (13). Nicotinic acetylcholine (cholinergic) receptors are stimulated by acetylcholine neurotransmitters. These receptors are found in the nervous system, muscles, and other organs (14). Recent studies have shown that nicotinic ACh receptors found in immune cells such as macrophages regulate neurotransmitter-mediated signaling in the inflammatory response. Also, some studies have shown that the stimulation of macrophage ACh receptors by nicotine inhibits proinflammatory cytokine production. Immune systems are adversely affected due to cytokines that cause inflammation in the body. It reduces the cytokine response of macrophages that are defense cells. Several studies have shown that activation of macrophage ACh receptors in the CAP signaling pathway prevents translocation of NF-κB factor (which mediates induction of proinflammatory cytokines) into the nucleus and eventually activates the tyrosine kinase JAK2 / transcription factor STAT3 pathway (15). Thus, by decreasing the inflammatory response, cytokine storm is prevented.

Conclusion:

It is a realistic approach to treat Covid-19 like a vascular disease. Therefore, antivirals alone are not enough to treat this disease; Treatment should support vascular protection and blood thinners. Endothelial cells are very significant in maintaining homeostasis in the body. Also, endothelial dysfunction is a predisposing factor in the development of many comorbid diseases. Therefore, by protecting our endothelial cells, we can increase our defense against COVID-19 disease. Previously many studies showed that nicotine has a positive contribution to neurocognitive functions with its anti-inflammatory effects . Based on the anti-inflammatory properties of nicotine, its protective and pathogenic effect on endothelial cells should be investigated by further experimentation and a large-scale clinical trial. In this way, both a light can shed for supportive treatment, and people who cannot quit smoking can direct to nicotine replacement therapy.

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Oral Presentation No: 21883
Evaluation of Patients who Presented to the Child and Adolescent Psychiatry Outpatient Clinic in the Normalization Process of the Covid-19 Pandemic

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Abstract

Purpose: The aim of this study is to evaluate the patients who presented to the child psychiatry department in the normalization process in terms of sociodemographic characteristics and psychological symptoms. In addition, it was aimed to evaluate the functionality in the first application and 3 months later.

Methods: 141 patients between the ages of 0-18 who presented for the first time between June 1-November 21, 2020 were included in the study. The psychological symptoms of individuals were evaluated with the SCL-90 R Symptom Screening Test, the functionalities were evaluated with the General Assessment Scale for Children.

Results: A significant relationship was found between online searching about the pandemic, doing activities with the family or spending time on the internet, and the SCL-90 R total score. Except 'anger-hostility' and 'additional items', all subscale scores were found to be significantly higher in girls, and as age increased, all subscale scores increased. There was a significant difference between the first CGAS and the 3-month-later CGAS scores.

Conclusion: It has been determined that the functionality of individuals is not seriously affected in this date range, symptoms improve rapidly with short-term treatments. Groups that search on the pandemic on the internet uncontrollably, spend a lot of time on the internet, and whose parents work from home, and girl adolescents, may be more at risk in terms of mental problems. It is thought that determining risk groups and taking precautions in these areas will be protective in terms of mental health.

Keywords: Child, Adolescent, Psychiatry, Outpatient Clinic, Covid-19 Pandemic

Introduction:

The new coronavirus 2019 (COVID-19) outbreak, which originated in Wuhan, China and affects the whole world, has been declared as a pandemic by the World Health Organization (WHO) and is increasing globally threatening people's well-being (1). In order to stop the spread of COVID-19 and reduce the burden on health systems, many countries have initiated "social distance" implementation and introduced many measures such as curfews at certain hours. One of these measures is that schools are closed, and formal education is suspended and children continue their education in home environments with distance learning models (2). It is thought that these changes and uncertain

situations that have not been experienced before can have positive or negative effects on children's mental health.

Parents generally do not have enough information about how, when, and what to say to their children about experienced unexpected situations, they may be afraid of the effects of these situations on their children, and therefore, may try to keep their children away from the situation. However, although children's perception of abstract and concrete concepts tends to increase as they reach adolescence, studies show that children are aware of the changes around them from the age of 2 (3). Therefore, children should not be evaluated independently of the pandemic. When the literature is reviewed, it is seen that pandemic affects the mental health and well-being of children negatively and causes a wide range of mental problems such as anxiety, stress, depression and sleep difficulties (4,5,6). In addition, the restrictions imposed greatly affected the lifestyles such as physical activity and sedentary behaviors of children and adolescents. In a study conducted by Xiang et al. (2020) with children and adolescents (ages 6-17) in China during the Covid-19 outbreak, a significant decrease in children's physical activity and an increase in screen exposure have been found (7).

Reduced physical activity and increased sedentary behavior can negatively affect the physical and mental health of children and adolescents. In addition, staying at home for a long time can adversely affect interactions with peers, leading to a decrease in physical activity and dependence on parents. In another study conducted by Jiao et al. (2020) with 320 children and adolescents, it has been found that the most common mental and behavioral problems were difficulty in separating from parents, distractibility, irritability, and fear of asking questions about the pandemic (8). The consequences of this pandemic on mental health are still unknown (9,10). However, changes in routine can become an important problem, especially in children with neurodevelopmental diseases such as autism. In a study, it has been found that children with autism spectrum disorder were more affected by this process than healthy children, and their anxiety, irritability, obsession, and impulsivity increased (11).

Approximately 3 months after the first case was seen in our country, the normalization process started. It was thought that the mental state of children/adolescents may have been affected after stressors such as pandemic, curfew restrictions, closing of schools and disruption of the routines of children/adolescents. Therefore, in order to determine the problem areas, it was aimed to examine the children/adolescents who applied to Kocaeli University Child and Adolescent Psychiatry Department for the first time during the normalization process in terms of sociodemographic characteristics, psychological symptoms and some variables related to the Covid 19 pandemic, thus to determine the risky groups. In addition, it was aimed to evaluate the functionality at the first application and 3 months after the application.

Methods:

The research was planned as a prospective cohort study. A total of 141 children/adolescents under the age of 18, who applied to Kocaeli University, Faculty of Medicine, Department of Child Mental Health and Diseases as outpatient basis or online (interviewed over the phone) from June 1, 2020 which is the date when the pandemic process normalization period started in our country, was literate, able to fill in the applied forms, and gave consent for the participation in the study were

included. Exclusion criteria for patients included in the study group was defined as not completing the necessary evaluations, not completing filling the forms, giving up participating in the study, or being illiterate.

A diagnosis interview was conducted with children/adolescents who were volunteers, either face-to-face or over the phone according to their application to the polyclinic, by a child psychiatrist, and psychiatric diagnoses, if any, were made according to the DSM 5 diagnosis booklet.

Sociodemographic Data Form, in which information such as age, gender, educational status, parents' togetherness/health/education status were obtained at the time of application, Child General Assessment Scale (CGAS) to measure the functionality of children/adolescents, and SCL- 90 R

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Symptom Screening Test to determine the psychological symptoms of the participants and the level of these symptoms were applied.

The approval for the study was obtained from the Ministry of Health and Kocaeli University, Faculty of Medicine, (KÜTF) Clinical Research Ethics Committee with the decision numbered GOKAEK-2020/14.04 dated 08/18/2020.

Sociodemographic Data Form: This form, prepared by the researchers, consisted of questions about the age, gender, class attended, age, marriage, health and education status of the parents, and the effects of the COVID 19 pandemic on the family and home environment.

Children's Global Assessment Scale (CGAS): It is a version of the Global Assessment Scale used for adults, adapted to children and adolescents. It is a scoring-based scale used in the follow-up of children and adolescents and to evaluate functionality. CGAS is scored according to the information obtained from the interview with the child and the scores range from 100 (very good functionality) to 0 (severe dysfunction) (12). This scale was adapted to Turkish in 2004 (13).

SCL-90 R: It was developed by Derogatis and Clearly. It is a 90-question test consisting of 9 subgroups and additional items including somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, anger-hostility, phobic anxiety, paranoid thoughts, psychotic symptoms. It is a 4-point Likert type scale and is scored as '0: not at all, 1: very little, 2: moderate, 3: quite a lot, 4: severe'. The overall severity score is calculated by dividing the total score of the answers given to 90 questions by the number of questions. A general severity score above 1 indicates that the symptoms are at the psychopathological level (14). The Turkish validity-reliability study of the scale was conducted by Dağ (15).

Statistical Analysis:

Statistical evaluation was made with IBM SPSS 20.0 (IBM Corp., Armonk, NY, USA) package program.

The conformity to the normal distribution was evaluated with the Kolmogorov–Smirnov test. Normally distributed numerical variables are given as mean ± standard deviation, non-normally distributed numerical variables as median (min-max), and categorical variables as frequency (percentage). The difference between the two groups was determined with the Mann Whitney U test for numerical variables that do not have a normal distribution. Differences between more than two groups were evaluated using the Kruskal Wallis test for numerical variables that do not have a normal distribution. For two-tailed hypothesis test, $p<0.05$ was considered sufficient for statistical significance.

Results:

Of the 141 cases included in the study, 49.6% (n=70) were female and 50.4% (n=71) were male. The mean age of the group was 10.53±4.43, while the mean maternal age was 38.67±6.99, and the mean age of the father was 42.68±6.7. While most of the cases (39%) had a sibling, the majority (49.6%) were first children. The parents of all the subjects included in the study were alive. Most of the mothers of the cases were housewives (71.6%) and lived as an elementary family (72.3%) and the

majority of the group had a higher socioeconomic level (44.7%). The demographic data of the patients are shown in Table 1.

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Table 1. Sociodemographic Data of the Patients Participating in the Study

Characteristics	N (141)	(%)
Gender		
Female	70	49.6
Male	71	50.4
Age		
0-6	28	19.9
7-12	62	44
13-18	51	36.1
Number of siblings		
0	24	17
1	55	39
2	41	29.1
3	18	12.8
4	2	1.4
5	1	0.7
The Birth Order		
0	1	0.7
1	70	49.6
2	46	32.6
3	16	11.3
4	8	5.7
Continuing to Education		
No	18	12.8
Yes	119	84.4
Other	3	2.1
School Grade		
Kindergarten	7	5.0
1	8	5.7
2	10	7.1
3	13	9.2

4	11	7.8
5	7	5.0
6	6	4.3
7	10	7.1
8	10	7.1
9	10	7.1
10	8	5.7
11	13	9.2
12	10	7.1
Grade retention		
Yes	1	0.7
No	125	88.7
Missing	15	10.6
Mother's Education Level		
Primary school	40	28.4
Secondary school	18	12.8
High school	39	27.7
University	43	30.5
Missing	1	0.7
Mother's Job		
Housewife	101	71.6
Worker	25	17.7
Civil servant	6	4.3
Self-employed	5	3.5
Other	4	2.8
Father's education level		
Primary school+No education	23	16.3
Secondary school	27	19.1
High school	49	34.8
University	41	29.1
Missing	1	0.7
Father's job		
Unemployed	6	4.3
Worker	26	18.4

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Civil servant Self-employed Other	59 36 14	41.8 25.5 9.9
Parents' health status Both are alive Mother is dead Father is dead Both mother and father are dead	141 0 0 0	100 0 0 0
Family status Nuclear Extended Modern Extended Fragmented	102 19 3 17	72.3 13.5 2.1 12.1
Socioeconomic level 2250TL and below 2251TL-4500TL 4501TL and above Missing	27 49 63 2	19.1 34.8 44.7 1.4

In the study, information about the effects of the pandemic process was questioned. It was found that the time spent with their family 82.3% of the cases increased, 40.4% rarely met with their friends, 97.1% experienced a caregiver change, and 75.2% were informed about the pandemic. It was observed that most of the cases did not do research about the pandemic online (60.3%), did not talk about the pandemic with their friends (51.8%), but there were talk about the pandemic at home (95.8%). It was learned that 85 (60.3%) cases had one acquaintant infected with covid-19, and 16 (11.3%) had one of their acquaintant died because of covid 19. The evaluation of the cases, who applied to the outpatient clinic for the first time in the normalization process, according to the variables related to the pandemic process is shown in Table 2.

Table 2. Evaluation of cases applying to outpatient clinic according to variables related to the pandemic process

During the pandemic;	N (total n)	%
Work from home Yes	53	37.6
No	88	62.4
Time spent with the family		
Increased	116	82.3
Did not increase	25	17.7

Frequency of meeting with friends online	33	23.4
Never	57	40.4
Rarely	39	27.7
Frequently	10	7.1
Very often	2	1.4
Missing		
Caregiver change		
Yes	137	97.1
No	4	2.9
Inability to continue to work		
Yes	59	41.8
No	80	56.7
Missing	2	1.5
Information given by		
Yes	106	75.2
No	33	23.4
Missing	2	1.4
Research on the internet friends about the pandemic	53	37.6
	85	60.3
Yes	3	2.1
No		
Missing		
Talking to friends about the pandemic	62	44
	73	51.8
Yes	6	4.3
No		
Missing		
Talking about a pandemic in the home	4	2.8
	58	41.1
Never		
Rarely		

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Frequently	58		41.1
Very often	19		13.5
Missing	2		1.4
Having acquaintance with Covid 19	85		60.3
Yes	55		39
No	1		0.7
Missing			
Having acquaintance who was dead due to Covid 19	16		11.3
Yes	124		87.9
No	1		0.7
Missing			

SCL-90-R general symptom score of the group included in the study was found to be 'normal'. With the SCL-90-R total score, sociodemographic data and items related to the pandemic were evaluated. The titles with a significant correlation are given in Table 3.

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Table 3. Correlation between SCL-90-R total score and some variables

	SCL-90-R total score			
	N	Mean±SD	Median	P value
Gender				Mann Whitney U Test
Female	70	0.81±0.61	1.2	
Male	65	1.28±0.84	0.64	P= 0.001
Free-time Occupations ;				Kruskal–Wallis Test
Course	27	1.06±0.61	0.99	P= 0.012
Talk to friends	8	1.32±0.99	0.87	
Sports	1	1.64	1.64	
Art	1	1.01	1.01	
Spending time with the family	20	0.52±0.52	0.32	
Spending time on the Internet	57	1.17±0.81	1.08	
Other	1	1.74	1.74	
All	16	1.19±0.82	1.01	
Does he/she make research about Covid 19 on the internet?				Mann Whitney U Test
Yes	52	1.33±0.84	1.23	
No	81	0.90±0.68	0.74	P= 0.003

Considering the SCL-90-R sub-scores; no difference was found between anger, additional items subscales, and genders, and scores from other subscales were found to be significantly higher in females.

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A significant difference was observed between all subscales of SCL-90-R and age, and subscale scores increased as age increased. A significant relationship was also found between the additional items subscale and working from home. Somatization, interpersonal sensitivity, depression, paranoid thought and psychotism subscale scores were found to be higher in those who talked about the pandemic with their friends. On the other hand, the scores of other subscales, except for anger and additional items subscales, were found to be significantly higher in those who made research about pandemics on the Internet.

No significant correlation was found between the family's inability to continue their work due to the pandemic, giving information about the pandemic to children and adolescents, talking about the pandemic at home, having one of their acquaintances infected with Covid-19 and the death of an acquaintance due to Covid-19 infection and the SCL-90-R subscales.

Considering the patients' first application and CGAS evaluation performed 3 months later, it was found that there was a significant difference between the first interview CGAS evaluation and the CGAS evaluation 3 months later ($p<0.001$). No significant relationship was observed between this change in the CGAS score and variables such as gender, age, research about the pandemic on the internet, or the death of an acquaintance due to Covid-19 infection.

Discussion:

In our study, it was aimed to examine the sociodemographic characteristics, psychological symptoms

and the level of symptoms of the patients who applied to our clinic for the first time between June 1, 2020 and November 29, 2020, and their functionality at the time of admission and 3 months later.

When the cases included in the study were examined, it was observed that the applications from both genders were equal. In terms of age, it was determined that the most frequent applications were made by children between the ages of 7-12. This result is consistent with the pre-pandemic results in the literature, and the relationship between the pandemic process and the age of application was not determined (16,17,18).

It was thought that mental problems could arise because of infection transmission anxiety that may occur due to the pandemic process, changing the daily routines of children and young people, changes in sleep patterns, their inability to attend school face-to-face regularly, not being able to meet with friends as before and staying with their families at home more. Considering the studies conducted with children and adolescents during the pandemic period, there are studies stating that externalizing disorders and attention problems increase with the COVID pandemic but there is no increase in the symptoms of internalizing disorders, there are also studies indicating that anxiety disorder and depression are seen at high rates (19,20,21,22,23,24). However, considering the results of the study, contrary to what was thought in terms of symptom level, the general symptom score of the cases was found to be 'normal'. Supporting this result, the first interview CGAS evaluation was found to be "Some difficulty in a field, but functionality is generally quite good (70-61)". The CGAS evaluation after a short period of 3 months was determined as "Good functionality in all areas, relationship at home, at school and with peers is reliable (90-81)". It was thought that this situation may be due to the decrease in stress related to the school and friendship relations, not experiencing much change in the order of home due to the fact that most of their mothers are housewives, or the fact that the families participating in the study managed the process better due to their high socioeconomic and sociocultural level. In a letter to the editor written by Bruining et al in July, they stated that clinical

experience and popular media coverage in recent weeks, changes due to curfews for some children and families have reduced daily stress and sensory exposures and changed family routines. They stated that these changes can actually reduce the symptoms of child and adolescent mental illness and even increase their well-being. They reported that some children were relieved of social and sensory pressures and enjoyed more intense family life (25).

When we look at the literature, in a study conducted in our country at the onset of the pandemic, it has been found that 2.1% of the cases received information about the pandemic from the people they were in contact with, whereas in our study, a high rate of 75.2% was given information about the pandemic by someone they knew (26). In addition, it was observed that most children/young people do not do research about the pandemic online and do not talk about the pandemic with their friends. These situations may have caused the child to have obtained the right information from someone he/she trusts and reduced the possibility of developing a mental problem. In one study, finding a corona-positive acquaintance has been found to be associated with a higher rate of mental disorders in children and adults, but it was not questioned how the disease of positive individuals continued or ended (27). In our study, although a relative of most children/young people had a Covid-19 infection, the reason why this situation affected the mental state less than expected may be due to the fact that most of them did not result in death. In addition, the fact that the pandemic has been stated to affect adults more and children/young people less in many environments where information is obtained may have caused more anxiety or depressive symptoms in adults, and may have affected children/adolescents in the opposite way.

It was determined that there was a significant difference between the SCL-90-R total score and spare time activities at home, and the items that cause this difference were spending time with the family and spending time on the internet. This result may be due to the fact that these two items are among the most frequent spare time activities, as well as the serious number difference between the cells in the table.

In the literature, it has been found that the time spent daily on the internet increased during the pandemic period (28). It was also observed that researching Covid-19 on the Internet significantly increases the SCL-90-R total score, although it is not considered at the level of mental disorder. Children/young people with a high level of anxiety or in a more depressed mood due to the troubles associated with the process experienced may be doing more research on Covid-19 online. Besides, children/young people who conduct uncontrolled research on Covid 19 on the internet may reach more sites with false information, and this may trigger anxiety or depressive mood.

In our study, both SCL-90-R total score and Somatization, OCD, Interpersonal sensitivity, Depression, Anxiety, Phobic-anxiety, Paranoid thinking, and Psychotism subscale scores were found to be significantly higher in females. In a study, being a female has been found to be the biggest risk factor for depression and anxiety symptoms (29). Similarly, Kang et al.'s study found that the mood of the boys was better than the girls (30). In a study, a significant relationship has been found between being a female gender and anxiety disorder, and this has been interpreted as being more sensitive to stressful events of COVID-19 and therefore expressing stronger anxiety and fears (28). In two studies on somatic symptoms in the literature, the rate of somatic symptoms was found to be 2.39% - 22% (8,31). In other studies, it has been found that somatic symptoms are common in children and adolescents, with prevalence rates varying between 10% and 30% (32,33). One of the reasons for the higher general scores in girls may be that culturally, more interfere in daily life of girls and consequently increased family conflicts.

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A significant difference was observed between all subscales of SCL-90-R and age, and subscale scores increased as age increased. These results may be related to adolescents' spending more time online and doing more research on Covid 19 online. Learning more about Covid-19 infection and its consequences on the internet or talking with friends more on these issues may have increased their mental symptoms. In addition, the increase in the frequency of intra-familial conflict during adolescence and more time staying at home with the family and spending more time together may be related to these results. Distancing from the family, individualization, and the importance of friendship relations are expected features in adolescence. The problems in these issues and the feeling of loneliness due to the pandemic may also have affected. It is well known in the literature that children and especially adolescents are prone to mental health problems and that most mental disorders occur during adolescence (34, 35).

In conclusion, it was found in our study that the functionality of children/adolescents was not affected severely in this date range and the mental distress of children/adolescents was not in the psychopathology dimension. In addition, it was observed that the symptoms rapidly improved with short-term treatments. Although it seems that there is no serious mental problem in children/adolescents in the current situation, it is thought that more serious problems may be observed with the prolongation of the pandemic process, and this situation should be examined with studies involving more children/adolescents in the future.

When the results are examined in more detail, it was determined that female adolescents and the groups that make uncontrolled research about the pandemic on the internet, spend a lot of time on the internet, and whose parents work from home may be more at risk in terms of mental problems. It is thought that identifying risky groups and taking measures in these areas will be protective in terms of mental health. Also, further studies are needed to evaluate parents' mental health and relationships with their children.

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Oral Presentation No: 22099

Focus on Pre-Existing Psychiatric Disorders in the Era of Covid-19

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Abstract

Purpose: The number of studies on the negative consequences of the pandemic on mental health is increasing and alarming. In this study, we aimed to evaluate the changes in the pandemic process of people with pre-existing psychiatric disorders

Methods: 232 patients who were followed up in the psychiatry outpatient clinic of the State Hospital with a diagnoses of anxiety-related disorders and mood disorders were included in the study. DSM-V oriented interview was conducted by the psychiatrist. The sociodemographic data form prepared by the researchers, Clinical Global Impression Scale, and Coronavirus anxiety Scale, were applied. Statistical analysis was carried out using IBM SPSS Statistics for Windows, version 22.0.

Results: The majority of the participants in this study were females (75%), with a mean age of 41.8 years, married 63.4%. 68.1% of the participants were diagnosed with anxiety-related disorders. Covid anxiety was found in 28.9%. İn the group with covid anxiety the severity of the disease significantly worsened compared to the pre-pandemic period. We conducted a binary logistic regression to identify the factors associated with Covid Anxiety. İndividuals who have a relative with Covid-19 were 5.70 times more likely to have covid anxiety when holding all the other predictors constant and presence of comorbid obsessive-compulsive disorder were 3.52 times more likely to have covid 19 anxiety than those who have not.

Conclusion: Considering the vulnerability of people with psychiatric illnesses understanding the factors associated with psychiatric illnesses during a pandemic can help physicians screen and identify those at high risk.

Keywords: Covid-19, Psychiatry, Anxiety, Mood Disorders

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Introduction:

The number of cases reaching sixty million in the World and death rates expressed in millions reveal the magnitude of the problem. There is no way yet to prevent or stop the epidemic. This situation leaves people feeling terrified and helpless.

The number of studies on the negative consequences of the pandemic on mental health is increasing and alarming. It is observed that studies on covid-19 focus on mental illnesses in healthcare workers and general population (1). Unfortunately, few studies have been conducted with people with previous psychiatric disorders. In this study, we aimed to evaluate the changes people with pre-existing psychiatric disorders during the pandemic process.

Materials and Methods

This study was performed of 232 patients who were consecutively admitted to the Psychiatry Department of a State Hospital, who have been followed up in a psychiatric outpatient clinic for at least 6 months diagnosed with anxiety disorders and mood disorders before the pandemic and agreed to participate in the study were registered. İlliterate participants were excluded from the study. Patients were evaluated by meeting with a psychiatrist face to face interview and sociodemographic data form, Clinical Global Impressions Scale (CGI) and Coronavirus Anxiety Scale (CAS) were applied to the participants in the interview.

IBM 21.0 software was used to perform statistical analysis. Veriler SPSS 21.0 programı kullanılarak analiz edildi. A paired sample t-test and independent sample t-tests were carried out in comparisons. Chi-square test was performed to explore the relationship with variables and binary logistic regression is conducted to identify the factors associated with Covid Anxiety.

Results

The demographic characteristics of participants in this study were shown in Table 1. Participants were 232 individuals (174 women, 57 men) between the ages of 18 and 73 (mean=41.82, S.D.=12.67). Generally, 147 (63,4%) participants were married; 117 (50,4%) participants were employed; 125 (53,9%) participants perceived their income is mid. Lastly, mean of education times and duration of disease are 8.31 and 42.79, respectively.

Table 1. Demographic Characteristics of Participants

	Total Sample: 232	
	Frequency (N)	Percent (%)
Age		
Mean (S.D.)	41.82 (12.67)	
Range	18-73	
Gender		
Male	57	24.6
Female	174	75
Marital Status		
Married	147	63.4
Single	53	22.8
Separated	27	11.6
Widowed	5	2.2
Occupation Status		
Employed	117	50.4
Unemployed	98	42.2
Student	15	6.5
Income Perception		
Bad	77	33.2
Middle	125	53.9
Good	28	12.1

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Education Time	
Mean (S.D.)	8.31 (3.56)
Duration of Disease	
Mean (S.D.)	42.79 (38.29)
Range	0-190

Sample sizes vary because of missing data. Percentages may not add to 100% because of rounding errors.

Diagnosis distribution is shown in table 2. As shown in the table, most participants have been diagnosed with anxiety disorder (68,1%)

Table 2. Clinical Diagnosis of Participants

	Total Sample: 232	
	Frequency (N)	**Percent (%)**
Diagnosis		
Anxiety Disorders	158	68.1
Generalized anxiety disorder	77	33.2
Panic disorder	43	18.5
Anxiety disorder (NOS)	30	12.9
Social phobia	8	3.4
Mood Disorders	73	31.5
Major Depression	63	27.2
Bipolar Disorders	10	4.3

NOS: Not Otherwise Specified

25% of patients had a comorbid psychiatric disorders, obsessive compulsive disorder (OCD) was the most common comorbid disease (8,2%). 26,7% of patients had a chronic disease and hypertension (5,2%) and asthma (5,2%) were the most common chronic diseases.

To determine that whether in participants have covid anxiety or not, CAS was used. If an individual's total score from CAS is 9 and above, that person was considered to have covid-19 anxiety. In this context, 67 (28,9%) participants had covid-19 anxiety. 25.4% of the patients had relative with covid-19. İn the group with covid anxiety the severity of the disease significantly worsened compared to the pre-pandemic period.

We conducted a binary logistic regression to identify the factors associated with Covid Anxiety. Initially, we had 22 variables in the logistic regression model. However, to detect the best-fitted model, the stepwise analysis was performed. The results gave us five independent variables including gender, duration of disease, relative with Covid-19, difference CGI scores, psychiatric comorbidity in the model. The results of binary logistic regression analysis suggested that the model including five independent variables was statistically significant, $X2= 107.124$, $df= 12$, $p<0.001$, $N= 232$, which is indicating that the independent variables significantly predicted the Covid Anxiety. Generally, the model classified correctly 85,3% of participants. The result of Cox & Snell is .37, and Nagelkerke R squared is 53. These results indicated that whole model explained between 37% and 53% of the variance that can be predicted from gender, duration of disease, relative with Covid-19, difference CGI scores, psychiatric comorbidity.

Results showed that the strongest predictor of having covid anxiety is to have a relative with covid 19. In other words, individuals who have a relative with Covid-19 were 5.70 times more likely to have covid anxiety when holding all the other predictors constant. Increasing difference CGI score was associated with an increased likelihood of having Covid anxiety. So, a one-unit change in the CGI score increased the probability of having covid-19 anxiety by 2.45. Last but not least, when

holding all the other predictors constant, individuals having OCD were 3.52 times more likely to have covid 19 anxiety than those who have not (Table 3).

Table 3. Binary Logistic Regression Associated Covid Anxiety

Independent Variables	β	S.E.	Wald	df	P	Odds Ratio	95% CI for Odds Ratio	
Gender	.219	.496	.195	1	.659	1.245	.471	3.294
Duration of Disease	.003	.005	.220	1	.639	1.003	.992	1.013
relative with Covid-19	1.741	.429	16.430	1	**.000**	5.701	2.457	13.226
Difference CGI Score	.978	.163	35.990	1	**.000**	2.659	1.932	3.661
OCD	1.259	.633	3.957	1	**.047**	3.523	1.019	12.182
Constant	-3.101	.564	30.265	1	.000	.045		

Discussion

To our knowledge, this is the first face-to-face study to examine the impact of COVID-19 with pre-existing diagnosed mental disorders. Studies on covid-19 were generally carried out online and by phone call. In a study, Covid-19-related stress levels were found to be significantly higher in participants with anxiety disorders (2). In another study, it was found that 27% of anxiety related disorders worsened during the pandemic process (3).

There have been several recent commentaries suggesting that people with pre-existing mental health conditions may be more susceptible to stressors associated with COVID-19 relative to the general population, particularly given disruptions to routines and mental health care and associated increase in potential for relapse or exacerbation of symptoms (2).

Studies conducted with different diagnosis groups are needed to understand the course of the disease in the pandemic process of people with previous psychiatric diseases. Considering the

vulnerability of people with psychiatric illnesses understanding the factors associated with psychiatric illnesses during a pandemic can help physicians screen and identify those at high risk.

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The Hidden Face of Society During Covid 19 Pandemic: Violence Against Women

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Abstract

The economic, psychological, social and political reflections of the Covid-19 pandemic, which started in China in December 2019 and affected the whole world, are positioned at the center of all people's lives and create an undeniable reality. The physical and psychological effects of this pandemic negatively affect the lives of many people. In the literature, during the pandemic process, people who may be exposed to negative consequences more; The elderly, young people, women, students and the homeless were reported. Although the Covid-19 pandemic does not discriminate between men and women, women are greatly affected during this epidemic process. Being a man during the pandemic process results in being strong and using less health care due to strict gender norms. Being a woman, on the other hand, occurs when health and economic needs are not met due to having a lower say and increasing home care. With the increase in time spent at home, the increase in the workload at home (due to child care, elderly care and housework by women) brings with it more exposure to domestic violence. In addition, women's sexual and reproductive health services and prenatal and postnatal care are also interrupted. With the effect of all these factors, the probability of women experiencing physical, verbal, sexual, economic and psychological violence increases. At the same time, Domestic Violence Experts stated that during the Covid-19 pandemic process, keeping women in physical areas more during quarantine and social isolation practices, which were carried out to take health measures, increased economic stress and household stress, resulting in an increase in domestic violence. The purpose of this review is to draw attention to the increasing violence against women during the Covid-19 pandemic and to emphasize that women should be supported more. Violence against women is a social problem, the whole society should be responsible for its solution.

Keywords: Covid-19, Epidemic, Pandemic, Violence Against Women, Woman.

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INTRODUCTION

Violence is an attack on the body that has been seen since ancient times. Violence is aggressive behavior that a strong person has applied to a weak person (1). Violence against women, on the other hand, is acts that result in the suffering and harm of women in physical, sexual, psychological or economic terms. Gender-based violence, which is used to establish oppression and superiority on women, occurs mostly with the effect of patriarchal social structure. The issue of violence against women becomes even more important in this period when the rule of staying at home is imposed with the restrictions experienced during the pandemic process (2). Common opinion of World Health Organization and Experts; It is stated that women experience more violence in physical areas such as home and are helpless against this violence (2,3). Many countries have started to take new and additional measures to support victims of violence in this process (4). It can be said that with this very difficult process in the field of health, the issue of violence against women, which is important, has reached a level that causes more concern. It is important to address the issue of violence, which is of great importance for the mental and physical health of the society and women, and all the factors that cause violence. The purpose of this review is to provide general information about violence against women, which is the hidden face of society during the Covid-19 pandemic process, and to draw attention to this issue.

VIOLENCE

Violence is an attack on the body that began with human history. When violence is mentioned, the first thing that comes to mind is the aggressive behaviors that a strong person has applied to the weak person (2).

Violence emerges as a violation of human rights. Sociology, psychology, social psychology, biology, law, economics etc. Violence, which is examined by experts in the fields, greatly damages the quality of life of individuals and creates negative effects on their physical and mental health. At the same time, violence is a public health problem that is tackled in almost all societies today (1,5).

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SOURCE OF VIOLENCE AND THE FACTORS THAT CAUSE VIOLENCE

Many sources can cause violence. Factors such as educational differences, family structure, status differences, cultural differences, religious beliefs and lifestyle play a role in experiencing violence (1).

Financial problems, men's job problems, lack of food at home, the man being jealous and angry, doubting the loyalty of the woman, the man's willingness to divorce are some of the reasons for the violence found as a result of the research carried out by GDWS (General Directorate of Women's Status). In addition to all these items, reasons such as the refusal of the woman to sexual intercourse, the bad habits of the man, and the cheating on the man underlie the violence against women (1,6). The women not remaining silent in the face of violence, reacting, shouting, preferring to divorce cause more violence to be applied.

The underlying factors of violence are parallel to the source of the violence, and the biggest factor that causes violence appears as the gender inequality in society. In addition to psychological factors such as developmental problems, personality disorder, violence occurs in relation to many reasons such as social and income inequality in the country, poverty, unemployment, unfair practices, barriers to human rights and lack of education (1,7)

VIOLENCE AGAINST WOMEN

Violence against women stems from the unequal power relationship between men and women. It is also a violation of women's fundamental rights and freedoms. In order to preserve the belief in the superiority of family integrity and security in terms of social values, the problem of violence should be objectively examined (8).

Violence against women is a difficult and extremely complex situation to handle. The general purpose of violence is to control women's behavior with the effect of fear. There is an imbalance of power between men and women against women in all violence. In addition, the fact that the woman's labor in the home is not valued due to the inequality she experiences in the family environment, the power of the husband, who is in a strong position on the basis of the power and power relations that arise due to the patriarchal social structure, shows the power of the husband over the woman and the women experience violence (8-10).

Violence against women is the totality of behaviors that result in physical, economic, sexual or psychological harm or suffering. In addition, it is an important social problem that causes

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the violation of women's freedoms such as living, nutrition, education and health care, participation in social and economic life and their fundamental human rights. Violence, which aims at suppressing women and establishing superiority over women, occurs with the influence of patriarchal social structure. The inequality women experience in issues such as labor force, education and participation in decision-making mechanisms negatively affect their access to social and economic resources (8).

Social factors that make women more vulnerable to violence position women as weak and passive, and men as strong and in power. In the gender structure where men are considered superior to women, violence is a symbol of men maintaining their power over women and is seen as a continuation of gender roles that are not equally distributed (8,9).

Violence applies to everyone, but particularly affects women and girls. Violence can be perpetrated in physical, economic, psychological, sexual and sociocultural forms and by anyone. In general, the perpetrators of violence appear as family members, spouses / partners and other community members (8,10).

TYPES OF VIOLENCE AGAINST WOMEN

Violence can be practiced not only physically, but also economically, psychologically (emotional) and sexually. In this context, all types of violence include physical violence against the body (10).

- Physical violence against women

It includes physically damaging actions that take place against the will of the woman to prevent women from doing something or to force them to do something (11,12). Physical violence can be practiced in a variety of ways. Some of those; slap, hand-arm sprains / breaking / bending, punching, kicking, squeezing his throat, spitting (1,8,12) In addition, the pushing and harassment of the woman, harming her body with sharp tools, being left to live in unhealthy conditions, preventing her from using health services, suffering bodily harm (1,8,12), throwing any object and killing are also within the scope of physical violence. (1).

Women and children are the most exposed to physical violence (1). As a result of physical violence, women also experience negative effects such as feeling worthless, losing self-esteem and experiencing fear (8,10).

- **Economic Violence Against Women**

The partial or complete removal, restriction or seizure of an individual's material income is defined as economic violence. In addition, being forced to work and / or not to work, to be employed in any undesired job, and seizure of earnings by others are included in economic violence. The individuals most exposed to economic violence are women (8,12).

Economic violence against women in a broad sense; It can be seen as the man taking a decision alone on economic issues concerning the family, without the woman's opinion, taking away the woman's money and personal property. In addition, it is also implemented in ways such as imposing restrictions that hinder women's career, preventing women from developing their skills that facilitate finding a job, causing an event in the workplace and causing unwanted women (1,8).

- **Psychological (Verbal-Emotional) Violence Against Women**

Unlike physical violence, psychological violence emerges as harming the individual's mental state. In psychological violence, psychological pressure applied by practices such as humiliating in front of others, interrupting frequently, shouting, hurting pride, constantly criticizing, restricting freedom to express his feelings and thoughts, threatening with physical violence, restricting freedom of movement, swearing, insulting names. (13). In addition, using violence against women as an excuse for jealousy, comparing them with other women, neglecting them, being ignored, deciding how to dress, where to go, with whom to meet, being told that they are ugly, and limiting their relationships with other people are examples of psychological violence. Ignoring the cultural differences of women, preventing their self-development, trying to suppress them or being mistreated for these reasons are also the effects of this violence (1,8).

They are the women who are exposed to psychological violence the most and for the longest time (1,8). The self-efficacy perception of women subjected to psychological violence decreases with the respect they give to themselves and the value they give to themselves. Women are unwilling to take any responsibility and have difficulty in emotional relationships. While having problems in relationships with other individuals, they experience problems in personality development and feel inadequate and incompetent. Women may have false thoughts about their bodies because they internalize messages about suicidal thoughts and worthlessness. There is an

increased tendency to knowingly physically harm and injure themselves. There are also physical complaints based on stress (8).

- **Sexual Violence Against Women**

Sexual violence is any forced sexual act, taking a sexual act or forcing the person to have sexual intercourse, regardless of their relationship with the victim (1,8,12). At the same time, it is a form of violence that emerges by using physical violence, threats and blackmail, and psychological pressure on an individual who does not have his consent and does not have the power to resist this attack (1,12).

Intensive sexual violence against women and children has existed in all societies since the creation of humanity. Women are forced to have sexual intercourse when they do not want to, where they do not want to and in an unwanted way, being exposed to incest, being forced to give birth or not to give birth to children, abortion and prostitution, damage to their genitals and comparing their physical characteristics with other women are also sexual violence (1,12).

Women and children are the most vulnerable to sexual assault. After the women are exposed to sexual violence and after this situation occurs, they may exhibit different mental disorders due to the reactions they will receive from their environment. They can become people who are withdrawn, embittered, resort to various suicide methods, have anxiety disorders and trust problems (1,12).

VIOLENCE AGAINST WOMEN IN THE COVID-19 PANDEMIA PROCESS

The Covid-19 pandemic, caused by the SARS-CoV-2 virus, which started in Wuhan, China's Hubei province in December 2019 and affected the whole world, quickly spread to 6 continents and hundreds of countries and went down in history as the first pandemic caused by corona viruses. The outbreak, which began the process by identifying the first positive cases in Turkey on 11 March 2020 will continue to increase the impact (14-16).

The economic, psychological, social and political reflections of the Covid-19 pandemic are located at the center of all people's lives and create an undeniable reality (17). The effects of this pandemic both physically and psychologically affect the lives of many people negatively (17, 18). In the literature, during the pandemic process, people who may be exposed to negative

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consequences more; It has been stated that there are old people, young people, women, students and homeless people (17,19, 20).

Although the Covid-19 pandemic does not discriminate between men and women, women are greatly affected during this epidemic process (14). Being a man during the pandemic process results in being strong, trying to look strong and resorting to less healthcare due to strict gender norms. In addition to these, men feel more financial problems such as economic difficulties and unemployment caused by the pandemic. This is reflected in the family and home environment as conflict and tension (14). Being a woman during the pandemic process appears as having a lower say in matters concerning herself and her family, and the inability to provide health care and economic needs due to increased home care (17,21).

In Turkey, where houses are densely regarding violence against women in this period in which the rules of staying in houses with restrictions, is increasing the importance of this issue. Domestic Violence Experts During the Covid-19 pandemic process, women experience more violence in physical areas during quarantine and social isolation practices, which are carried out to take health precautions, and it is difficult for women to call emergency help lines due to the fact that these women cannot stay away from the perpetrators of violence during quarantine (14). Many countries have started to take new and additional measures to support victims of violence in this process. In this context, free accommodation facilities were provided, on the other hand, the number of shelters and sexual assault centers was increased, and financial support packages were introduced (17,18). In this process, it is stated that women feel obliged to do everything they are asked to do in order to reduce violence, child care, elderly care, all housework are covered by women, and women are actually more exposed to domestic violence with the increase in the workload at home (14,16). Economic troubles increase the stress and conflicts on women, men and families and cause an increase in severity. The risk of women experiencing economic abuse increases with the decrease in financial resources. Perpetrators of violence can take advantage of existing restrictions due to COVID-19 to reduce women's access to assistance, services and psychological support, to exert power and control over them (22). In addition, women's sexual and reproductive health services and prenatal and postnatal care are also interrupted. Violence is inevitable for women who are prevented from receiving health care (22,23).

CONCLUSION

In this review, the importance of examining violence against women and all factors affecting them, which is of great importance for women's health in the Covid-19 pandemic process, is emphasized. All individuals are negatively affected during the Covid-19 pandemic process. However, the negative effects on the health, body, mental structure and rights of women are more common. These negative effects occur to varying degrees from underdeveloped countries to the most developed countries. In line with the goals of health for all, this process should be addressed globally with international cooperation. In this process, care should be taken against the increasing violence against women and women should be supported more. Violence against women is a social problem, the whole society should be responsible for its solution. Based on the results of such studies, education programs that will raise awareness of women against violence and reach women should be provided. Women should be taught who, where and to which unit they should apply in case of violence. It may also be suggested to conduct qualitative studies that can reveal women's individual views and experiences on this issue.

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Stock Management with ABC and VED Analysis in Hospitals During the Covid-19 Pandemic Process

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ABSTRACT

Inventory control methods to be applied in hospitals during the pandemic process are of vital importance in terms of the sustainability of the health services provided. There is a need for more than one material used in healthcare services, and the availability of these materials will speed up the provision of healthcare services. Classification of stocks can be made using cost-based ABC analysis and VED analysis used in hospital enterprises. However, the ABC + VED matrix can also be used, which allows to evaluate according to both cost and importance of stocks. This study aims to analyze the medical equipment expenditures and consumption during a pandemic in a public university hospital using inventory control techniques. The subject of this study is the analysis of medical materials used in a university health facility during the Covid 19 pandemic that emerged in the world in 2020, using the stock control methods Always Better Control - Viatal-Essential-Desirable (ABC-VED) and ABC-VED matrix analysis.

Keywords: Covid 19, Pandemic, Inventory Management, Medical Equipment, ABC Analysis, VED Analysis, ABC-VED Matrix Analysis

INTRODUCTION

The pandemic was formed by combining the words pan: all and demos: people in ancient Greek. The general name of epidemic diseases that spread to all countries of the world is pandemic (Aysan et al., 2020).

"COVID-19" disease was announced as a pandemic by the World Health Organization (WHO) on 11 March 2020, and it is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in humans. The number of patients meeting the case definition of the new pathogen (2019-nCoV) known as Covid-19 is increasing all over the world (World Health Organization, 2020b). This causes an increase in the number of morbidity and mortality caused by the epidemic day by day.

Due to the coronavirus (COVID-19) epidemic, the density of healthcare production in hospitals has increased. In this busy period, the correct management of the circulation of hospital supplies and drug stores has increased the importance.

This epidemic has revealed that most of the materials in the hospital stock are of vital importance. It is clear that the problems to be experienced in stock control or ordering processes during the pandemic period may cause irreparable results. For this reason, a planning and control system based on the importance of the material and cost should be applied in the inventory management of hospitals.

Companies should keep their stocks in the warehouse for various reasons such as preventing stock exhaustion, minimizing projected demand fluctuations or getting quantity discounts. When it comes to hospitals, it is known that many materials are required to maintain the health quality and even the lives of patients. About a third of the total budget of healthcare institutions is spent on supplies including medicines. (Kathleen and d.2005) On the other hand, excess stock affects the competitiveness of organizations through its impact on product costs. An efficient inventory management can offset many costs associated with it. In addition, hospitals should consider a wide variety of different products, which are clinical consumables of high financial importance. Hospitals keep stocks of quite a large number of products with many references and suppliers for the same product. This is understandable for hospitals as it ensures that the materials necessary for human life are obtained in sufficient number, variety and at any time. However, this situation needs to be kept under control otherwise the financial situation does not allow good negotiation with the suppliers.

With the increasing demand for healthcare services, it is inevitable that the diversity of the workforce, imaging and laboratory devices that will provide these services will increase. This increases the amount and type of materials used in healthcare production.

The uncertainty in the increase in the number of patients in the pandemic causes uncertainty in the supply of materials used in hospitals, in predicting the amount of use, and in the estimation of variables. For this reason, it becomes compulsory to keep extra stock. During these periods, inventory control should be done carefully, materials should be stocked at the desired level and excessive inventory costs should be avoided.

The excessive type of materials used in the diagnosis and treatment of patients in hospitals makes it difficult to determine the inventory level. But this situation, the number of materials and the total cost; It can be made easier by classifying them according to materiality, stock turnover, lead times and seasonal fluctuations of usage. In the literature, some inventory control methods are used for these situations. (Devnani et al., 2010). These:

• ABC: High, medium and low cost materials,

• VED: Vital, Essential, Desirable materials,

• FSN: Fast moving, slow moving, stationary materials,

• SDE: Limited in supply, difficult to supply, easy to supply,

• HML: Materials with high, medium or low stock value,

• SOS: Classified as seasonal and non-seasonal materials.

The most preferred of these methods in hospitals are the ABC and VED methods based on the amount of use and total cost of the materials and the ABC-VED matrix method, which is formed from the matrixes of both methods. (Anand et al., 2013).

1.1. ABC (Always Better Control) Method

The ABC method (Ağırbaş 2016), which is based on classifying stocks according to their importance, divides the stocks into 3 groups according to the annual monetary value percentage and the annual usage amount (Tengilimoğlu et al. 2011). In this method, which is also called Pareto analysis (Ghewari, Manvar 2016) after the Italian economist Vifredo Pareto, the annual monetary value percentage of the material according to the Pareto principle is approximately 70%, 20% and 10% for groups A, B and C, respectively, while the percentage of annual use is approximately 10%, 20% and 70% (Gupta et al. 2007).

ABC analysis is one of the methods widely used in stock control in businesses. This method is based on the Pareto rule or the "80-20 Rule". Pareto Principle; The storage function is the basis for a method called ABC analysis, which is precisely "always better control" to control inventory management, order processes and overall costs effectively. This analysis method divides a large number of stock items into three main groups in order to identify important stock items and provide an effective stock control. In addition, this method facilitates the diagnosis and analysis of all kinds of problems that occur in the warehouses of health institutions. The ABC analysis technique, as an inventory classification system, is a simple method that makes it easier to distinguish materials that require more control from materials that require less control. (Kaptanoğlu, 2013: 28). This method developed by Vilfredo Pareto assumes that the items that make up 80% of the total financial value are 20% of the total items. With the rule created with this assumption, the ABC analysis method classifies the materials in stock into three groups. This classification is as follows: (Pund and d.2016)

• Class A materials are 20% of the total inventory, and the total inventory value of these materials is 80%.

• Class B materials are 30% of the total inventory, and the total inventory value of these materials is 15%.

• Class C materials are 50% of the total inventory and the total inventory value of these materials is 5%.

In the ABC analysis technique, Class A materials will be covered extensively as they are most of the inventory value. Since the lack or absence of these materials will cause the businesses to bear high costs, the stock control of the materials in this group should be done very carefully. Group A materials should be constantly reviewed by the officers in storage areas and the amount of safety stock for materials should be determined according to their consumption. In stock classification, rules should be applied for B and C group materials according to the fields of activity of the institutions. Although it varies according to the fields of activity of the institutions, a low-control stock policy can be applied for materials in group B. For materials in group C, the stock control policy may be more flexible, but stock control must be made for materials in both groups. The lack or absence of drugs and materials used in patient treatments, especially

in healthcare institutions, may cause failures and irreparable results in medical treatment, which is very important for patients.. (Manhas and d.2012)

1.2.VED Analysis

VED analysis method is used in the stock control of medical materials and drugs used in patient treatment in hospitals. Since the ABC analysis method classifies products according to their purchase costs, VED analysis classifies them according to their importance in patient treatment. In VED analysis, materials are divided into three groups according to priority and importance for patient health. [Anand et al. 2013]

V (Vital): Materials and drugs in this group are defined as life-saving in the treatment of patients and there should always be stock.

• E (Essential): Important for illnesses, but less important compared to the vital drugs and supplies that should be available in hospitals.

• D (Desirable): The materials in this group have the lowest criticality level compared to patient treatment and the deficiencies of these materials in the hospital are not essential for the treatment of patients. (Theptong, 2010)

Mistakes and incomplete operations made during the production of healthcare services in hospitals may cause irreparable loss and injury to patients. For this reason, the absence or deficiency of a cost-effective material may be of vital importance during service delivery in hospitals. For example, the cost of purchasing the material required for the vascular access of patients is low, but it is very important for patients. Lack of these and similar stock items in hospitals may cause delay in the treatment of patients. For this reason, inventory control methods should be used in hospitals based on both the cost and the vital importance for patients. (Karagöz and Yıldız, 2015: 381).

1.2. ABC-VED Matrix Analysis

The ABC-VED matrix is created by cross tabulating ABC and VED analyzes. [Devnani et al., 2010] Three material groups are created from the combination created. Service production costs should be kept at the optimum level in terms of not affecting the quality of health service delivery in hospitals and in terms of continuity of service delivery. ABC-VED matrix analysis is a method that takes into account the stock value, financial value and importance level of the materials used in hospitals. In addition, it classifies materials according to stock control priority. (Pund et al., 2016: 469-470).

The ABC-VED matrix is formulated by cross-tabulating ABC and VED analysis. The combination obtained is classified into three groups (Vaz, et al., 2008: 120). After the inventory control and valuation groups are determined in the ABC + VED matrix, the materials in the V and E groups are ABC classified. It should be noted that the first letter in this category indicates the place of the item in the ABC analysis, where it indicates the location of the second letter in the VED analysis.

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Category 1: These materials are vital for hospitals, both with high purchasing costs and in patient care. Stock controls of the materials in this category should be done regularly. This group may be materials that make up subcategories such as AV, AE, AD, BV and CV.

Category 2: Materials in this group are not as expensive as materials in the first category or critical to patient care. Stock controls of the materials in this group should be done periodically. This group may be materials that make up categories such as BE, CE, BD.

Category 3: The materials in this group are the cheapest and the patients are of vital importance. The materials in this group do not need to be checked regularly. This group may be sub-category materials called CD.

2. MATERIALS AND METHODS

This study was conducted retrospectively by examining the medical equipment usage information of the hospital and the material cost data.

In 2020, 6-month consumption data of medical supplies used to patients in pandemic wards and expenditures for each item were taken from the Hospital Material Management System. The data was also transferred to an MS Excel spreadsheet for quantitative calculations.

Based on the 6-month usage of the data for each material, the total unit costs were calculated. The total unit costs of all materials calculated in this way during the 6-month pandemic period were arranged in descending order and the total material cost for this period was found. The cumulative spending percentage and the cumulative percentage of the number of items were calculated for ABC analysis. The data of all the materials that make up the universe of the study were reached.

In order to decide the importance of the materials(Vital, Essential and Desirable), the classification was made by consulting with experts in the field.

In the study, a matrix was created by using ABC and VED analysis results to create an inventory control model that can be used to prioritize managerial decisions during the pandemic period. Each section in the created matrix is indicated by two letters. The first group represents ABC analysis, the second represents VED analysis. Three categories were classified from the resulting combination, category I created by items belonging to the subcategories AV, AE, AD, BV and CV. The BE, CE and BD subcategories are Category II, and the remaining materials in the CD subcategory are Category III.

3. RESULTS

In the study, 6-month total usage amount and total purchase costs of 332 materials used in pandemic services in 2020 were analyzed for ABC analysis. In our study, while performing VED analysis, a group of doctors who worked during the pandemic was consulted and the materials were classified according to their vitality for patients. After the data required for ABC and VED matrices were created, the inventory control model to be proposed as a model was created.

When Table 1 is examined, the materials in group A correspond to 9.04% of the total materials used and 70% of the total material cost. Group C materials constituted 77.11% of the total materials used, and

the material cost in this group is 10%. The total material cost of the materials in group B has been calculated as 20%, and it constitutes 13.86% of the total material usage amount.

Table 1: ABC Analysis Table

ABC Analysis Table				
Stock Group	**Number of Material**	**Material Item Rate (%)**	**Total Spending Amount (₺)**	**Total Spending Rate (%)**
A	30	9,04	₺ 325.756,08	69,35
B	46	13,86	₺ 97.105,38	20,67
C	256	77,11	₺ 46.847,68	9,97
Total	332	100,00	₺ 469.709,14	100,00

In hospitals, it is necessary to keep an optimum inventory record with a minimum investment of working capital and to reduce costs in order to maintain healthcare services. Therefore, by using inventory control techniques and various criteria for the control of hospital inventory, it is ensured that the desired balance is established between high stock amount and lack of stock. As seen in Table 1, ABC analysis has been made based on the cumulative total costs of the materials in the classification of the materials, thus controlling the A group materials in order to control the total material cost and giving control priority will provide hospitals an advantage in terms of cost control.

Figure 1: Proportional Distributions of ABC Analysis Stock Items
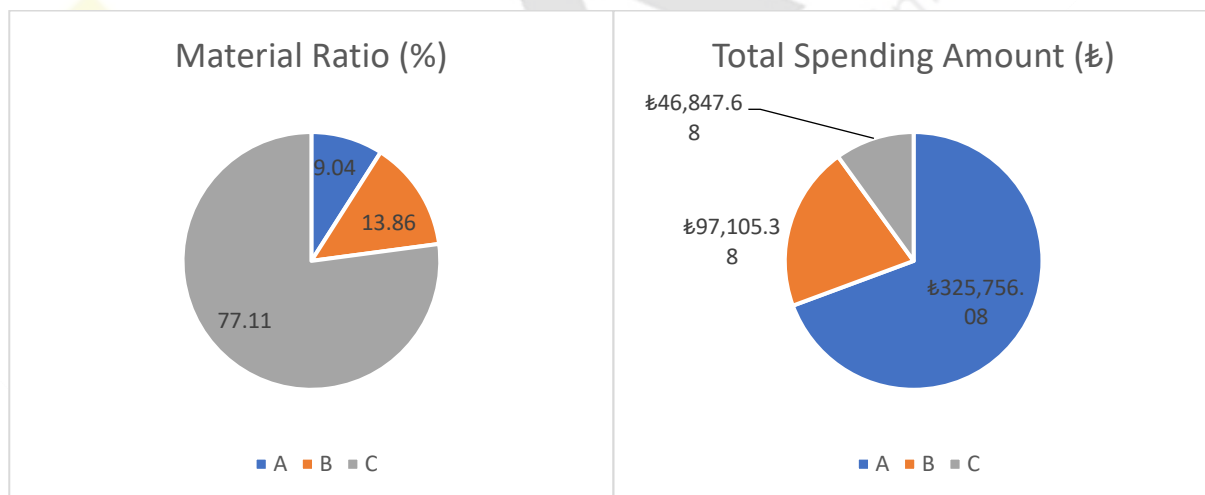
In Figure 1, the costs of the materials are calculated by multiplying the unit material cost by the total consumption amount during the pandemic period and ABC analysis has been arranged in descending order of the obtained numbers. According to the total usage amount and costs, the usage rates of the

materials separated according to the category A B C are 77%, 13% and 9% respectively, the rates of the total consumption costs of the materials are 69.35%, 20.67% and 9.97%.

The results of our VED analysis for the materials used in the pandemic period are presented in Table 2. In general, 25.00% of the materials (83 materials) are in the V group, 25.30% (84 materials) in the E group, and 49.70% (165 materials) in the D group. The total cost of the materials in the V group was calculated as 68.10%, the cost of the E group materials as 12.48%, and the total cost of the D group materials as 19.42%.

Table 2: VED Analysis Table

Tablo 2: VED Analiz Tablosu				
VED	**Number**	**Amount (TL)**	**Number (%)**	**Amount (%)**
V	83	₺ 319.879,23	25,00	68,10
E	84	₺ 58.605,92	25,30	12,48
D	165	₺ 91.223,99	49,70	19,42
Total	332	₺ 469.709,14	**100**	**100**

When the materials used during the pandemic period are examined by ABC analysis, it is seen that 30 materials in group A constitute 69.35% of the total cost. When the same situation is made for VED analysis, it is seen that 83 materials in the V group constitute 68.10% of the total cost. According to the table, the materials in the V group constituted more than half of the total material cost used in terms of total number and cost. According to this result, it is very important to keep vital materials in stock in hospitals during the pandemic period.

3.1. ABC-VED Matrix Analysis Results

In order to create an inventory control model to be used to prioritize managerial decisions in hospitals during the pandemic period, a matrix was formed by combining the tables created after ABC and VED analysis. The panes in the created matrix are identified by two letters, the first pane represents ABC analysis and the second represents VED analysis. After this combination was created, the materials were divided into three different categories. Category I was formed from AV, AE, AD, BV and CV subgroups, category II, BE, CE and BD subgroups, category III CD subgroups.

Table 3 shows the calculation of the combination obtained from ABC and VED analysis. According to the calculations, it constitutes 79.39% (60) of category I materials. 15.05% of the materials are category II and the remaining 5.56% is category III. According to the material groups created, the inventory management of the materials in Category I (AV, AE, AD, BV and CV) should be done regularly and in a complex manner. Consumption amounts and frequency of materials in this category and stock follow-up should be done regularly.

It consists of 60 expensive materials that make up 20.13% of category I materials, which are sub-groups of AV, AE, AD, BV and CV, used by the hospital during the pandemic period. These materials are vital or necessary and are unacceptable to be out of stock.

BE CE and BD subgroups constitute Category II for low cost but highly critical materials. Consumption quantities and stock control of the materials in this category should be checked periodically. Materials that make up Category III (CD) consist of materials that are required to have a stock and have low total cost. The materials in this group should be ordered in certain time periods according to their usage conditions and stock controls should be provided regularly.

Table 3: ABC-VED Matrix Analysis Table

ABC-VED Matrix Analysis Table				
ABC ve VED Matrix Analysis	Number	Amount (TL)	Variety (%)	Number (%)
Category I (AV+AE+ AD+BV+CV)	60	₺372.887,89	20,13	79,39
Category II (BE+CE+BD)	97	₺ 70.691,40	32,55	15,05
Category III (CD)	141	₺ 26.129,85	47,32	5,56
Total	298	₺469.709,14	100	100

With this analysis, it is aimed to prevent the stocking of surplus materials in hospitals during pandemic periods and the stocking costs that this will cause.

During pandemic periods, it is very important to use the inventory management model based on a scientific basis for the management of materials used in hospitals, to make effective prioritization in stock management, to decide on the procurement of special products, and to monitor and control the material groups that are of high vital importance. ABC, VED and ABC-VED matrix analyzes are methods that can be used to determine the materials and drugs that require precise control in order to use the financial resources of hospitals more rationally and to eliminate stock shortages in hospitals. According to the results of our study, materials in category I, which are both vital and high-cost, constituted 80% of the total material expense and 20% of the materials. Finally, the results of the ABC and VED analysis are also classified into a combined matrix representing the three basic functional parameters of "total consumption, cost and criticality" and their significance levels are revealed.

Discussion And Conclusion

During pandemic periods, effective and planned inventory control is essential for determining the demand precisely in healthcare institutions, evaluating financial resources more rationally and making the best use of opportunities. In the current "limited resource and unlimited demand" healthcare environment, no healthcare facility will have abundant resources and therefore optimum use of available resources will be an important component of hospital logistics management to contribute to the maximum benefit of hospital customers.

Inventory management in hospitals generally covers all processes starting with the purchase of materials and ending with their use for patients. Especially during the pandemic period, these processes in hospitals should be optimized and every movement of the materials in the hospital should be recorded.

In this study, we tried to show that ABC analysis can be used in hospitals during pandemic periods to reduce expenses and increase the effectiveness of its use. However, since ABC analysis depends on the price of the product and the consumption rate, it is not sufficient for efficient inventory management. A material can be cheap and vital or life-saving. Therefore, we applied VED analysis to overcome the limitation of ABC analysis during pandemic periods. With VED analysis, the materials used in patient treatment can be grouped according to the criticality level. Therefore, we applied the combination model of ABC and VED analysis in our study. ABC-VED matrix analysis ensures that materials are tightly controlled for optimum use of financial resources and that out-of-stock situations are avoided.

In this study, materials are grouped according to their costs and vital importance and standardized with ABC-VED analysis in order to make decisions about inventory control during the pandemic period and to keep the related costs at a minimum. In this way, it can be ensured that the high-important materials used in the pandemic period can be checked frequently and the ones with lower importance can be checked in longer time intervals. In this way, the workforce calculation for inventory control will be made more rational and the negativities that may occur in this process will be prevented.

It is clear that appropriate scientific inventory management tools should be implemented in hospitals during pandemic periods as a routine practice for meeting patient needs and for efficient management of patient care. In our study, it has been found that ABC-VED analysis is an effective inventory management tool in determining the materials that require tight control in order to use financial resources more rationally and to eliminate stocklessness in hospitals during pandemic periods.

Health managers of the future will have to use scientific inventory management methods in times of pandemic / crisis. The role of the management of the logistics system in order to be an efficient hospital can no longer be ignored.

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EXPERIENCES OF COVID-19 PATIENTS IN THE ISOLATION PROCESS: A QUALITATIVE STUDY

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ABSTRACT

Objective: The purpose of this study was to examine the experiences of COVID-19 patients during the isolation process.

Methods: This qualitative study was conducted with 18 COVID-19 patients. The data were collected through in-depth interviews with the "Semi-Structured Interview Form". The interviews were conducted as phone calls due to the isolation conditions. The interviews were analyzed using thematic analysis method.

Results: The main themes of the research; Struggle in isolation, results of the disease / isolation process and adjustment to the new normal. Subthemes of the theme of struggle in isolation; The struggle with the symptoms of the disease was the fear of death, the fear of contagion and the feeling of loneliness / helplessness. Sub-themes of disease / consequences of isolation process; they were physical and psychological consequences. Subthemes of the theme of adaptation to the new normal; nutrition, hygiene and social distance and wearing a mask. Most of the patients reported that they had to cope with the fear of death, the fear of infecting their families / others, and the feeling of loneliness. The concern of re-contamination and illness after recovery was often

mentioned. Patients frequently emphasized that people avoided them in isolation and the subsequent process.

Conclusion: COVID-19 patients were most often found to have psychological difficulties during the isolation process. Due to the unknown and degrading process of the disease and its treatment, patients have difficulty returning to their normal lives. Psychological support of patients in isolation and the subsequent process is important in order not to experience post-traumatic stress syndrome.

Keywords: Coronavirus, Patients, Patient isolation, Qualitative evaluation

INTRODUCTION

COVID-19 is a virus that spreads all over the world in a short time after emerging in Wuhan, China, and causes severe pneumonia (1,2). COVID-19, which emerged in late 2019, was declared as a pandemic by the World Health Organization, as of March 11, 2020, with a total of 118 thousand people in 114 countries and causing 4,291 people to die (3).

The morbidity and mortality of COVID-19 is largely caused by Acute Respiratory Distress Syndrome due to acute viral pneumonia. In some patients, shortness of breath and hypoxemia can be observed in the second week of the disease (4,5). In 10-20% of severe patients, Acute Respiratory Distress Syndrome picture develops between 8-14 days of the disease and mechanical ventilation may be required due to non-cardiogenic pulmonary edema. Intensive care follow-up may be required in patients with critical case shock and severe respiratory failure that requires mechanical ventilation (4,6).

There are studies showing that the COVID-19 virus is a pandemic virus with high mortality, causing a high fear of the disease in patients (7–9). These patients also undergo severe isolation

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conditions in order to reduce the spread of the disease. Under these conditions, patients are left alone and cope with their fear alone. Therefore, interventions for psychological well-being should be planned by examining the experiences of patients during the isolation process (7,8).

The severe isolation conditions suggest that the experiences of the patients may result in severe consequences (10). Qualitative studies examining the difficulties experienced by healthcare personnel during the COVID-19 pandemic process were found in the literature (11,12). However, there is no qualitative study examining the psychological experiences of COVID-19 patients during the isolation process both in the hospital and at home. Therefore, in this study, it was aimed to examine the experiences of COVID-19 patients in intensive care and after. In line with this general purpose, the questions of the study were as follows:

- What did the patients do when they realized they had COVID-19? What did he pay attention to?
- What did the patients experience during home isolation due to COVID-19?
- How has COVID-19 affected patients?

METHODS

Study Design

This descriptive and qualitative study was carried out in the phenomelogy design. The main purpose in the phenomenology design is to make individual experiences of a phenomenon an explanation of a universal truth (13). The phenomenon addressed in this study was "the experiences of COVID-19 patients in the isolation process".

Participants

This study was conducted with patients who were followed up with a diagnosis of COVID-19 and were discharged. Criteria sampling method was used. When the participants started to focus on

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similar issues during the interviews, it stopped accepting participants. The research was conducted with 18 participants who met the participation criteria. The characteristics of the participants are presented in Table 1.

The criteria for participation in the research:

- Getting a positive diagnosis of COVID-19
- Volunteering to participate in research

Data Collection Process

Due to the isolation conditions, the data were collected by phone calls between November and December 2020. Telephone numbers of the patients were obtained with written permission from the institution. The patients were informed about the researcher's identity and the research (purpose of the study, confidentiality of the answers, where and how the data would be stored). Volunteerism was taken as a basis for participation. Interviews were recorded with the permission of the participants. The interviews lasted between 15-20 minutes.

The data were collected through the "Semi-Structured Interview Form". The Semi-Structured Interview Form includes open-ended questions about what patients experience after their diagnosis of COVID-19. The questions on the form are as follows: (1) How did you know that you were caught with COVID-19? (2) What / what did you do when you realized that you were infected with COVID-19? What did you pay attention to? (3) If you were hospitalized due to COVID-19, what did you experience / feel during this period? (4) What did you experience / feel during your home isolation process due to COVID-19? (5) How has COVID-19 affected you? (6) How does your life continue after you recover?

Data Analysis

Colaizzi's phenomenological method was used in the analysis of the data (14). In this model, themes are extracted from direct interviews. The basic procedure is to collect similar data within the framework of certain concepts and themes and to organize and interpret them in a way that the reader can understand (13). Two researchers performed thematic processes for the analysis of the data. The themes obtained after the first theming process were reviewed by all researchers, and the final themes were prepared after additions and changes were made. Feedback was obtained from the patients who were interviewed about the accuracy of the themes (15).

Ethical Considerations

The decision of the ethics committee of the study was obtained from the Zonguldak Bülent Ecevit University Human Research Ethics Committee (Date: 24.11.2020, Decision number: 940), and written consents were obtained from the institution where the study was conducted. Data were collected on the basis of voluntary participation. Participants were informed about the purpose of the research and the confidentiality of all data. In accordance with the requirements of research ethics, students' names were coded without using them. The research was presented in accordance with the Standards for Reporting Qualitative Research (SRQR) checklist (16).

RESULTS

The themes obtained from the interviews with the patients as a result of the content analysis are presented in Table 2.

Theme 1. Fighting in isolation

All of the patients mentioned that they had to cope with the ethics of the disease and its treatment during the isolation process. Some of the patients' statements were as follows:

> *"My body changed color due to the drugs I used, my whole body swelled."* (P2);

> *"I had a lot of trouble. I couldn't sleep, I had trouble breathing. Everything seemed to smell, I couldn't eat. "* (P3);

> *"They gave me medication after my test result was positive. Every night I had fever, nightmares. There were wounds on my tongue. On the fourth day of my quarantine, my whole body swelled as if boiled in boiling water. "* (P7);

> *"I couldn't stand. My legs were shaking. My eyelids seemed to be dislodged. "* (P17).

Half of the patients reported that they experienced fear of death due to the unknown course of the disease and high mortality. Some of the patients' statements were as follows:

> *"I was very bad psychologically. We were all caught as a family. We had a fear of death. "* (H6);

> *"I was not good at all. I thought I could not be well and conquer the disease. "* (H8);

> *"I thought a lot about whether I would be able to leave when I was in intensive care."* (H10).

Half of the patients stated that they feared the transmission of COVID-19 to their families and others during the pandemic process. Some of the patients' statements were as follows:

> *"I wasn't allowed to go to the hospital from my workplace. I put on a double mask to avoid being under the plague, I worked like that. "* (H11);

> *"I felt like a microbe. I tried to stay away from people. "* (H15);

> *"I spent time with a lot of people not knowing that I was sick. It's not their fault, it's because of me. I feel uncomfortable conscientiously. "* (H16).

More than half of the patients reported that they felt lonely and helpless due to the constraints and uncertainties brought by the pandemic. Some of the patients' statements were as follows:

"I locked myself in a room at home. I separated everything. I always wore slippers. I accidentally stepped on the carpet outside (from the room) once. My wife gave it to wash. " (H7);

"I used disposable plastic fork / spoon. We had a hard time with the bathroom and toilet. My mother was putting my food on the door. I felt so helpless. " (H11);

"In the first days I had a psychological collapse. Everyone around me ran away from me. Nobody even opened the door to my room. " (H12);

"I couldn't get close to my kids. This situation exhausted me. I feel guilty." (H13).

Theme 2. Disease / consequences of the isolation process

Seven of the patients reported that they had to cope with the physical damage they encountered as a result of the illness / isolation process. Some of the patients' statements were as follows:

"I still have no cure. I have difficulty in my joints when going up and down stairs. I get tired very quickly. " (H3);

"I thought a lot and was tiring myself. Thoughts caused insomnia. I experienced loss of appetite and weight. " (H13).

Seventeen of the patients reported that they had difficulties in adapting to normal life psychologically as a result of their illness / isolation process. Some of the patients' statements were as follows:

"After I recovered, I turned into a more pimply person. I try to take every precaution against the possibility of re-infection. " (H6);

"I started praying five times a day. Because I was afraid of being caught off guard rather than illness. This was a means for me. " (H7);

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"The people around me have moved away and are still nervous. It is very difficult psychologically. " (H1);

"I'm very worried if there is any damage left." (H17).

Theme 3. Adapting to the new normal

All of the patients reported that they tried to adapt to their new normal living conditions due to the illness they had and the possibility of recurrence. The most important point in this regard was social distance and paying attention to wearing masks.

"I definitely do not go into crowded places." (H1);

"I care about mask and distance ten times more than usual." (H12).

More than half of the patients also reported that they tried to pay attention to hygiene:

"I pay attention to common areas at home. I take a shower every day. " (H10);

"When I got on public transport, I was trying not to touch anything. When I have to touch it, I clean it with cologne and touch it. " (H16);

"I wash my hands often. I use disinfectant. My hands have always been hurt. " (H18).

The patients reported that they tried to pay attention to their nutrition in order to keep the body resistance high while adapting to the new normal life. It drew attention that patients used alternative methods for this purpose:

"I drink lemon water to keep my body resistance strong. I'm taking vitamin C supplements. " (H2);

"I drink honey, ginger, quince stem and linden." (H10).

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CONCLUSION

The aim of this study was to examine the experiences of COVID-19 patients in the isolation process. The main themes of the research are; Struggle in isolation, results of the disease / isolation process and adjustment to the new normal. Most of the patients reported that they had to cope with the fear of death, the fear of infecting their families / others, and the feeling of loneliness. The concern of re-contamination and illness after recovery was often mentioned. Patients frequently emphasized that people avoided them in isolation and the subsequent process.

In this study, patients diagnosed with COVID-19 stated that they experienced psychological symptoms such as fear of death, loneliness / helplessness related to the disease and isolation. There are studies showing that the COVID-19 virus is a pandemic virus with high mortality, causing higher fear of the disease in patients (7–9). The COVID-19 pandemic causes high morbidity and mortality rates. The unknown process of the disease and the lack of treatment cause anxiety in patients (17). Sun et al. (7) reported that patients diagnosed with COVID-19 have intense feelings of fear, denial, and stigma regarding the disease, and an uncertainty regarding the illness and being in the hospital. In another study in which the experiences of COVID-19 patients were investigated, it was emphasized that patients experienced emotions such as fear, denial, anxiety and thinking that they would die (18).

Most of the patients in the study stated that everyone avoided them during the isolation process. Therefore, patients had to cope with the feeling of loneliness. The statement of one of the patients was (H7) *"I locked myself in a room at home. I separated everything. I always wore slippers. I accidentally stepped on the carpet outside (from the room) once. My wife gave it to wash.* ". One of the patient statements in a qualitative study conducted with patients diagnosed with COVID-19 positive was *"I cannot get out of the door of the room and there is no person to talk to in my room.*

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I feel so alone. I lie in bed and just look at the ceiling." Because of the feeling of loneliness and escape from COVID-19 patients, patients diagnosed with COVID-19 can experience intense feeling of stigma. In this case, patients may feel more alone (7).

Despite the negative effects of the patients on COVID-19 infection and disease, the patients stated that they realized the importance of survival and health. The patients stated that they paid more attention to the isolation rules after the treatment and they paid attention to their diet. Some statements by the patients were (H2) *"I drink lemon water to keep my body resistance strong. I'm taking vitamin C supplements."* and (H12) *"I care about masks and distance ten times more than normal."* in this study. COVID-19 patients pay more attention to their health due to the unknown process of the disease, high mortality rates, and not being exposed to difficult isolation conditions (7,12).

CONCLUSION

COVID-19 patients were most frequently found to have had psychological difficulties during the isolation process. Due to the unknown and degrading process of the disease and its treatment, patients have difficulty returning to their normal lives. After the long isolation process, patients may need support to hold on to life and take care of their health. Improvements are recommended to improve rehabilitation and adaptation of COVID-19 patients. Psychological support of patients in isolation and the subsequent process is important in order not to experience post-traumatic stress syndrome. Within the scope of home care nursing, these patients should be followed-up and integrated care should be provided after discharge.

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Tablo 1. Participants characteristics

Patients	Age	Gender	Education	Having chronic illness	Cchronic illness	Hospitalization due to COVID-19	Number of days of hospitalization
P1	30	Female	High school	No	-	No	-
P2	29	Female	High school	Yes	Asthma	No	-
P3	55	Female	Primary school	Yes	Asthma	Yes	10
P4	56	Female	Primary school	Yes	Hypertension	No	-
P5	51	Male	University	No	-	Yes	3
P6	47	Female	High school	No	-	No	-
P7	47	Male	Primary school	Yes	Hypertension	No	-
P8	40	Female	Primary school	No		Yes	1

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P9	40	Female	Primary school	Yes	Diabetes, Asthma, Hypertension	No	-
P10	21	Female	University	No	-	No	-
P11	21	Female	University	No	-	No	-
P12	21	Female	University	No	-	No	-
P13	46	Female	Primary school	No	-	No	-
P14	73	Female	Illiterate	Yes	Asthma	No	-
P15	31	Female	University	No	-	No	-
P16	19	Female	University	No	-	No	-
P17	42	Female	Primary school	No	-	No	-
P18	22	Male	High school	No	-	No	-

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Table 2. The themes and subthemes

Themes	Struggle in isolation	Disease/ consequences of the isolation process	Adaptation to the new normal
Subthemes	Combat symptoms of the disease	Physical consequences	Nutrition
	The fear of death	Psychological consequences	Hygiene
	Fear of contagion		Social distancing and wearing a mask
	Feeling of loneliness / helplessness		

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Assessment of hematological parameters of hospitalised patients with COVID-19

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Abstract

Purpose: Coronavirus disease 2019 (COVID-19) was first discovered in Wuhan, China, towards the end of 2019, and became a major public health issue worldwide. In this study, we aimed to investigate the hematological parameters and inflammatory indexes of hospitalized COVID19 patients.

Methods: Data were collected retrospectively with the Laboratory Information System, which provides detailed information about the age, gender, diagnosis and hospitalization unit of the patients between October and December 2020. Peripheral blood parameters, neutrophil lymphocyte ratio (NLR) and platelet lymphocyte ratio and C-reactive protein were compared among Intensive Care Unit (ICU) and non-ICU patients.

Results: Of the 186 patients included in the study, 62.4% were male and the average age was 67,87 ± 14,66 years. 80 patients were receiving treatment in the intensive care unit (43%). White blood cells, neutrophils, platelets, platecrit, platelet distribution width (PDW), NLR and PLR were statistically higher, lymphocytes were lower in ICU patients compared to non-ICU patients ($p < 0.05$). CRP positively correlated with PLR, NLR and neutrophils ($r=0.307$; $p<0.001$, $r=0.367$; $p<0.001$, $r=0.253$; $p=0.001$), and negative correlated with lymphocytes ($r=-0.314$; $p<0.001$).

Conclusions: Patients with COVID-19 in ICU showed significant differences in hematological parameters and inflammatory indexes compared with patients in non-ICU. NLR, PLR and lymphocyte count with CRP can be useful to predict the disease severity.

Keywords: coronavirus disease 2019, neutrophil-to-lymphocyte ratio, platelet-to lymphocyte ratio, C-Reactive Protein

Introduction

Coronavirus disease 2019 (Covid-19, Severe Acute Respiratory Syndrome Coronavirus 2 (SARSCoV-2)) first discovered in the state of Hubai of China and spread rapidly to the other countries, still continues all over the World (1). As of January 15, 2021, COVID-19 has been confirmed in 90,335,008 cases and has resulted in 1,954, 336 deaths worldwide in 223 countries (https://covid19.who.int/). COVID-19 transmission from person to person occurs with close contact through droplets. Covid-19 infection causes a wide range of clinical spectrum as asymptomatic,mild, severe an deven death (2 ,3).

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As in the diagnosis and treatment of many diseases, the laboratory findings included biochemical and hematological parameters have an important role in Covid-19 infection (4). Previous studies of Covid 19 disease reported that the biochemical and hematological data correlate with the severity of the disease (5,6,7,8).

In this study, we aimed to evaluate the hematological parameters (e.g. neutrophils, lymphocytes and platelets) and blood cell count indexes of NLR and PLR in hospitalized COVID-19 patients.

Methods

The current study retrospectively enrolled 186 confirmed COVID-19 patients who were hospitalised in Pamukkale University Hospital from 1 October to 31 December 2020. The diagnosis was confirmed by detecting SARS-CoV-2 RNA with reverse-transcription polymerase chain reaction in combined oro-nasopharyngeal swabs. We obtained data with the Laboratory Information

System which provides detailed information about the age, gender, diagnosis, laboratory values and hospitalization unit of the each patient. The complete blood count analysis (CBC) was performed using the Mindray BC-6800 Hematology System (Shenzhen Mindray Bio-Medical Electronics Co., Ltd., China) through the electrical impedance method. CRP levels were analyzed with electrochemilumisence method on Cobas 702 AutoAnalyzer (Roche Diagnostics GmbH, Mannheim, Germany. Neutrophil/lymphocyte ratio (NLR) and platelet/lymphocyte ratio (PLR) were calculated in accordance with the CBC results. We divided the patients into two groups; Intensive Care Unit (ICU) and non-ICU patients.

Statistical analysis

All the statistical analyses were carried out using SPSS 25.0 software. Kolmogorov Smirnov test was used for determination of normal distribution, and the continuous variables were defined by the mean ± standard deviation, median (min–max), while the categorical variables were expressed as number (percentage). In order to compare the independent groups, an Independent Samples *t*-test was used parametric test assumptions were provided, and Mann whitney u test were used when parametric test assumptions were not provided. Differences between categorical variables were made using chi-square test. Spearman correlation tests were used to determine the relationship between variables. Statistical significance was set at $p<0.05$.

Results

Of the 186 patients included in the study, 62.4% (n:116) were male and the average age was 67,87 ± 14,66 years. The age and laboratory data of all the patients included are demonstrated in Table 1 . 80 patients were receiving treatment in the intensive care unit (43%). 65% (n:52) of ICU patients were male. No significant differences in ages were observed between patients in ICU and non-ICU. White blood cells, neutrophils, platelets, platecrit, platelet distribution width (PDW), NLR and PLR were statistically higher, lymphocytes were lower in ICU patients compared to non-ICU patients ($p<0.05$) (Table 2). The correlation

analysis showed a significant positive correlation of CRP with PLR, NLR and neutrophils (r=0.307; p<0.001, r=0.367; p<0.001, r=0.253; p=0.001) and a significant negative correlation with lymphocytes (r=-0.314; p<0.001) (Figure 1).

Discussion

In recent years, several biomarkers of systemic inflammation have become available based on CBC and these are non-invasive, easy-to-measure, routine and low cost (9,10).

According to the studies conducted with COVID-19 the haematology laboratory is important in providing several useful prognostic markers. Routine laboratory parameters may help estimate patient risk by guiding the classification between mild and severe COVID-19 cases.

(11,12,13) In the present study, hematological parameters were evaluated in hospitalised patients and compared between patients treated in ICU and non-ICU.

NLR and PLR are the novel prognostic inflammatory markers and Fest J. et al provided reference values in the Rotterdam Study for NLR: 1.76 (0.83–3.92), for PLR: 120 (61–239) (14). Several studies reported elevated values of these markers in Covid-19 disease (6,15,16) and our findings were consistent with those of previous studies that NLR, PLR, and CRP levels were increased in hospitalised Covid-19 patients; CRP was positively correlated with NLR, PLR and neutrophils; negatively correlated with lymphocytes.

In terms of patients in ICU and non-ICU, the proportion of patients in ICU had higher white blood cells, neutrophils, platelets, platecrit, PDW, NLR and PLR and lower lymphocytes compared to non-ICU patients. Fan BE et al. conducted a study in a small cohort of 9 Covid-19 patients in ICU and 58 Covid-19 patients in non-ICU, and found that lymphocytes count was significantly lower in ICU patients (17).

Kazancioglu et al. reported lower lymphocytes, eosinophils, basophils and platelets, and higher DNI, NLR and PLR were found in COVID-19 compared to healthy controls and also concluded PLR during follow-up may be more useful compared to NLR to predict the disease severity (18). Similarly, Yang et al. found that NLR and PLR are the diagnostic and predictive indexes in COVID-19 patients (6).

This study had some limitations. First, the inadequate number of patients and secondly this is a laboratory based retrospective study and we couldn't reach the patient histories including comorbidities, clinical characteristics or medications.

Conclusion

Patients with COVID-19 in ICU showed significant differences in hematological parameters and inflammatory indexes compared with patients in non-ICU. NLR, PLR and lymphocyte count with CRP can be useful to predict the disease severity.

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Table 1. Age and laboratory parameters of patients

	Mean ± SD	Median (min - max)
Age (year)	67,87 ± 14,66	69,5 (26 - 97)
White Blood Cell (K/uL)	10,7 ± 6,57	9,24 (0,31 - 44,92)
Red Blood Cell (M/uL)	4,38 ± 0,71	4,37 (1,99 - 7,12)
Hemoglobin (g/dL)	12,59 ± 2,17	12,6 (5,1 - 20,9)
Neutrophil (K/uL)	9,06 ± 6,32	7,96 (0,08 - 40,15)
Lymphocyte (K/uL)	1,07 ± 0,64	0,96 (0,09 - 3,85)
NLR	**12,67 ± 14,65**	8,02 (0,11 - 131,29)
Platelet (K/uL)	254,9 ± 103,48	246,5 (52 - 583)
Plateletcrit, (%)	0,24 ± 0,09	0,23 (0,04 - 0,57)
MPV (fL)	9,68 ± 1,26	9,5 (7,5 - 14,8)
PDW (%)	16,23 ± 0,46	16,2 (15,2 - 19)
PLR	**341,27 ± 314,12**	265 (48,3 - 3188,9)
CRP (mg/L)	**86,72 ± 78,64**	67,78 (0,32 - 422,6)

NLR: Neutrophil-to-lymphocyte ratio; CRP: C-reactive protein; PLR: Platelet-to-lymphocyte ratio; MPV: Mean platelet volüme; PDW: Platelet Distribution Width

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Table 2. Comparisons of demographic and hematologic parameters between ICU and non-ICU patients

	ICU (n:80)	Non-ICU(n:106)	
	Mean ± SD	Mean ± SD	*p*
Age (year)	68,05 ± 14,73	67,74 ± 14,67	0.885
WBC (K/uL)	12,46 ± 6,85	9,37 ± 6,05	0.0001
RBC (M/uL)	4,3 ± 0,59	4,44 ± 0,79	0,082
HGB (g/dL)	12,42 ± 1,76	12,72 ± 2,44	0.33
NEU (K/uL)	11,04 ± 6,48	7,56 ± 5,79	0.0001
LYM (K/uL)	0,86 ± 0,56	1,23 ± 0,65	0.0001
NLR	17,26 ± 12,96	9,2 ± 14,96	0.0001
PLT (K/uL)	277,31 ± 103,08	237,99 ± 101	0,006
PCT (%)	0,27 ± 0,09	0,22 ± 0,09	0,001
MPV (fL)	9,79 ± 1,26	9,6 ± 1,25	0,235
PDW (%)	16,3 ± 0,39	16,17 ± 0,5	0,016
PLR	429,11 ± 266,54	274,97 ± 331,79	0.0001
CRP (mg/L)	100,39 ± 91,55	76,41 ± 65,87	0,087

NLR: Neutrophil-to-lymphocyte ratio; CRP: C-reactive protein; PLR: Platelet-to-lymphocyte ratio; MPV: Mean platelet volüme; PDW: Platelet Distribution Width

Figure 1: The correlation analysis between CRP and NLR, PLR and Lymphocyte

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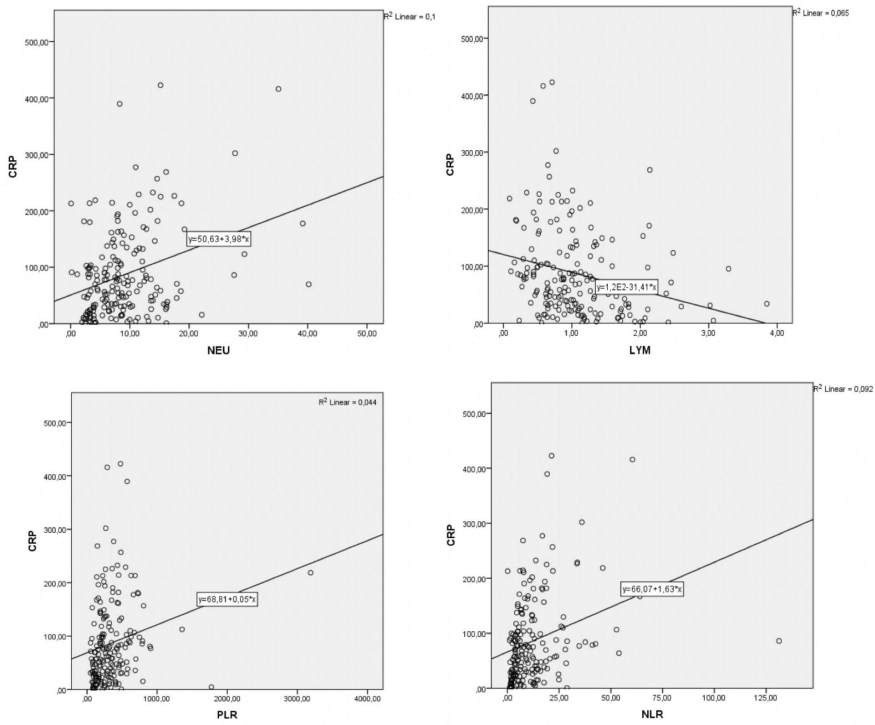
Oral Presentation No: 29348

Covid-19 Pandemic and Its Effects on the Education of Nursing Students

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ABSTRACT

The aim of this review is to examine the effects of the COVID-19 pandemic period on the education of nursing students. The etiological agent identified by the World Health Organization as COVID-19, Sars-CoV-2, has caused a global epidemic all over the world. The COVID-19 pandemic is a serious public health problem and nurses have been managing the process by playing a key role, facing serious challenges in this pandemic process. The pandemic also affects the education and learning process of nursing students. Disruptions in internships in health care organizations make it difficult for students to develop their care practice skills. Differences in access to information and communication technologies are added to the difficulties experienced by students. Due to the difficulties experienced by the students, learning approaches are rapidly being developed in many countries in line with technological and practical learning needs. A holistic education program consists of a combination of effective communication techniques through active formal teaching and technological resources, along with students, teachers and learning resources. In the COVID-19 pandemic, it is thought that students should be supported by universities with practice videos of theoretical courses and psychological counseling services to cope with stress. As a result, universities providing nursing education should plan educations by identifying strategies for developing learning skills with online educations.

Key Words: Pandemic, Nursing Students, Education

Covid-19 Pandemic and Its Effects on the Education of Nursing Students

The virus, called Covid-19, which spreads around the world and causes severe pneumonia, was first seen in Wuhan, China. Covid-19 was declared as a pandemic by the WHO (World Health Organization) on March 11, 2020, due to its occurrence in 114 countries (118 thousand people in total) and resulting in deaths (4,291). The first case in our country was detected in March 2020 and due to an increase in the number of COVID-19 cases, the Ministry of Health, higher education institutions and the Ministry of National Education aimed to reduce the pandemic by deciding to temporarily close schools, universities, primary and secondary education institutions as of March, 25 by taking a joint decision.

Covid-19 pandemic not only causes many changes in social life; and also causes changes and improvements by affecting the education, work economic situations. Because of the pandemic, schools were closed in many countries, as in other pandemic processes. In the 2019-2020 education

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and training program, most school education and training was transferred to the next year, some of the schools preferred to continue online system education through technological systems by preferring the distance education. In Canada, online conferences were organized to find a solution to the education of nursing students during the pandemic, they aimed not to reduce the quality of education of students, to prevent transmission and contagion, to minimize financial burden and to prevent academic concerns.

It is reported that these changes today seriously affect the delivery of health care. Management of a health care plan that covers the entire community from the beginning to the end of the pandemic process becomes important. Education is an important marker in the effectiveness of health care plan management. Different methods used to increase learning are approaches that affect education, such as storytelling, question-answer, and brainstorming. In these methods, which are often used in learning, while the teacher plays an active role, the student is in a passive state. The idea that the education that students receive face-to-face is the best education has been questioned over time that online education supports technological innovations. Innovations in information and communication technologies constitute the necessity of distance education. This form of education addresses the inequality of opportunity in education, individual learning-based, supporting the use of educational technology, applications ensure the maintenance of life-long learning. Online education has been a revolution in education since the first day of its emergence, the concept of distance has been destroyed, especially thanks to online courses that support life-long learning, it has made great contributions to professionalism by strengthening interpersonal interaction and communication, it facilitates the education process, especially for graduate nursing students. It was found that students who received online education in America had a higher academic success rate than students who received traditional education. In some countries, it has been determined that during the pandemic, students experience distrust of the evaluation criteria of exams during the transition from face-to-face education to online education, restrictions on internet access, anxiety caused by the process, and inadequacies due to the new formation of distance education programs of universities. During the pandemic in Turkey, the Higher Education Council (YÖK) has tried to ensure crisis management by making quick decisions on the turning the 2020 spring semester into the distance education. Along with these decisions, formal education had a break in all educational institutions, local and central exams were postponed, and the creation of an online exam system for measuring and evaluating student success was decisively implemented in distance education. Online (e-education and training) has also been applied in nursing undergraduate and graduate programs. The distance education system had to be adapted quickly to the system designed according to formal education. This is in the form of internet technologies, computers and the introduction of web-supported education.

Conclusion: In nursing education, the technological infrastructure of countries and the readiness of the online system, the availability of individuals to the internet affect the effectiveness of online education.

While online education contributes greatly to the theory, it causes deficiencies in the education and training of nursing students such as practice and care, by setting up simulation laboratories, this process can be managed effectively by providing mask, distance, hand hygiene, and environment disinfection.

As a result of the establishment of online simulation laboratories to improve nursing practice skills, it is believed that active use will provide a new approach to nursing internship practice.

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The relationship between anxiety and pain in patients with chronic musculoskeletal pain during the Covid-19 pandemic

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ABSTRACT

Aim: The aim of the study was to examine the relationship between anxiety and pain in patients with chronic musculoskeletal pain during the Covid-19 pandemic.

Material and Methods: 58 patients with chronic musculoskeletal pain were included in the study. Demographic and clinical characteristics of the participants were recorded. The Visual Analog Scale (VAS) was used to assess pain intensity. The coronavirus anxiety of the participants was evaluated using the Coronavirus Anxiety Scale Short Form (CAS-SF).

Results: The mean age of the patients participating in the study was 50.43 ± 12.9 years. 25.9% of the participants were men. There was a statistically significant relationship between the VAS score and the CAS-SF score ($r = 0.334$, $p=0.010$).

Conclusion: As a result of the study, a relationship between anxiety and pain was found in patients with chronic musculoskeletal pain during the Covid-19 pandemic. Increasing anxiety level during this period may be a factor that increases pain intensity.

Keywords: Covid-19, pain, anxiety

INTRODUCTION

COVID-19, a disease caused by the coronavirus SARSCoV-2 (Severe Acute Respiratory Syndrome-Coronavirus-2), is a global health problem (1). The COVID-19 pandemic has affected economy, businesses, and the healthcare sector, (2). Among these, economic measures, changing the priority order of health services and social isolation practices are the most prominent ones (3). In this respect, the medical care for patients with chronic pain may be negatively affected.

Chronic musculoskeletal pain restricts daily activities and decreases the quality of life (3). The COVID-19 pandemic has many features (such as long-lasting stress) that can potentially trigger and increase chronic pain (4). The aim of the study was to examine the relationship between anxiety and pain in patients with chronic musculoskeletal pain during the Covid-19 pandemic.

METHODS

58 patients with chronic musculoskeletal pain were included in the study.

Demographic and clinical data of the participants were recorded.

Visual Analogue Scale (VAS) was used to evaluate pain intensity. The participants were asked to mark the point that best described their pain intensity on a 100 mm line with two endpoints representing "no pain" and "worst pain". The distance between the marked point and "no pain" end indicates the patient's intensity of pain (5).

The CAS-SF is a brief mental health screener to identify potential cases of dysfunctional anxiety associated with the COVID-19 crisis. Each item is rated on a 5-point scale to reflect the frequency of the symptom, ranging from 0 (not at all) to 4 (nearly every day) over the preceding two weeks. The total score ranges from 0 to 20. Higher scores indicate increased anxiety (6). The Turkish version of the CAS-SF score was found as valid and reliable (7).

RESULTS

The mean age of the patients participating in the study was 50.43±12.9 years. 25.9% of the participants were men (Table 1).

There was a statistically significant relationship between the VAS score and the CAS-SF score (r = 0.334, p=0.010).

DISCUSSION

The finding of the study was that there is a relationship between pain and anxiety in patients with chronic musculoskeletal pain during the Covid-19 pandemic. The undesirable effects of the pandemic are not only physical but also psychological (8). An increase in anxiety and depression levels is reported in relation with the COVID-19 pandemic (9). These negative psychological effects are a risk factor for individuals with chronic pain (10).

In conclusion, a relationship between anxiety and pain was found in patients with chronic musculoskeletal pain during the Covid-19 pandemic. Increasing anxiety level during this period may be a factor that increases pain intensity.

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Table 1. Characteristics of the participants

(n =58)	Mean± SD
Age (years)	50.43±12.9
Sex (male, %)	25.9
Height (cm)	164.75±6.3
Weight (kg)	76.77±11.4
Body mass index (kg/m^2)	28.03±4.1

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Determination of Attitudes of Students Receiving Nursing Education towards the Distance Education Method in the COVID-19 Process

Running Title: Distance Education in Nursing

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ABSTRACT

Purpose: The educational activities continue online to reduce the spread of COVID-19, which has been declared as a pandemic by the World Health Organization. This study was conducted to determine the "Attitudes towards Distance Nursing Education" of the students in this period.

Methods: The study universe consists of N=640 distance education students at the Nursing Faculty of a university in Northern Cyprus in the fall semester of 2020-2021.All students were investigated without sample selection and n=425 students who agreed to participate in the study were reached. The data of the study were collected online between 25-29 December 2020 using the Personal Information Form and the "Attitude Scale towards the Distance Nursing Education" to determine the socio-demographic characteristics of the students.For the research, student approval was obtained with the permission of the institution and ethics committee.

Results: In the study, 64.9% of the students are female, 30.4% are in the fourth grade, 78.8% are living in their families' home and 68.7% of the students haven't received web-based education before. The total score of the "Attitude Scale towards the Distance Nursing Education" is 99.14±11.58 and the average was good and statistically significant in favor of distance education(p<0.05).

Conclusion: It has been revealed that students who receive distance nursing education during the COVID-19 pandemic show positive attitude in terms of distance education.It is thought that the ability of students to interact with the instructor in online lessons and to watch the recorded lessons at the frequency and time they want is thought to affect this result.

Keywords: COVID-19, nursing education, distance education

INTRODUCTION

New Type coronavirus (SARS-CoV-2) induced COVID-19 infection, has emerged in the end of December 2019 in Wuhan city of China. The highly contagious virus spread rapidly to the world in a short time and was declared a pandemic by the World Health Organization (WHO). In this process, it was necessary to take social isolation measures in the society and to change the way people live and work in order to break the chain of contamination, control the pandemic (1-2). In many countries, it has been decided to temporarily close educational institutions in order to reduce the spread of the COVID-19 pandemic. The first case was detected in the Republic of Turkey (TR) on March 11, 2020 and was primarily discussed the issue of education. TR Ministry of Health announced that educational institutions with up to 25 March 2020has been temporarily shut down since (3). The Council of Higher Education (YÖK) has decided to continue the 2020-2021 spring term education and training process with the distance education method (3-4). With these explanations, face-to-face education was suspended at all educational levels, it was decided to postpone local and central exams and to use online methods to evaluate student success. Distance education is the educational process in which learning takes place by using communication and educational technology opportunities, although the learner and the teacher do not share the same physical environment (5). COVID-19 has also caused widespread problems in the education of undergraduate students receiving nursing education (6-7).

The purpose of nursing education; To raise professional nurses who have the knowledge, skills and attitudes that can determine, plan, implement and evaluate the nursing care needs of individuals in

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every setting, in line with basic knowledge of health sciences and the health needs of the society (8). It was stated that students who continue their education in nursing programs can complete their practical training in health units or distance education using methods such as simulation training, skill videos, virtual classroom, projects, case studies (9). There are many studies to determine the problems and solutions experienced by students who receive distance health education due to the COVID-19 pandemic regarding the education process. In the studies done; It was determined that students' education was interrupted due to inadequacies arising from the distance education system and internet infrastructure conditions, they experienced emotional state and exam anxiety caused by the pandemic, they had difficulty in following the lessons and could not get enough efficiency from the lessons (6-10). In another study, it was stated that staying away from the practice area of nursing students, whose field of application is health institutions, negatively affected their vocational knowledge and skill learning, and therefore, distance education system was not a suitable method for nursing students (11). In the literature, there are studies stating that the distance education method increases the professional knowledge and skills levels of nursing students and their strengths and weaknesses and contributes to the professional development of students compared to the traditional education method (12-13-14). It is necessary to understand the experiences and expectations of nursing students in education life during the pandemic, to provide sufficient resources to nursing students by responsible instructors and to reorient university education. This study was conducted in order to determine the "Attitudes towards Distance Nursing Education" of the students who received nursing undergraduate education with the distance education method during the COVID-19 pandemic process.

METHODS

The study was conducted descriptively and cross-sectionally between 25-29 December 2020. The universe of the study consists of 640 students studying at the nursing faculty of a university in the Turkish Republic of Northern Cyprus in the fall semester of the 2020-2021 academic year. In the study, no sample selection was made and it was aimed to reach all students. A total of 425 students who accepted to participate in the study were reached and the percentage of participation in the study was 66%.

The data of the study were collected using the Personal Information Form to determine the sociodemographic characteristics of the students, and the Attitude Scale towards Distance Nursing

Education (astDNE). The data were collected online by obtaining the consent of the students after the purpose of the study and how to fill the form were explained by the researchers. It took 10-15 minutes for the students to fill out the forms.

Personal Information Form: Prepared by the researchers, it consists of 22 questions that are thought to affect the introductory characteristics of nursing students and their attitudes towards distance nursing education.

astDNE: The scale was developed by Yüksekdağ and Barlas in 2015. The scale is a five-point likert type consisting of 25 items. It consists of five sub-dimensions: "interaction", "learning styles", "support services", "interaction tools", and "content delivery". The scale is evaluated on the total score of both the total and sub-dimensions, and as the score increases, its positive attitude towards distance nursing education increases. The highest score that can be obtained from the scale is 125 and the lowest score is 25. The internal consistency coefficient of the scale was determined to be 0.94 (15). In this study, Cronbach alpha value was found 0.89. The dependent variable of the study is the mean score of UHEIT, and the independent variables are its introductory characteristics (age, place of residence, previous distance nursing education, etc.)

Statistical Analysis

Study data were analyzed using the Statistical Package for Social Sciences (SPSS) 21.0 statistical package program. Percentage and frequency were used for descriptive analysis in the study, and Kolmogorov-Smirnov normality test was used for the distribution characteristic of quantitative variables for the selection of appropriate hypothesis tests. Independent T Test was used for data conforming to normal distribution and Kruskal Wallis Test for data not conforming to normal distribution. Statistical significance level was accepted as $p < 0.05$.

Ethical Aspect of Research

Ethics committee approval (2020 / 86-1234) from the Ethics Committee of a university and institutional permissions from the Nursing Faculty of the same university were obtained in writing. It is stated in the Personal Information Form that the purpose of the research is that the information to be obtained from the research will be kept confidential and the research is voluntary.

RESULTS

Looking at the descriptive characteristics of the students in Table 1; 64.9% were in the female gender group, 30.4% were in the fourth grade, and 78.8% were living in a home environment with their family. It was determined that 96.5% of the participants used internet resources for nursing education before and 68.7% of them had received distance nursing education before. 39.5% of the students stated that they can access the internet through home and mobile network.

Students' views on distance nursing education are given in Table 2. 46.6% of the students are of the opinion that there is a decrease in the interest shown in the lessons given by distance nursing education, 85.2% of the distance education makes a difference in the study order, and 40.5% of them have a decrease in the study time. In addition, it was determined that 37.6% of the students had sufficient opinion in theoretical knowledge, 64.9% were insufficient in professional practice skills, and 79.8% of distance nursing education was not as effective as face-to-face education.

It was determined that students spend 43.40 ± 29.80 hours weekly for general internet use and 21.86 ± 19.39 hours for distance nursing education.

In Table 3, the distribution of students' astDNE total and sub-dimensions score averages are given. The total score average of the students from the scale is 99.14 ± 11.58 (min: 57, max: 125).

The distribution of astDNE score average according to some introductory characteristics of the students is given in Table 4. A statistically significant relationship was found between the astDNE score average of the students place of residence (x2: 12.810, p: 0.005), interest in distance nursing education (x2: 14.854, p: 0.001) and the effect of distance nursing education on study time (x2: 7.832, p: 0.001) (p <0.05). In addition, a statistically significant relationship was found between the mean scale score of the students and the effect of distance nursing education on professional practice skills (x2: 8,934, p: 0.011) and theoretical knowledge level (x2: 19.336, p: 0.001) (p <0.05).

A statistically significant relationship was found between the astDNE score average of the students and the opinion that they had previously received distance nursing education (t: 2.893, p: 0.004) and that distance nursing education was as effective as face-to-face education (t: 3.915, p: 0.001) (p <0.05).

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DISCUSSION

One of the most important areas affected by the coronavirus, which emerged in a short time and spread all over the world, is the education sector. Globally, the COVID-19 pandemic has affected the education system in many countries, causing some necessary changes in the way education is implemented, and countries have switched to distance education instead of traditional face-to-face education (16).

Nursing education requires an education system based on theoretical and clinical practice that supports students' cognitive, sensory and psychomotor skills. Therefore, in the nursing education process, it is aimed to gain clinical skills as well as theoretical knowledge and to develop acquired skills. Clinical education enables the student to integrate theoretical knowledge and practice in health care settings and to learn by experiencing (17).

The nursing profession, which is an applied science and focuses on people, through distance education brings many situations for both educators and students. Studies aiming to determine the attitudes and opinions of nursing students regarding distance education are increasing in the literature during the pandemic process (17-19) In our study, it was based on the determination of the attitudes of students who received nursing undergraduate education towards distance nursing education. The total score average of astDNE students participating in the study was determined as 99.14 ± 11.58 (min: 57, max: 125). As the astDNE score increases, the positive attitude towards distance nursing education increases. Considering that the highest score that can be obtained from the scale is 125, it can be said that the general attitudes of the students towards distance nursing education are positive and high in this study. When the literature is examined, there are different attitude results of nursing students regarding the distance education method. In the study conducted by Kurtüncü and Kurt (2020), it was stated that nursing students experienced many problems related to the distance education method, they found the method inadequate, and they experienced anxiety and distrust towards exams to be made on the internet (18). In the study conducted by Kızıltepe and Kurtgöz (2020), the attitude of the students was evaluated as medium (17). In the study of Keskin and Kaya (2020), students stated that distance education is not as effective as face-to-face education (19). The reasons why student attitudes towards distance education differ; It is thought that students do not have or have limited internet access, experience problems due to the system used by the instructors and the university, the home environment is not suitable, they do not have devices that can provide access to the lessons, and time-related problems (11, 16-18).

In our study, 85.2% of the students stated that distance education made a difference in the study order and 40.5% of them stated that their study time decreased. In the study of Özdoğan and Berkant (2020), it was observed that students showed a positive attitude regarding distance education, due to the opportunity to work at their own pace, to offer flexible working opportunities independent of time and space, and to save time (20). The high average score of the attitude scale in our study is thought to be due to the positive change in the study patterns and duration of the students.

It is known that face-to-face training is important and effective in the acquisition of psychomotor skills in nursing education that requires clinical practice skills. It was observed that students who received nursing education with the distance education method felt inadequate in professional practices and stated that distance education was not as effective as face-to-face education (14, 16, 18, 20, 14, 21, 22). In the study of Kurtüncü and Kurt (2020); While 73.6% of the students stated that they had difficulties in applied lessons with the distance education method, 79.8% stated that they had difficulties in learning due to the distance education of nursing practice skills (18).

While 64.9% of the students participating in our study stated that distance nursing education was insufficient for professional practice skills, 79.8% stated that it was not as effective as face-to-face education. It is thought that learning through eye contact, touch and exchange of experience in the field of practice in professional applied disciplines will not be possible through distance education.

Limitations of the Study

The research is limited by the time period of the research, the students included in the sample and the data collection tools used. The fact that not all students could be reached in the study may have created a limitation for the study in terms of the number of samples. The study is limited to the views of students studying nursing at a university and cannot be generalized to the population.

CONCLUSION

In the COVID-19 pandemic, the education process also challenges students in addition to the stress caused by the pandemic. Regarding applied courses, new strategies covering the following semesters should be

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developed in line with the possibilities of their schools. Students enrolled in distance education programs should have adequate access and effective use of learning resources, including libraries, information resources, laboratories and equipment. Trainings on distance education methods should be organized for students and lecturers. In addition, it is thought that universities should provide psychological support to cope with students' stress and anxiety.

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TABLES

Table 1. Distribution of Descriptive Characteristics of Students Studying at the Faculty of Nursing (n:425)

Descriptive Characteristics		n	%
Sex	Female	276	64.9
	Male	149	35.9
Class	1	101	23.8
	2	81	19.1
	3	114	26.8
	4	129	30.4
Living place	Alone	14	3.3
	Dorm	28	6.6
	Homestay	335	78.8
	Home with friend (s)	48	11.3
Income level	Low	163	38.4
	Middle	236	55.5
	High	26	6.1
Use of internet resources for nursing education	Yes	410	96.5
	No	15	3.5
Having received distance nursing education before	Yes	113	31.3
	No	292	68.7
Internet access resource	Home network	143	33.6
	School network	14	3.3
	Mobile network	45	10.6
	All	51	12.0
	Home network + school network	4	0.9

	Home network + mobile network	168	39.5

Table 2. Students' Views on Distance Nursing Education (n:425)

Opinions on Distance Nursing Education		n	%
Interest in distance nursing education	Increased	47	11.1
	Reduced	198	46.6
	Same	180	42.4
The difference that distance education creates in the study order	Yes	362	85.2
	No	63	14.8
Effects of distance nursing education on study time	Increased	110	25.9
	Reduced	172	40.5
	Same	143	33.6
The effect of distance nursing education on theoretical knowledge level	Insufficient	124	29.2
	Sufficient	160	37.6
	Partially	141	33.2
The effect of distance nursing education on professional practice skills	Insufficient	276	64.9
	Sufficient	46	10.8
	Partially	103	24.2
Distance nursing education is as effective as face-to-face training	Yes	86	20.2
	No	339	79.8

Table 3. Students' Attitude Scale Towards Distance Nursing Education and Sub-Dimensions Mean Scores

Scale and Sub-dimensions	Min	Max	Mean±SD
Interaction	10	30	23.17±3.67
Learning Styles	14	30	23.11±3.63
Support Services	12	30	25.36±3.06
Interaction Tools	8	20	15.40±2.49
Content Delivery	5	15	12.10±1.82
Total Score	57	125	99.14±11.58

*SD: Standard Deviation

COVID-19 Pandemisinde Araştırma-Yayın ve Eğitim Süreçlerine Bakış Kongresi, 15-16 Ocak 2021

Table 4. Distribution of Students' Attitude Scale Towards Distance Nursing Education Scores According to Some Descriptive Characteristics

Total Score / Descriptive Characteristics		Mean±SD	x^2	p
Living place	Alone	103.85±10.12	12.810	0.005
	Dorm	92.64±11.23		
	Homestay	99.53±11.75		
	Home with friend (s)	98.85±9.73		
Interest in distance nursing education	Increased	102.23±10.23	14.854	0.001
	Reduced	96.61±12.34		
	Same	101.12±10.47		
Effects of distance nursing education on study time	Increased	101.47±8.96	7.832	0.020
	Reduced	97.29±12.64		
	Same	99.58±11.74		
The effect of distance nursing education on theoretical knowledge level	Insufficient	95.38±12.16	19.336	0.001
	Sufficient	101.76±10.69		
	Partially	99.47±11.23		
The effect of distance nursing education on professional practice skills	Insufficient	97.98±11.72	8.934	0.011
	Sufficient	103.95±13.29		
	Partially	100.09±9.69		

* Kruskal-Wallis Test

COVID-19 Pandemisinde Araştırma-Yayın ve Eğitim Süreçlerine Bakış Kongresi, 15-16 Ocak 2021

Oral Presentation No: 31492

Covid 19 Knowledge Level In The Student of Faculty of Pharmacy - A Multidimensional Appraisal

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ABSTRACT

Aim: We aimed to determine the microbiological and pharmacological knowledge the level of students of the Faculty of Pharmacy about the Covid-19 virus, to define the ways to access information sources and what the difficulties in accessing resources are.

Method: Participants of the 1st and 2nd grades of the Faculty of Pharmacy were asked to fill out an online survey of 16 questions on a voluntary basis., and the data were analyzed in the SPSS-20 program by performing frequency analysis, chi-square analysis, and Mann-Whitney U tests.

Results: The study included 125 students. The average age is 19.6 and 70.4% of them are women. Participants mostly use social media as a source of information (84.8%). 62.4% know the name of Covid 19. The receptors of the Covid-19 virus is known by 64.8% and the virus attaches to the receptor is known by 52.8%. It is well known that Favipiravir is used in the treatment at our country (68.8%) While the contamination information were answered with high accuracy (100%), but gaps in convalescent plasma content and vaccine information are identified. 48.4% of respondents said the virus was produced for biological warfare purposes. There is no significant relationship between information sources and the knowledge level ($p > 0,05$). 35.3% of the participants stated that they use the internet for more than 3 hours and have difficulty in accessing information due to information pollution.

Discussion: Students of media usage rates are high. Students should be supported in accessing reliable academic sources containing accurate information.

Keywords: Covid-19, faculty of pharmacy, student, knowledge level

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INTRODUCTION

The Corona Virus Disease 2019 (Covid-19) pandemic led to a global crisis that has an impact on all dimensions of society (1). One of the most important crises arising due to the Covid-19 pandemic is education activities. According to the data of 2020 Global Education Monitoring Report of UNESCO, 1.57 billion students in more than 190 countries were affected by the pandemic. Also, Turkey has experienced similar situations. The training of more than 7 million people who have students in higher education institutions in Turkey, was interrupted. A new process in terms of continuity of education with the pandemic has started. Students were enabled to continue their education within the scope of distance education through online platforms, television or radio (2-3). Unlike the in person education method, distance education, which is a new model that is digitalized, lonely, has the responsibility of learning and requires autonomy, has undoubtedly changed the orientation of university students who had to move away from campuses (4). Students' level of knowledge and awareness have become important in this period when we reached the first year of the pandemic. Our research designed to determine the knowledge level of the students about Covid-19, what the sources of access to information and the effect of these sources on the level of knowledge are. In the literature review, while there are researches on Covid-19 the knowledge levels among the students of the Faculty of Medicine in our country, there has been detected any researches in the students of Faculty of Pharmacy who have the potential to become an important healthcare workers (5).

This study is a descriptive study to determine the level of microbiological and pharmacological knowledge level about Covid-19 and the effect of information sources on the level of the knowledge of undergraduate students 1st and 2nd years of the Faculty of Pharmacy.

MATERIALS and METHODS

Study design and sample

Our research is a cross-sectional and descriptive study. This study was conducted during 8 and 10 January of 2021. The sample of the study consists of undergraduate students from the 1st and 2nd years of the Faculty of Pharmacy. Before starting the study, relevant permission.s
.were obtained from the Ethics Committee of Afyonkarahisar Health Sciences University (No:08.01.2021/55). The students were asked to fill out a questionnaire which has 25 questions. 16 questions of the questionnaire measures the knowledge level by using the "Google Forms" application on a voluntary basis. A hundred twenty-five (125) students were included in the study.

The survey is a structured multiple choice questionnaire that was divided into sections. In the content of the questionnaire, demographic data - characteristics of the virus - symptoms of the disease - mode of transmission - ways of protection - drugs used globally and locally - information sources and internet usage rates were questioned.

Statistical analysis

Statistical analysis of all data obtained was made using SPSS 20.0 (Statistical Package for the Social Sciences) program. The data obtained were evaluated with descriptive statistics (arithmetic mean, median, standard deviation, percentage distributions). When comparing the mean of two independent groups, Independent Group T Test was used when parametric

conditions were met. Mann Withney U test was used when parametric conditions were not met. Chi-square test was used to compare the percentage of distribution of the categorical data between groups. The significance level of $p<0.05$ was considered.

RESULTS

While 51.2% of the 125 students participating in the study are first year students, 48.8% are second year students. The average age of the students is 19.6, 70.4% of them are women. The detailed demographic information of the participation is given in Table 1.

The sample was made with the participation of 90% of faculty students. 84.8% of respondents as a source of information for the new coronavirus disease declared that they use social media. The questions that we aimed to measure the knowledge level of 16 questions in terms of microbiological and pharmacology, maximum 14 and minimum 6 questions were answered correctly. The average correct answer is 10 ± 1.5. The knowledge level was determined as 62.5% out of 100. There was no difference between the 1st and 2nd grades in terms of the knowledge level ($p> 0.05$). 62.4% of the participants know the name of Covid-19 defined by the World Health Organization (WHO). There was no difference between the 2nd grade in terms of knowledge level on this subject ($p> 0.05$). The questions are asked to the participants and the distribution of their answers informations are given in Table 2.

While the rate of those who knows the receptors of the Covid-19 virus is 64.8%, the rate of those who knows which part of the virus attaches to the receptor is 52.8%. 68.8% of participants knows Favipiravir truly as an antiviral agent is used in the treatment in Turkey. The accuracy rate of mask, distance, prevention of hygiene rules and contamination information by droplet were 100%, and it was determined that the most mistakes were convalescent plasma content and vaccine information. The rate of those who declared that they believe the Covid-19 virus was produced for biological warfare purposes is 48.4%.

No significant relationship was found between the sources of information and the level of knowledge when looked one by one ($p>0.05$). However, the level of knowledge was found to be significantly higher in the group with webinar participation and following the process with more than one source ($p <0.01$). 35.3% of the participants use the internet for more than 3 hours outside class hours and point out information pollution as difficulty in accessing information.

DISCUSSION

Covid-19 period as in many countries of the world in order to take control spread of the disease, as well as training to in person were suspended in the Turkey. Web-based education process has started in our country. The distance education model is a model of students who are far away from each other and learning from resources (6). The distance education model is a dynamic network that is constantly evolving, changing and developing. In addition, many studies are needed to evaluate the effectiveness (7). This education model has disadvantages such as problems in access to technology, inequality of opportunity in disadvantaged groups, lack of social interaction, and lack of the in person training. On the other hand, it offers advantages such as learning lessons at any time regardless of time and place, diversity in

accessing information sources, effective use of information technologies and improving lifelong learning skills (8-9).

All undergraduate students of the Faculty of Pharmacy participated in this study, where we questioned the effect of this independence, flexibility and individuality (10) provided by distance education on Covid-19 knowledge level, which was not included in the curriculum, and the diversity of information sources. The vast majority of students declared that they obtained information about coronavirus through social media. Webinars and seminars were the least used source to access information about Covid-19. This result is thought to be due to the rapid and effortless access to information. Similarly, in 2020 Turkey Statistical Institute (TUIK) Household Survey on Information Technology Usage 16-24 age group according to the results of internet usage rate increased from 77% to 91.8% the last 5 years (11). Studies support that social media usage rates increase with the pandemic (12). In a study conducted with 652 university students, it shows that the social media usage hours of distance education students increased by 5.27 ± 2.98 hours during the COVID-19 process compared to the pre- COVID-19 (2.98 ± 2.12 hours) (13). In our study, the high rate of internet usage outside the classroom is striking. Although an one to one relationship was not determined between the information sources obtained from social media, television, seminars or the environment and the knowledge score (p> 0.05) (Table 3); the fact that the level of the knowledge is significantly higher in the group with webinar participation and following the process with more than one source material the effect of students in a positive way. Therefore, it explains that the effect on their knowledge level if students know how can they find true source materials.

Answering the questions of convalescent plasma and vaccine information are the least correct questions and it shows the research on corona virus remains at certain levels. The importance of the correct use of the mask and its role in preventing the spread of the disease is known (14). Information about mask, distance, importance of hygiene in protection and transmission routes were answered correctly by all participants. In this respect, knowing the usage of masks in the young age group participating in our study is promising for fighting the disease.

A study in 1179 people aged over 18 living in Turkey was conducted 63.3% of respondents find the adequate knowledge Covid-19 (15). The studies relating to Covid-19 is increasing continually. There are 4483 clinical trials, some of which have been concluded, (www. clinicaltrial.gov) (16). When Covid-19 is written to the Google search engine, there are 5,570,000,000 results (17). Therefore, an important concept comes to the 'Infodemia'. Infodemia is an excessive flow of information about a problem. The World Health Organization warns that false information can lead to the spread, confusion and loss of trust (18).

Although, in our study information pollution is the biggest handicap to acces information. The fact that nearly half of the participants declared that Covid 19 is a laboratory-produced virus for biological warfare. Within our current knowledge, it has been proven that Covid-19 is transmitted to humans by natural selection (19).

Our research is important because of it is the only study about the level of knowledge in faculty of pharmacy students. More over, the limitation of the study is that the study is limited to one university.

CONCLUSION

Participating students have high media usage rates. The power of the media in the flow of information is an undeniably important potential. Students should be supported in accessing reliable academic sources containing accurate information. Educational content is shaped according to formal education. Moreover it should be revised to the extent and students will gain lifelong learning competence. Furthermore students' participation in seminars and webinar meetings should be encouraged.

Informed Consent: From participants himself/herself

Compliance with Ethical Standards: Afyonkarahisar Health Sciences University Non-Interventional Clinical Research Ethics Committee, 08.01.2020/55

Author Contributions: Concept - JA; Design -JA; Data Collection and/or Processing- NB; Analysis and/or Interpretation -JA; Literature Search -JA; Writing Manuscript- JA,NB; Critical Review- JA, NB.

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Table 1. Demographic information of participants.

		Number (n)	Percentage (%)
Grade	1st Grade	64	51%
	2nd Grade	61	49%
Gender	Female 88 70%		
	Male	37	30%
	Total	125	100%

Table 2. The questions are asked to the participants and the distribution of their answers.

Questions		1st Grade		2nd Grade		p
		Number (n)	Percentage (%)	Number (n)	Percentage (%)	
1. Which of the following is the name of Covid -19 accepted by the World Health Organization?	F*	27	42.2%	20	32.8%	
	T**	37	57.8%	41	67.2%	
2. Which receptor does Covid-19 use to attach to the cell surface?	F	26	40.6%	18	29.5%	
	T	38	59.4%	43	70.5%	
3. What protein does it use to attach to the Covid-19 receptor?	F	58	90.6%	55	90.2%	
	T	6	9.4%	6	9.8%	
4. Which of the following is the antiviral drug used in the treatment of Covid-19 in our country?	F	22	34.4%	17	27.9%	
	T	42	65.6%	44	72.1%	
5. Aspirin should be used by every patient.	F	57	89.1%	53	86.9%	
	T	7	10.9%	8	13.1%	
6. Since Covid-19 provides susceptibility to thrombosis, anticoagulant treatment can be started when necessary.	F	12	18.8%	14	23.0%	
	T	52	81.2%	47	77.0%	
7. The transmission time of the disease is on average 4-12 days.	F	5	7.8%	8	13.1%	
	T	59	92.2%	53	86.9%	
8. The disease can be overcome asymptomatically	F	8	12.5%	2	3.3%	
	T	56	87.5%	59	96.7%	p>0.05
9. Covid 19 antigen is given to the patient with convalescent plasma.	F	27	42.2%	30	49.2%	
	T	37	57.8%	31	50.8%	
10. Mask, distance and hygiene are essential to prevent disease.	T	64	100.0%	61	100.0%	
11. What is the transmission route of Covid 19?	T	64	100.0%	61	100.0%	
12. 100% alcohol ratio in hand disinfectants is the ideal ratio in terms of preservation.	F	53	82.8%	58	95.1%	
	T	11	17.2%	3	4.9%	
13. The vaccine to be used in our country is the mRNA vaccine.	F	26	40.6%	25	41.0%	
	T	38	59.4%	36	59.0%	
14. PCR method is the main diagnostic method in the diagnosis of the disease.	F	10	15.6%	6	9.8%	
	T	54	84.4%	55	90.2%	
	F	12	18.8%	9	14.8%	

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15. Vitamin D is recommended as an adjunct agent in the treatment of the disease.	T	52	81.2%	52	85.2%
16. What are the drugs used globally?	F	49	76.6%	41	67.2%
	T	15	23.4%	20	32.8%

*F: False
**T: True

	Information score below average		Information score is above average		p
	Number)	Percentage (%)	Number (n)	Percentage (%)	
Other Sources of Information	10	25.6%		25.6%	p< 0.05
Webinar Participatory Information Resources	29	74.4%	64	74.4%	

Table 3. Webinar and knowledge level relationship
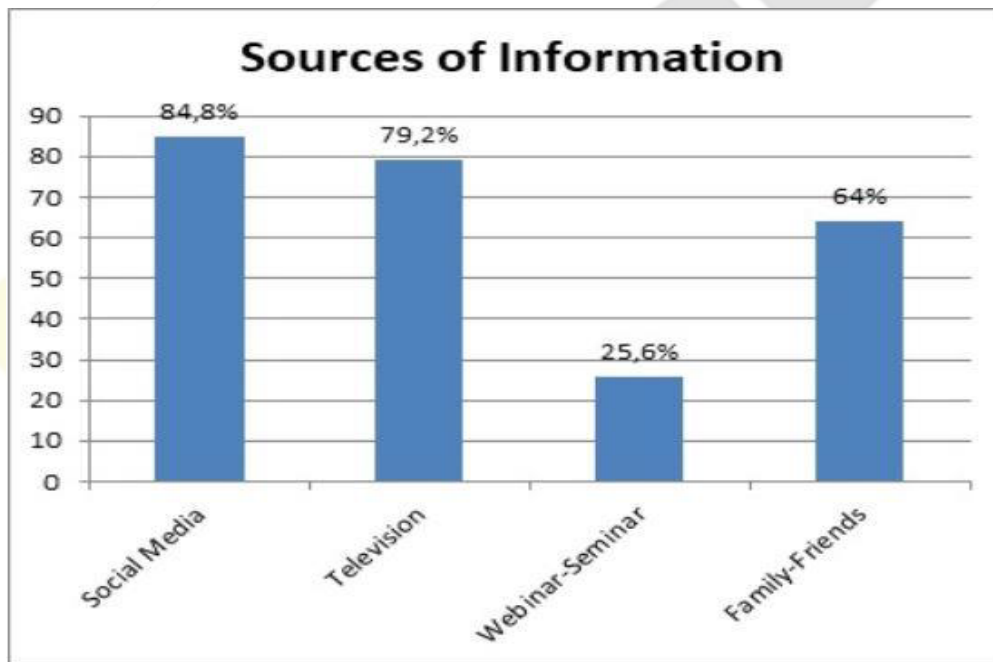
Figure 1. Source of information

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Oral Presentation No: 32436

The Effect of Students' COVID-19 Awareness Levels on Vaccine Hesitancy

Running Title: COVID-19 Awareness and Vaccine Hesitancy

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ABSTRACT

Purpose: This research was carried out to determine the effect of students' awareness levels of COVID-19 on vaccine hesitancy.

Methods: The population of this descriptive study consisted of 276 students who are studying at the Vocational School of Health Service of a private university in Northern Cyprus. Data collected from the character-defining form, COVID-19 Awareness and Vaccine Hesitancy Scale, between 25-29

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December 2020, by using the online form method. COVID-19 Awareness Scale was formed by three sub-dimensions: 'contagion prevention awareness', 'awareness of following current developments' and 'hygiene measure awareness'. Each statement can be scored between 1-5. The Vaccine Hesitancy Scale consists of 21 items that can be scored between 1-5, in the five-points Likert type. The higher the score on the scale shows the higher the level of vaccine hesitancy. Permission from the university ethics committee and institutional permission from the college was obtained for this research.

Results: The overall mean score of the COVID-19 Awareness Scale was 68.11±9.93. The mean score of the Contagion Precaution Awareness, Awareness of Following Current Developments and Hygiene Precaution Awareness sub-dimensions were 38.75±5. 15.36±3.67, and 13.99±3.57, respectively. The overall mean score of the Scale of Vaccine Hesitancy was 55.82±12.07. No statistical significance was found between the general level of Awareness Scale and vaccine hesitancy (p>0.05), When the sub-dimensions of this scale were examined, a statistically significant difference was found only between the "contagion prevention awareness" sub-dimension and vaccine opposition (p <0.05).

Conclusion: The high level of awareness has enabled the vaccine hesitancy to be at a medium-low level.

Keywords: COVID-19, awareness, vaccine hesitancy, student

INTRODUCTION

In December 2019, cases of pneumonia of unknown etiology occurred in Wuhan, Hubei province in China (1-3). The new type of coronavirus, defined as 2019-nCoV by the World Health Organization (WHO) in January 2020 and named COVID-19 in February 2020. In the following month of March, WHO declared COVID-19 as a pandemic (4, 5).

The signs and symptoms of COVID-19 are; high fever, cough, muscle pain (myalgia), fatigue, increased sputum, dyspnea, loss of taste and smell, dizziness, headache, diarrhea, nausea, vomiting

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(1, 6-8). As of 06th January of 2021, in the COVID-19 pandemic, >84.2 million positive cases and >1.8 million death happened (9).

It is inevitable that chaos and panic will occur among people during pandemic periods. In these cases, it is important to reach correct and reliable information. Because of wrong practices and negative attitudes, pandemic periods can be longer, more difficult and increases pandemic period (10). The COVID-19 pandemic has particularly badly affected the countries' economy and human psychology. Countries have taken many measures to manage the pandemic and prevent transmission. Among these measures; there are restrictions such as quarantine and close the whole country, avoiding people activities, closing public institutions, organizations and educational institutions. Countries carried out studies to raise awareness on issues such as wearing masks, gloves and social distance in this period (11). The policies formed by all countries and states during the pandemic process, the precautions they take and the educational materials created to raise awareness, public service ads, etc. available. Apart from these issues, the behaviors and attitudes of the people also have a great impact on this process (12).

Some studies conducted during the COVID-19 period show the awareness levels of various groups/examples. In the study of Alahdal et al. (2020), the awareness level of the participants was determined to be medium with 58% (11). In the study conducted by Modi et al. (2020), which made with students and professionals in the field of health, this level was found to 71.2%. It was stated that the highest level of awareness belongs to medical students (13). In the study of Labban et al. (2020), the level of awareness was found medium (14).

The search for treatments and vaccines continues to finish the COVID-19 pandemic period. Recently, ongoing vaccine research to terminate COVID-19 has brought the issue of vaccine hesitancy. It is known that vaccination is one of the greatest achievements in the public health. Vaccine hesitancy, which started with the start of vaccination in the 1800s, continues today. Anti-vaccination leads to poor health outcomes, risk to individual and public health at micro and macro levels, and waste of resources (15-17).

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Many factors can cause vaccine hesitancy. These include socio-demographic and psychological factors, religious beliefs, distrust of healthcare professionals, level of trust in biomedical science. It is stated that the key points in eliminating or minimizing these and similar negative factors is health literacy (17, 18).

In this study, it was aimed to investigate the relationship between students' awareness of COVID-19 and the effect of these levels on vaccine hesitancy.

METHODS

The universe of this descriptive study was composed of 276 students studying at the Vocational School of Health Services of a university in Northern Cyprus.

The research data were collected between 25-29th December 2020 with an online data collection form consisting of three parts. In the first part of the form, there are 7 questions about the introductory characteristics of the students such as age, gender, income status, attitudes of the student and his family towards vaccination, infected/or not infected of COVID-19 and fear of COVID-19.

In the second part of the form, there is the Coronavirus (COVID-19) Awareness Scale. The scale was developed by Bilgin (2020). The scale includes 17 expressions and 3 sub-dimensions. Each statement has options and points such as 'never' (1), 'rarely' (2), 'often' (3), 'usually' (4) and 'always' (5). The sub-dimensions of the scale are 'contagion precaution awareness' (CPA) (statements 1-9), 'awareness of following current developments' (AFCD) (statements 10-13) and 'hygiene precatuion awareness (HPA) (statements 14-17). The highest score that can be obtained from the scale is determined according to the sub-dimensions. The highest score is 45 for the CPA sub-dimension and 20 for the AFCD and HPA sub-dimensions (12).

In the evaluation of attitudes towards vaccination, Vaccine Hesitancy Scale created by Kılınçarslan et al. was used (2020). The scale consists of 21 statements. Each statement consists of 'strongly agree' (5), 'agree' (4), 'partially agree' (3), 'disagree' (2) and 'strongly disagree' (1) options and ratings. The first 5 items of the scale are scored in reverse. There is no cut-off value in the scale. The lowest and

highest scores of the scale are 21 and 105 points, respectively. The higher score indicates greater vaccination resistance (19).

Necessary permissions were obtained from the Near East University Scientific Research Ethics Committee (YDU/2020/86-1219), Vocational School of Health Services Directorate, scale owners and participants in order to carry out the study.

Statistical Analysis

The data of the study were analyzed in the Statistical Package for Social Sciences (SPSS) program. The introductory characteristics of the students were determined by frequency analysis. In the data analysis, Kolmogorov-Smirnov Z test was applied to determine the conformity of the data to normal distribution, and according to this, Mann-Whitney U and Kruskal-Wallis H tests were analyzed according to the number of variables. In the analyzes, mean±standard deviation values were determined. Correlation analysis was performed to determine the effect of both scales on each other. The results of the study were analyzed at 95% confidence interval and $p < 0.05$ significance level.

RESULTS

When the introductory characteristics of the students were examined, it was determined that 67% were between the ages of 18-20 and 59.4% were female. It was determined that 69.9% of the students had a middle income level, 60.5% were not sure about the attitude towards vaccination and 56.5% of the students were not sure about their families' attitude towards vaccination. It has been determined that 87% of students did not infected COVID-19 and 65.9% are afraid of COVID-19 (Table 1). Considering the students' total scale scores; it was determined that the total scores from the scale of vaccine hesitancy were 55.82±12.07 points, while the total scores from the coronavirus (COVID-19) awareness scale were 68.11±9.93. When the distributions of the sub-dimensions of the coronavirus (COVID-19) awareness scale are examined; it was determined that they got 38.75±5.27 points from the CPA sub-dimension, 15.36±3.67 points from the AFCD sub-dimension, and 13.99±3.57 points from the HPA sub-dimension (Table 2).

The results of the correlation analysis between the mean scores of the coronavirus (COVID-19) awareness scale and the average score of the scale of vaccine hesitancy of the students in the study are shown in Table 3. It has been determined that there is a negative relationship between the awareness scale total score and sub-dimension mean scores and the scale of vaccine hesitancy general score average, but only AFCD sub-dimension showed a significant relationship (r=-0.125, p<0.05).

When the introductory characteristics of the students and the general mean scores of the scale of vaccine hesitancy were compared, the ones with the highest mean scores of the scale; it has been determined that there are students who are in the 21-23 age group, have a male gender, have a poor income and do not infected COVID-19. There was no statistically significant difference between these variables and the overall mean score of the scale of vaccine hesitancy (p>0.05). It was concluded that students with negative attitudes towards vaccination got 68.57±9.85 points, students whose families had negative attitudes towards vaccination got 67.21±11.07 points, students who were not afraid of COVID-19 got 59.73±13.33 points, and there was a statistically significant difference (p<0.05) (Table 4).

The introductory characteristics of the students and the CPA sub-dimension of the coronavirus (COVID-19) awareness scale are compared. Students in the 18-20 age group have 39.70±5.04 points, middle income students have 38.91±5.00 points, students who show a positive attitude towards vaccination have 39.49±4.55 points, families of students showing a positive attitude towards vaccination have 38.98±4.63 points and students infected with COVID-19 have 39.27±5.50 points; but there was no statistically significant difference (p>0.05). Female students' score 39.35±5.00 points from the CPA sub-dimension, 15.79±3.44 points from the AFCD sub-dimension, 14.57±3.37 points from the HPA sub-dimension, 39.29±5.22 points from the CPA sub-dimension of students who afraid of COVID-19, 15.69±3.43 points from the AFCD sub-dimension, HPA It was determined that they got 14.45±3.57 points from the sub-dimension and there was a statistically significant difference (p<0.05) (Table 5).

DISCUSSION

This study was conducted in order to examine the COVID-19 awareness levels of the students studying at the Vocational School of Health Services and the effect of these levels on vaccine hesitancy.

COVID-19 has affected the whole world and has become a pandemic (4). While the health systems and state policies of the countries have an important place in battling the pandemic; individual and social behaviors and attitudes also play a determining role in the course of the pandemic process. It has become important to educate the public and raise awareness within the scope of battling the disease(12).

In our study, the overall score that the students got from the coronavirus (COVID-19) awareness scale was determined as 68.11/85 (Table 2). This average score shows that students have a good level of awareness. Similar to our study in the literature, there are studies in which the awareness/knowledge levels of various samples are determined to be high. In a study evaluating the knowledge level and behavior of dentists, it was determined that the knowledge level of dentists working in public hospitals was high (20). In another study examining the level of knowledge, protective behaviors and risk perceptions of students who are studying in the field of health about COVID-19; the knowledge level of the students was determined as 90.3% (21). In another study evaluating the knowledge, attitude and practices of pharmacy students about COVID-19 in Egypt; it has been determined that the students have general knowledge apart from the knowledge and practices of wearing masks (22).

In the study examining the COVID-19 awareness of people who are living in Syria; it is stated that the participants have a medium level of awareness (14). In another study conducted with health professionals and students trained in this field, high awareness (13) and another study in which protective behaviors were evaluated, it was found that the participants increased protective action behaviors during the pandemic period (23).

People who are working in the field of health and receiving education in this field; its role in the management of the pandemic/disease is critical. Education of these groups is important for both individual and social protection (24). In this period, poor information level causes the disease to

spread further and to become difficult to control. Again, it is thought that the biggest share in this field belongs to health professionals (25). The reason for the high level of awareness in our study is thought to be that students receive education in the field of health.

When the general scores of all sub-dimensions of the scale are examined; the levels of female participants were determined to be higher in all sub-dimensions than males (Table 5). There are research samples similar or different to our results. In a study in which the knowledge, attitudes and behaviors of academic staff towards COVID-19 were determined (26) and in a cross-sectional study examining pandemic awareness in patients who applied to the ear nose and throat outpatient clinic (27), the knowledge levels of women were determined to be higher than male participants. In separate studies examining the COVID-19 knowledge levels of emergency healthcare personnel and healthcare students, the knowledge scores of male participants were found to be relatively higher (21, 28). It can be said that the awareness level of women is higher due to reasons such as the fact that women attach more importance to hygiene and the rates of obeying and following the necessary rules are higher than men. According to the results of our study; Females' contamination prevention, following up-to-date developments, and levels of hygiene measures are higher than males (Table 5).

The vaccine hesitancy level of the students included in the study was determined as 55.82/105, at medium level (Table 2). Vaccination is one of the most fundamental elements in the immunization of the population and is one of the biggest gains in public health (17, 29). Vaccine hesitancy may develop for various reasons. It should not be forgotten that these reasons are individual (17).

According to the results of the country-by-country vaccine confidence study published by Larson et al. In 2016; the general sensitivity of countries to vaccines has been stated as positive. However, it was stated in the study in countries with negative levels (especially in Europe). It was determined that France (41%) and Bosnia-Herzegovina (36%) did not agree with the vaccine safety. The interesting finding emerged in the study is that countries with a high education level and good access to health services have low positive attitudes towards vaccines (30). In a study examining the factors that cause vaccination hesitancy in 2014, it was stated that anti-vaccination was not related to income status, but it affected all countries (31).

For COVID-19 vaccines that can be put into practice; in a study examining the views of physicians, nurses and normal individuals; 78% of physicians, 61% of nurses and 75% of individuals from the population want to be vaccinated; it was also determined that 60% of physicians, 55% of nurses and 70% of individuals from the general population wanted to have their children vaccinated (32). It is a known fact that individuals are dependent on their decisions until they reach a certain age. Failure of any family member to have their children vaccinated poses a risk in the field of public health (17). Moderate vaccine hesitation as a result of our study; it may be caused by reasons such as insufficient studies, insufficient knowledge, lack of awareness, fear and anxiety.

Limitations of the Study

This study was limited by the fact that it covered only the opinions of students training in the fields of the vocational school of health service at a single university.

CONCLUSION

According to the results of our study; The awareness levels of the students according to the general and sub-dimensions of the coronavirus awareness scale are good and their level of vaccine hesitancy is medium. It is promising that students who will start working as health professionals in the coming years have high levels of awareness of COVID-19 and relatively low levels of vaccine hesitancy. The fact that young students use social media and mass media more and more effectively can be effective in the emergence of such a result. Studies on the subject are quite insufficient. It is recommended to make new studies with various samples and to add them to the literature.

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TABLES

Table 1. Introductory characteristics of the students (n=276)

	n	**%**
Age		
18-20	**185**	**67.0**
21-23	65	23.6
24-26	12	4.3
27-29	9	3.3
30 years and over	5	1.8
Sex		
Female	**164**	**59.4**
Male	112	40.6
Income level		
Good	48	17.4
Middle	**193**	**69.9**
Bad	35	12.7
Attitude towards vaccination		
Positive	57	20.7
Not sure	**167**	**60.5**
Negative	52	18.8
Families' attitude towards vaccination		
Positive	74	26.8
Not sure	**156**	**56.5**
Negative	46	16.7
Infected with COVID-19		
Yes	36	13.0
No	**240**	**87.0**
Fear of COVID-19		
Yes	**182**	**65.9**
No	94	34.1
Total	**276**	**100.0**

Table 2. Coronavirus (COVID-19) Awareness Scale and Vaccine Hesitation Scale score distributions (n=276)

Coronavirus (COVID-19) Awareness Scale	Contagion precaution awareness sub-dimension		Awareness of following current developments sub-dimension		Hygiene precatuion awareness sub-dimension		Coronavirus (COVID-19) awareness scale general score	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
	38.75	5.27	15.36	3.67	13.99	3.57	68.11	9.93
The scale of vaccine hesitancy general score	**Mean**	55.82						
	SD	12.07						

SD: Standard Deviation

Table 3. Correlation analysis between the mean scores of the Coronavirus (COVID-19) Awareness Scale and the average score of The Scale of Vaccine Hesitancy

Coronavirus (COVID-19) Awareness Scale	Contagion precaution awareness sub-dimension		Awareness of following current developments sub-dimension		Hygiene precatuion awareness sub-dimension		Coronavirus (COVID-19) awareness scale general score	
	r	**p**	**r**	**p**	**r**	**p**	**r**	**p**
The scale of vaccine hesitancy general score	-0.109	0.069	-0.125	**0.038**	-0.012	0.841	-0.109	0.071

Table 4. Comparison of the student introductory characteristics with the mean scores of The Scale of Vaccine Hesitancy (n=276)

	Mean±SD	Minimum	Maximum	p	Difference
Age					
18-20	55.40±11.55	26	91	0.143	-
21-23	**57.47±13.49**	30	85		
24-26	57.16±14.09	43	80		
27-29	57.11±8.16	44	72		
30 years and over	44.60±8.67	32	55		
Sex					
Female	55.60±11.75	26	90	0.836	-
Male	**56.15±12.58**	30	91		
Income level					
Good	54.06±12.79	30	85	0.095	-
Middle	55.66±11.72	26	91		
Bad	**59.11±12.72**	30	78		
Attitude towards vaccination					
Positive	44.82±10.12	26	76	**0.000***	1-2
Not sure	55.61±9.20	30	91		1-3
Negative	**68.57±9.85**	35	90		2-3
Family attitude towards vaccination					
Positive	46.93±10.06	26	76	**0.000***	1-2
Not sure	56.68±9.92	30	91		1-3
Negative	**67.21±11.07**	35	90		2-3
Infected with COVID-19					
Yes	55.36±10.29	35	85	0.709	-
No	**55.89±12.34**	26	91		
Fear of COVID-19					
Yes	53.80±10.87	30	80	**0.000***	-
No	**59.73±13.33**	26	91		

*p<0.05, SD: Standard Deviation

Tablo 5. Comparison of the student introductory characteristics with the mean scores of the Coronavirus (COVID-19) Awareness Scale (n=276)

	Contagion precaution awareness sub-dimension		Awareness of following current developments sub-dimension		Hygiene precatuion awareness sub-dimension	
	Mean±SD	p	Mean±SD	p	Mean±SD	P
Age						
18-20	**39.70±5.04**		15.32±3.69		14.17±3.44	
21-23	38.84±5.85		**15.69±3.66**		13.49±4.07	
24-26	35.16±6.30	0.142	14.33±3.62	0.215	**14.75±2.30**	0.605
27-29	38.55±2.83		13.77±3.83		13.00±3.50	
30 years and over	36.60±4.33		17.60±1.67		13.60±4.39	
Sex						
Female	**39.35±5.00**	**0.025***	**15.79±3.44**	**0.028***	**14.57±3.37**	**0.001***
Male	37.88±5.55		14.73±3.92		13.13±3.70	
Income level						
Good	38.04±5.62		**15.95±3.47**		13.89±3.28	
Middle	**38.91±5.00**	0.550	15.18±3.67	0.420	13.96±3.55	0.739
Bad	38.85±6.22		15.51±3.95		**14.25±4.15**	
Attitude towards vaccination						
Positive	**39.49±4.55**		15.43±3.42		14.19±3.89	
Not sure	38.64±5.24	0.603	**15.44±3.60**	0.907	13.84±3.54	0.955
Negative	38.32±6.04		15.01±4.17		**14.25±3.33**	
Family attitude towards vaccination						
Positive	**38.98±4.63**		**15.54±3.60**		**14.06±3.84**	
Not sure	38.89±5.22	0.764	15.32±3.52	0.921	13.93±3.54	0.993
Negative	37.93±6.32		15.10±4.30		14.06±3.28	
Infected with COVID-19						
Yes	**39.27±5.50**	0.369	15.19±4.11	0.926	**14.00±3.74**	0.563
No	38.67±5.24		**15.38±3.61**		13.99±3.55	
Fear of COVID-19						
Yes	**39.29±5.22**	**0.004***	**15.69±3.43**	0.060	**14.45±3.57**	**0.002***
No	37.71±5.22		14.71±4.04		13.10±3.41	

*p<0.05, SD: Standard Deviation

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Effects of Covid-19 on Sexual and Reproductive Health

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Abstract

Sexual and reproductive health (SRH) are essential concepts that are discussed together and are effective in the formation of the individual's full well-being. SRH services need to be addressed during or after the COVID-19 pandemic. The problems that may arise in SRH services in pandemic processes are not limited to individuals. Failures can lead to an increase in adverse conditions such as difficulty in accessing contraceptives, unwanted pregnancies, difficulty in managing sexually transmitted infections, gender-based violence, unsafe curettage, complications during pregnancy, adolescent pregnancies, stigmatization in the community. These undesirable results in SRH services can negatively affect the development levels of countries. During the pandemic process, SRH services should continue without disruption. Follow-up and treatment processes of individuals should be managed remotely when necessary. Also, social screening and information activities should be continued throughout the process by taking the necessary measures. In this review, the problems that may arise because of the prevention of SRH services during the pandemic process, its sustainability, and the measures that can be taken to prevent malfunctions in services are discussed.

Keywords: COVID-19, sexual health, reproductive health, pandemic

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Introduction

Sexual health has been on the agenda of the World Health Organization (WHO) since 1975 as an element that enriches the individual's personality and supports communication and love (1). Also, in the action plan of the International Conference on Population and Development (ICPD) held in 1994, sexual health was determined as a component of reproductive health. Sexual and reproductive health (SRH) is defined as the full physical, mental, emotional, and social well-being of individuals concerning the reproductive system (1,2). Disasters and outbreaks lead to the emergence of all SRH problems, including inadequate access to healthcare, malnutrition, hygiene, and the rise of sexually transmitted diseases (3,4).

During the crisis, personnel and equipment that provide SRH services can be directed to different areas to fulfill the needs of the crisis. Also, both clinics may be closed due to outbreaks and individuals do not want to apply to health institutions for SRH services (5,6). While countries restrict the movement of people to prevent the spread of the virus, healthcare professionals must suspend some non-essential SRH services, such as abortion care, contraception (5,7). Since the public health crises experienced in previous years were not the primary consequence of the infection, it has been shown that the effects on SRH are generally not noticed (7). Adverse situations such as the slowdown in treatment and care services due to the increase in the burden of healthcare institutions, and the transfer of materials to crisis management cause an increase in inequality in access to health care (8). This process, which affects the SRH of the whole society, makes the provision of services difficult and affects especially women and developing countries negatively (3).

WHO and the Human Reproduction Program (HRP) also addressed SRH in the research roadmap for COVID-19 (9,10). In early February 2020, the Asia and Pacific Regional Office of the United Nations Population Fund (UNFPA) published its first guidance document, reporting that SRH was a major public health problem during outbreaks (11).

There is an average of 8 billion human population in the world. Women, children, the elderly, and pregnant women who are subjected to violence are vulnerable groups that create around 168 million of the population (12,13). Therefore, it is necessary to develop the necessary planning and practices

to maintain the SRH and the rights of women, young and undefended groups along epidemics. Scientists, healthcare professionals, politicians, non-governmental organizations, and international institutions are recommended to work together during the pandemic (8,14,15).

SRH should be among the priorities of healthcare professionals so that crises do not become a public health problem. The necessary precautions should be implemented in a timely manner by making observations and researches especially on vulnerable groups. There is also a need for temporal assessments of effects on SRH (14). Past crises have led to reduced access to healthcare services such as family planning and antenatal care, HIV, gender-based violence, and mental health. Therefore, maternal and infant death, unwanted pregnancies, unsafe abortions, and increases in sexually transmitted infection (STI) rates have occurred. Besides, there was an increase in the rates of post-traumatic stress disorder, depression, suicide, and partner violence (15,16).

This review aims to evaluate the impact of the COVID-19 pandemic on SRH and to provide recommendations to healthcare professionals in the light of the literature with the data obtained from past outbreaks to prevent possible negative consequences.

Pandemic and Gender Inequality

The effects of COVID-19 on abuse and gender-based violence have been proven (2). Evidence shows that quarantine negatively affects the psychological state of individuals by increasing post-traumatic stress disorder and tantrums. In the light of data from previous crises, it has emerged that the risk of gender-based violence and abuse may be higher at the time of quarantines (17,18). Situations such as spending more time with problematic individuals at home during quarantine, economic freedom and disruption of protection services lead to an increase in gender-based violence and abuse. Caring for children and other individuals with restrictions at home increases the workload of women and further reduces their ability to care for themselves (19). For this reason, outbreaks tend to exacerbate gender inequality, increasing the risks of gender-based violence and sexual abuse (20,21).

World Bank Group (22), which works on globally fragile groups, offers suggestions about the process of experiencing gender inequality in COVID-19 and what can be done for protection, based on previous pandemics. Women have a large share in the healthcare sector, home, and family settings,

which exposes them to greater exposure to contamination. Occupational gender segregation can also bring different levels of exposure. For instance, women are more involved in customer-facing roles, while men focus on logistics or security. Providing COVID-19 testing with protective equipment and materials to higher risk occupational groups plays an essential role in reducing the risk of transmission (22).

It is known that the morbidity and mortality rate in COVID-19 is more intense in the male population. For this reason, the loneliness of women in the family may cause them to be more affected by gender inequalities (22). Also, there may be an increase in adolescent pregnancies and consequently maternal deaths due to the decrease in SRH services. More information on social media and electronic media can help prevent them (22).

Social and gender norms may cause interest in home education to shift from girls to boys. This deficiency may cause problems for girls to return to education after the pandemic. In this sense, early incentive programs can be beneficial for girls not to leave education (22).

Considering the gender dimensions explained above, the effectiveness of social protection activities against the pandemic will increase. Funding programs will be required for groups that include vulnerable women, both as part of the pandemic process and in the longer term (for instance, single mothers with children, widows, or women farmers). Special programs will also play a central role to support women's return to economic activities (e.g. public works, access to education and credit, direct productive inputs to women farmers). Access to care support will also be required when continuing to work outside the home (22).

According to the data published by the WHO in November, it shows that there is an increase of 50-60% in the rates of violence against gender in the Eastern Mediterranean Region where gender-based violence is most frequently observed (23). On the other hand, the number of applications to organizations in Turkey, which seems to be an increase of 55-78% when examined about gender violence (24,25).

It is a fact that violence against gender is on the rise throughout the world, and the obstacles to access to existing protection and support systems during pandemic lead to a perception of impunity among

perpetrators. For this reason, the capacity of protection and support systems should be increased. Support systems should be maintained and developed with social awareness, informal support networks, and the participation of healthcare professionals (22).

Pandemic and Stigma

It is important to consider how communication between patients and healthcare professionals affects the uptake of SRH services from the stigma and discrimination associated with COVID-19 from previous outbreaks (26).

According to Kaufman et al. (27), stigma and xenophobia have become a daily reality as the main element of public discourse. Increased stigma has been reported against specific groups with high infection rates. Therefore, it caused an increase in the number of patients presenting with anxiety and depression. Both national and international interventions are required to reduce stigma.

Pandemic and Sexually Transmitted Infections

There are limited studies on the effects of the COVID-19 pandemic on sexually transmitted infections. Center for Disease Control and Prevention (CDC) published data on sexually transmitted infections during the COVID-19 pandemic in the United States (28). According to this publication, there has been a reduction in sexually transmitted infections during the pandemic process. However, the CDC states that these reductions are not due to a decrease in infections. CDC states that the reason for the reduction in rates is the decrease in individuals' admission to health institutions. As a suggestion, Crane et al. (29) noted that developing self-administered test kits that individuals can apply at home and sending them to healthcare institutions via mailing method should be considered as an option, especially in screening for infections such as chlamydia and gonorrhea.

Considering the public health effects of individuals with STI / HIV-associated immunosuppression, problems such as how their risk status is and whether their chances of recovery are low should be considered as another important issue (30). An online survey conducted in the People's Republic of China in early February 2020 found that people diagnosed with HIV are highly concerned about the COVID-19 pandemic in the community (30).

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Pandemic and Maternal Neonatal Outcomes

Adverse health consequences will result from problems in access to contraception, obstetric and neonatal care, or disruption to life-saving services such as abortion care and follow-up (31). Disruption of services and diverting resources from basic SRH services due to prioritization of COVID-19 management are expected to increase the risk of disease and death in mothers and children (32,33).

It is known that more than 100 million babies are born each year. Given the current impact of the pandemic on the world, it is thought that the virus will remain for a while. Therefore, more studies are needed on the reproductive effects of COVID-19 (34). In past outbreak examples, the Zika virus infection in 2015 caused pregnancy complications and in particular, microcephaly and congenital deformities in fetal brain development, while the epidemic in Latin America sparked a debate on the need to expand abortion laws to protect women's safe abortion rights. Between 2014 and 2016, the Ebola virus epidemic in West Africa caused women to be exposed to a higher risk of infection due to gender norms (35-38). Sochas et al. (39) report that such crises have negative and indirect effects on SRH in the evidence presented by the Ebola virus epidemic in West Africa in 2013-2016. Besides, the authors reported that due to the deterioration of SRH services and the fear of going to the healthcare facility during the epidemic, decreases in maternal and neonatal care would result in an estimated 3,600 maternal and newborn deaths and stillbirths.

Riley et al. (40) made predictions on the outcomes of COVID-19 on SRH according to the number of contraceptive use and unwanted pregnancies in underdeveloped and developing countries in 2019. They reported that the proportion of women receiving SRH services would decrease by 10% during the COVID-19 pandemic process. Also, they are suggested that the effect of this decrease on unwanted pregnancy, maternal and neonatal deaths over 12 months will be as follows: -15 million unwanted pregnancies, -1.7 million women who gave birth, -2.6 million newborns will experience major complications, -28,000 maternal deaths, -168,000 newborn deaths. Besides, the authors noted that in cases of nationwide restrictions, forced closure of clinics, or abortion considered an unnecessary service, 10% of women who would normally have a safe abortion would resort to an

unsafe method. They also predict that this increase in unsafe abortions will result in 1000 maternal deaths (40).

Pandemic and Family Planning

The COVID-19 pandemic can disrupt the production of essential ingredients of contraceptive materials or the methods themselves. Besides, these protection products can have negative effects on the supply chain (41). There may be a shortage of essential medical supplies due to the closure of factories and restrictions on the transportation, import, and export of raw materials in medical equipment producing countries (41). In some countries, concerns have already arisen about the lack of condoms, progesterone, and antibiotics (42).

It has also been argued that in a region of China, the demand for safe abortion services has increased due to concerns about the disruptions in access to contraceptive materials or the uncertainty of the effects of the infection on pregnancy (43). This expected situation for COVID-19 has emerged as similar problems in the Zika and Ebola epidemics (44). During the Zika epidemic in Puerto Rico, when contraceptive services were accessible, contraceptive use increased to prevent adverse birth outcomes from unwanted pregnancy and prenatal exposure (44).

Nanda et al. (44) have made recommendations to facilitate women's contraceptive access during the COVID-19 pandemic as follows:

- It should be ensured that prescriptions that can be used once a month are prepared and distributed to facilitate access to contraceptive methods (44).
- The application of intrauterine tools and implants should be encouraged with reliable techniques and attention to hygiene rules (44).
- Self-injection training should be provided for women who require an injection method of contraception.
- Pre-prepared prescriptions for emergency contraception should be given to increase awareness and reduce barriers to emergency access (44).

- Throughout the process, telehealth systems should be used for complications monitoring and counselling (44).

Pandemic and Male Reproductive Health

Although symptoms of COVID-19 in various systems have been reported, the reproductive effects of coronavirus infection are still unknown. Since reports document that COVID-19 is more severe in men, and morbidity and mortality rates are high, attention has shifted to potential male genetic susceptibility (48). During the pandemic process, it is necessary to talk about reproductive health not only for women but also for men. It is stated that COVID-19 can cause damage to male reproductive systems. However, there are not enough data about its effect on male SRH yet. The long-term outcomes of this process need to be investigated (48).

The necessary way for the coronavirus to enter the cell is by binding the virus to ACE2 inhibitors. It also uses cellular serine protease (TMPRSS2) to bind to ACE2. Therefore, coronavirus may also be found in the testicles through TMPRSS2. For this reason, concerns have arisen regarding infection of the testicles and possible sexual transmission (49). Song et al. (49) conducted a study on whether COVID-19 can be transmitted directly to the testicles or male genital tract and whether it can be sexually transmitted from men. In the study, a real-time polymerase chain reaction test (RT-PCR) was applied to semen and testicular biopsy samples from 13 COVID-19 positive patients. At the end of the study, no positive RT-PCR result was found in semen or testicular biopsy. According to this study, there is no evidence that COVID 19 is sexually transmitted from men. However, according to the findings obtained by the authors in the continuation of the study, they also reported that the patients experienced testicular edema and a high level of pain in their testicles during the treatment process (49).

The effect of COVID-19 on the male reproductive system is not risky according to the findings at the first stage, but it is a separate question of how we will encounter reproductive health results in the future.

Pandemic and Adolescent Group

Adolescents, which are a fragile population, are also individuals who need attention in terms of SRH. In particular, adolescent pregnancies should be considered separately in terms of adverse maternal, fetal and neonatal outcomes. With the support of the Population Council, a project has been initiated by Acharya et al. (50) to monitor the SRH of adolescents and young women in India and to inform them about the COVID-19 pandemic. Within the scope of this project, it is planned to reach 2.041 adolescents by phone and evaluate the process with a total of five questions, including questions on access to SRH services in the COVID-19 pandemic. Increasing studies such as this project may be useful in revealing the effects of COVID-19 on the adolescent group.

Post-Pandemic Sexual and Reproductive Health

After COVID-19 is largely under control, it is necessary to monitor how long it will take individuals to return to pre-epidemic levels from using basic SRH services. There is evidence that births in family planning, antenatal care, and healthcare facilities fell during the Ebola epidemic in West Africa between 2014 and 2015 and did not fully reach pre-epidemic levels for 6 months (51,52). Bietsch et al. (53) reported that Ebola outbreaks led to a decrease in contraceptive use and admissions to family planning services in Guinea, Liberia, and Sierra Leone. According to the results of the study, it is predicted that after outbreaks, applications to contraceptive use and family planning services can return to normal in six months to two years. Besides, Camara et al. (51) show that after the Ebola epidemic, the number of admissions to antenatal care services and births in healthcare facilities in Guinea could not reach previous levels even after six months.

Management Recommendations

In the context of pandemic preparedness and response, the Inter-Agency Standing Committee (IASC) has published a guide on SRH during the COVID-19 process (54). The guide provides four recommendations on how to reduce its impact on mortality and morbidity due to SRH conditions in the COVID-19 crisis and vulnerable settings.

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- It has been found that the adverse risks to be caused by disruptions in SRH services are more important in health institutions compared to the transmission of the virus. Therefore, the continuity of primary health care services defined for SRH should be ensured. These services should include issues such as intrapartum care, newborn care, abortion care, contraception, clinical care for those exposed to gender violence, and care for sexually transmitted infections. Besides, early breastfeeding and skin-to-skin contact should be encouraged for newborns. In suspected or diagnosed cases, both mother and newborn should not be separated unless critically ill (54).

- SRH services should continue comprehensively as far as health system conditions are possible. Remote approaches should be considered wherever possible (e.g. telephone, digital apps, text messaging) for the necessary information and follow-up (54).

- Understandable and up-to-date public health information prepared for target audiences should be presented to the public and healthcare professionals. In this information, it should be stated that individuals should continue to receive health services for the pregnancy process and all other basic SRH needs arising from disease, trauma, or violence (54).

- Prevention and control measures for the transmission of COVID-19 infection should be passed on to patients and family members. Triage must be provided before applying to a health institution. Isolated areas should be created for doubtful or diagnosed patients in order to maintain consultations (54).

Riley (40) also makes suggestions on different issues to maintain healthy COVID-19 pandemic process management.

- Governments must take swift and decisive action to prevent the SRH crisis. Besides, SRH services should be fundamentally defined and promoted by governments (40).

- Governments should make SRH services and products more accessible to patients. For this reason, it should facilitate access by identifying product recommendations and alternative suppliers (40).

- Offer contraceptives without a prescription to improve access to SRH services; It should ensure that contraceptives, medicines and other supplies are distributed throughout the country and, if possible, provide services to homes (40).

- It should prevent resources and personnel from being kept away from SRH services by adopting up-to-date and technological care methods such as telehealth (40).

Conclusion

SRH problems are often overlooked in most countries as they are not considered to be of high policy and resource interest, as most of the health sector's resources are directed towards the COVID-19 emergency response (55). Also, behaviors related to SRH are not prioritized in emergencies such as outbreaks. However, pregnancy, sexual and gender-based violence, sexually transmitted infections in society are the conditions that determine the level of the health system (56,57). Reducing basic SRH services or deemed unnecessary during the pandemic will cause the gains made in recent years to be reversed (58). In countries with poor health systems, SRH services should be accessible in emergencies to minimize preventable deaths, even if resources are diverted for outbreak response (58).

Health systems and health professionals should empower women during such crises and provide resources for psychosocial counseling, care, and treatment. Respect for human rights, attention to SRH in all age groups, non-discrimination, access to quality services, and cooperation will increase the success of excellent health (59). These practices will not only reduce the negative consequences of COVID-19, but will also have positive effects in the long term as new practices are adopted and spread (59).

As a result, malfunctions in SRH services may not be the primary infection outcome during the pandemic process. However, in the pandemic process or post-pandemic normalization, the disruptions in the crisis process may have unexpectedly negative consequences on SRH. These negative results may have negative effects on the development levels of countries. For this reason, SRH should not be considered unnecessary and luxurious during the pandemic process.

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Oral Presentation No: 34200

Presentation of Two Separate Cases with Fetus Mortality in Pregnant Women with Asymptomatic COVID-19 PCR Positivity

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Abstract

Purpose: We aimed to examine ablation placenta, severe preeclampsia and intrauterine mort fetalis that developed suddenly in the 2nd and 3rd trimesters of pregnancy in two pregnant women with COVID-19 positivity.

Methods: Cases were presented as case reports.

Results: Case 1: D.A, 39-year-old patient, pregnant for 28 weeks and 4 days according to the last menstrual period applied to our clinic with the complaint of not feeling the baby movements for 2 days at night. Fetal heartbeat was negative in the ultrasonography of the pregnant woman. In the light of the present physical examination and clinical findings, the pregnant woman was delivered urgently by cesarean section because of sudden onset severe preeclampsia. A 1530 gram baby boy with head presentation, dead and diffuse masher appearance was delivered by cesarean section. Placenta was posteriorly located and occult type placental detachment line was observed in approximately 25 percent. The placenta was not sent for pathology. **Case 2:** K.Ç, 37-year-old patient, pregnant for 23 weeks and 2 days according to the last menstrual period, with 2 previous cesarean delivery history, applied to our clinic because the COVID-19 PCR test result was positive. Fetal heartbeat was negative in the ultrasonography of the pregnant woman. The patient underwent hysterotomy with the diagnosis of repeated cesarean section and IUMF. A fully formed dead male baby, weighing 440 grams, with 0/0 APGAR score was delivered by hysterotomy. Approximately 40% ablation area was observed in macroscopic examination of the placenta during peroperative observation. Histomorphological examination findings of the placenta were as follows, respectively; significant perivillous fibrin deposition, lymphocytic infiltration including intervillous and localized neutrophils, free hemorrhage as well as degenerated villous structures were observed. In the results of the immunohistochemical study performed on the placenta, the following findings were obtained, respectively; cytotoxic T cells

showing positive immunoreactivity with CD8, macrophages showing positive immunoreactivity with CD68 and a small number of positive staining with CD4 were observed.

Conclusion: In these cases, ablatio placenta and related IUMF were observed in pregnant women who did not have any other obstetric risk factors before but who had COVID-19 positivity. More cases and more pathological sampling are needed to elucidate the relationship. In addition, patients should be informed about the symptoms that may develop suddenly, even if the course is uneventful in COVID-19 positive pregnancy follow-ups.

Key words: COVID-19, pregnancy, intrauterine mort fetus, ablatio placenta, severe preeclampsia.

Introduction: In the light of current information, we know that COVID-19 syndrome has the same characteristics as non-pregnant individuals in terms of clinical symptoms, laboratory and radiological findings during pregnancy (1). There are data indicating that the morbidity of third trimester pregnancies is affected rather than early period pregnancies. Especially in pregnant women who developed pneumonia after COVID-19 infection, the frequency of cesarean section seems to be increased due to preterm labor, premature rupture of membranes, preterm delivery, preeclampsia and fetal distress (2,3,4). However, morbidity and mortality has not been reported in terms of fetus in pregnant women with asymptomatic PCR positivity.

Objective: We aimed to examine ablation placenta, severe preeclampsia and intrauterine mort fetalis that developed suddenly in the 2nd and 3rd trimesters of pregnancy in two pregnant women with COVID-19 positivity but an asymptomatic course, and that COVID-19 may increase antenatal morbidity and mortality in asymptomatic pregnant women, which we do not encounter frequently in the literature.

Design: Cases were presented as case reports.

Case 1: D.A, 39-year-old patient, pregnant for 28 weeks and 4 days according to the last menstrual period, with 3 previous vaginal delivery and 1 miscarriage history, applied to our clinic on 25.11.2020 with the complaint of not feeling the baby movements for 2 days at night. There was no additional feature in the obstetric history taken from the pregnant woman. She only declared that, the result of the combined swab test taken about 4 weeks ago in terms of COVID-19 infection in this pregnancy was positive and she had no other findings related to this infection. As a result of obstetric ultrasonography (USG) to the pregnant; single fetus with vertex presentation in intrauterine cavity, dead fetus with negative fetal heartbeat, BPD 27 weeks, AC 33 weeks 4 days, FL 29 weeks 1 day, estimated fetal weight 1732 grams as obstetric measurement findings were detected. Placenta was posteriorly located in obstetric USG and there was no retroplacental hematoma area. Approximately 2 hours after admission to the clinic, the control blood pressure was 180/120 mm-hg and the second control blood pressure measured 15 minutes later was found as 190/120 mm-hg. In addition, clinical signs of severe preeclampsia (headache that started

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suddenly from the root of the neck, right upper quadrant pain) started in the pregnant woman. In the light of the present physical examination and clinical findings, the pregnant woman was delivered urgently by cesarean section. Laboratory results of the patient before cesarean operation were as follows, respectively; hb 11.9 g/dl, wbc 7.02, plt 216.000, liver and kidney function tests were normal, pt 12.5 seconds, aptt 21.2 seconds, pt ınr 0.95 seconds, erythrocyte sedimentation rate 78, CRP 32.51 mg/l, troponin-ı 0.184, d-dimer 2101, ph value in arterial blood gas was 7.39, tsh 7.25, ft3 2.59, ft4 0.90. Since the fasting period of the patient was also suitable by chance, emergency cesarean operation was performed under spinal anesthesia. A 1530 gram baby boy with head presentation, dead and diffuse masher appearance was delivered by cesarean section. During the cesarean operation, the amnion fluid was observed with dark meconium. Placenta was posteriorly located and occult type placental detachment line was observed in approximately 25 percent. Free fluid in the form of exudate with a volume of approximately 500 cc was aspirated in the abdomen. The placenta was not sent for pathology. Cesarean operation of the patient was completed without any maternal complications. The first 24 hour follow-up of the patient in the postop period was performed in the general intensive care unit. While the patient was in the general intensive care unit, MgSO4 1.5 gr/hour maintenance treatment, Alfamet 250 mg tablet, 4x1, PO and Adalat Crono 30 mg tablet, 2x1, PO treatments were given. With these treatments, the blood pressure of the patient was brought under control. The patient was discharged from the hospital with recovery on the 5th day after cesarean operation, when the control COVID-19 combined swab sample test result was negative and the control blood pressure values returned to the normal range.

Case 2: K.Ç, 37-year-old patient, pregnant for 23 weeks and 2 days according to the last menstrual period, with 2 previous cesarean delivery history, applied to our clinic because the COVID-19 PCR test result was positive due to a history of contact with a person with COVID-19 positivity. The pregnant woman was conscious, oriented and cooperative. It was learned from the anamnesis that the patient came to the pregnancy follow-ups regularly and that there were no systemic or obstetric risk factors in previous examinations. In the physical examination of the pregnant woman, there was sensitivity in the uterus, there was no rebound or defense in the abdomen. Fetal heartbeat was negative in the ultrasonography of the pregnant woman, and uterine contractions were not observed in the tocogram follow-up. Ablatio placenta and intrauterine mort fetalis (IUMF) diagnoses were made based on the present USG and physical examination findings. The patient underwent hysterotomy in the negative pressure operating room with the diagnosis of repeated cesarean section and IUMF. A fully formed dead male baby, weighing 440 grams, with 0/0 APGAR score was delivered by hysterotomy. Approximately 40% ablation area was observed in macroscopic examination of the placenta during peroperative observation. The patient, whose general condition was good and vital signs were stable, was discharged from the hospital on the second postoperative day with a discharge prescription. The patient, who had no additional complaints during the puerperium period, was directed to the "Infectious Diseases Polyclinic" in the postoperative period.

Findings in gross pathological examination of placenta were as follows; placental tissue weighed 190 grams after formalin fixation, the length of the umbilical cord was 14.5 cm, and the diameter of the umbilical cord was 1.3 cm at its widest point, the size of the placenta was 12x12x4 cm and the placenta was in appearance with bleeding (Figure 1). Histomorphological examination findings of the placenta were as follows, respectively; significant perivillous fibrin deposition (Figure 2), lymphocytic infiltration including intervillous and localized neutrophils, free hemorrhage (Figure 3) as well as degenerated villous structures were observed. In the results of the immunohistochemical study performed on the placenta, the following findings were obtained, respectively; cytotoxic T cells showing positive immunoreactivity with CD8 (Figure 4), macrophages showing positive immunoreactivity with CD68 (Figure 5) and a small number of positive staining with CD4 were observed.

Figure 1: Macroscopic view of the placenta
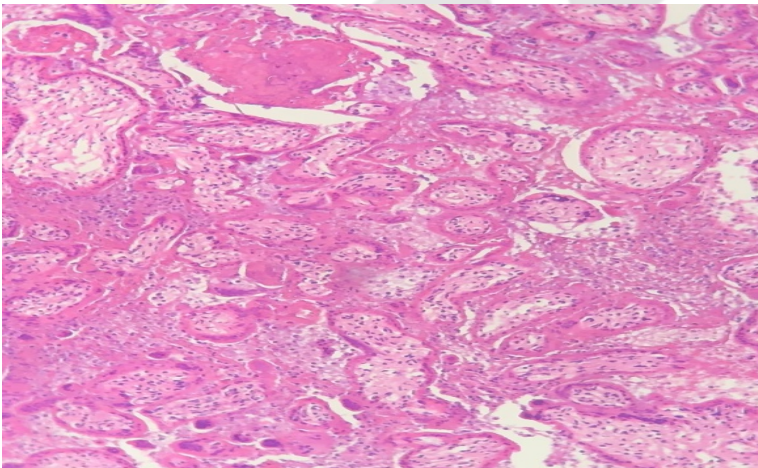
Figure 2: Perivillous prominent fibrin deposition image (H&E, 40X)

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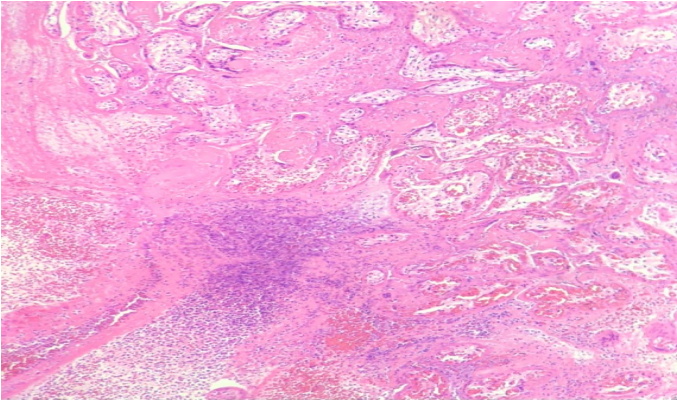
Figure 3: İntervilleus, lymphocytic infiltration including localized neutrophils (arrow) and free hemorrhage areas (H&E, 40X)
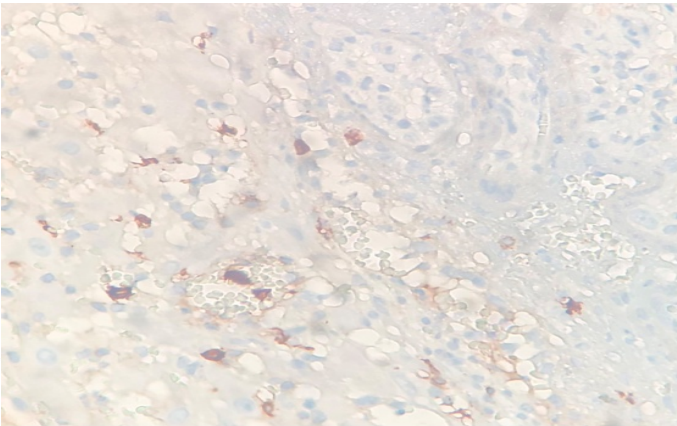
Figure 4: Cytotoxic T cells showing positive immunoreactivity with CD8
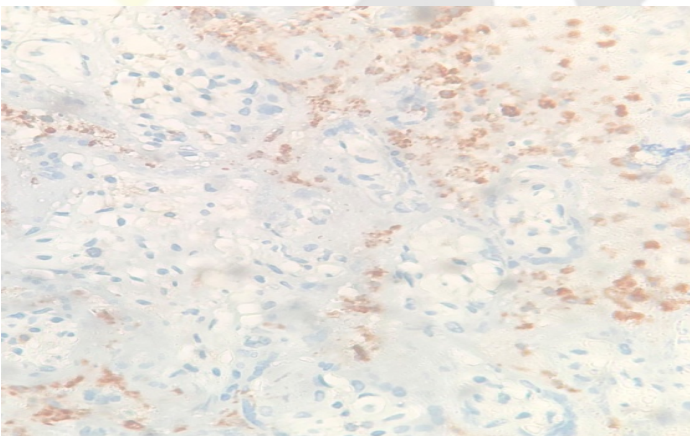
Figure 5: Macrophages in clusters showing positive immunoreactivity with CD68

Discussion: It is important to follow up fetal development after a few weeks, especially in patients with severe COVID-19 infection (5). It is not known whether it will cause intrauterine growth restriction because of limited data. Fetal growth restriction and placental thrombotic vasculopathy have been reported in patients with previous SARS (6). Estimated fetal weights in USG performed in both of our patients and final weights of fetuses after operative deliveries were compatible with each other and fetal growth restriction was not detected in these fetuses. However, the presence of widespread degeneration areas in the placental pathology of our second case clearly explains the impaired uteroplacental circulation.

Conclusion: Available data show that pregnancy and delivery do not worsen the clinical course of Coronavirus infection, and most infected mothers recover without giving birth. In these cases, ablatio placenta and related IUMF were observed in pregnant women who did not have any other obstetric risk factors before but who had COVID-19 positivity, as we have not encountered in the literature. More cases and more pathological sampling are needed to elucidate the relationship. In addition, patients should be informed about the symptoms that may develop suddenly, even if the course is uneventful in COVID-19 positive pregnancy follow-ups.

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Oral Presentation No: 34443

Women in the Pandemic

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Abstract

According to the United Nations Population Fund (UNFPA), the coronavirus (Covid-19) pandemic is threatening the health of people throughout the world, especially groups defined as "vulnerable populations", and exacerbating gender inequalities.

It has been reported that participation in education, working life, and decision-making mechanisms, which are determinants of women's health and status, have been further affected adversely by quarantine conditions and that domestic violence has increased. During the pandemic process, isolation and "good" hygiene practices have increased the burden of women, especially at home.

During the pandemic, it has become even more difficult for women to establish a balance between work life and home life, which has led to an increase in the number of women having to leave their jobs, a reduction in their income, and their impoverishment consequently.

The decrease in the rate of schooling and attendance of girls to school and the increase in adolescent marriages during the pandemic process are also among the negative effects of the pandemic on women's lives.

As a result, it is very important to evaluate the impact of the pandemic on women's lives objectively and to implement measures that can improve the current situation in the short and long term. Accordingly, UNFPA has decided to emphasize the theme, "Curbing Covid-19: How can the health and rights of women and girls be protected now?", as the 2020 World Population Day theme.

Keywords: Pandemic, Woman, Quarantine

Introduction

Covid 19 is a virus that causes severe acute respiratory syndrome and is pathogenic to humans. Covid-19 coronavirus infection caused by SARS-CoV-2 has caused a pandemic that affects the whole world

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(1). The mortality rate due to the Covid-19 pandemic is 3-15% (2). The morbidity / mortality risk created by the infection and the socioeconomic crisis have caused countries to take drastic measures, including the closing of border gates (3). Pandemics are a social phenomenon that affects individuals and society at many levels and causes deterioration. Because, as the perception of threat caused by the infectious disease increases, people who experience panic and stress exhibit different behaviors than usual (4). How the emotional and psychosocial effects of the uncertainty and crisis emerging during pandemic periods are managed and how to deal with them has an important place for the individual and society. Elderly individuals and those with chronic diseases have been identified as the group with the highest potential to be affected by the Covid-19 pandemic process (5). Women can also be considered in the risk group because of their status in society and their caring roles. In addition, women have a higher disease burden than men in this extraordinary period due to their reproductive disease burden. The World Health Organization stated that Covid 19 is more mortal in men; however, it reports that women's health is affected more negatively than men in this process (6). With the quarantine conditions and social isolation measures, women experience difficulties in meeting their health care needs and the use of resources with the economic and social crisis, and it is reported that gender-based violence against women is gradually increasing. With these measures, it is seen that the responsibilities of women at home have increased. While it is difficult for working women to balance their work and home life even in their normal routines, it becomes more difficult and tiring during the process of COVID-19. This situation makes it easier for women to quit their jobs and prepares the ground for a decrease in income and impoverishment. Another important point is the continuity of education. During the pandemic process, it is observed that the difference between the schooling and school attendance rates between boys and girls has turned against girls (7). It is very important to evaluate the impact of the pandemic on women's lives objectively and to implement measures that can serve the efforts to improve the current situation in the short and long term.

Pandemic and Women

The COVID-19 epidemic experienced today has caused us to increase our awareness on many issues. Employment conditions and health status of the individual are affected by each other (8). In this context, according to the ILO, women are at the forefront of the COVID-19 epidemic process. At the global level, more than 70% of health and social service workers (about 100 million people) are women (9). As a result of the epidemic, women are exposed to double burden in the context of 'longer shifts' and 'additional care work at home'. Women contribute to the economy in two ways. One of them is the labor in working life and the other is the unpaid domestic worker role in the household. During the epidemic, the time spent at home within the scope of isolation measures seriously affected the lives of working and non-working women. Some women whose jobs and professions are suitable for working at home have begun to work at home, offering their paid labor from home. (10) However, the roles assumed by women within the household have diversified and the transition period between

these roles has become very short and intertwined. While the woman is cooking in the household, she can prepare the environment or course materials for her child to study; She is able to negotiate on the phone while ironing. Another important issue is that the support from family members such as grandmother, grandmother and grandfather in child care cannot be obtained due to the fact that the individuals are (mostly) in the risk group by age. This affects the woman negatively both physically and psychosocially.

Women in Distance Education Processes of Children

Women have become an important role in the responsibility for the follow-up, encouragement, control and feedback of the distance education processes of children during the pandemic process. In this role, the woman is held responsible for many components such as following the lesson hours and homework, providing communication and feedback with the school administration and teachers, active use of information technologies, tracking live course broadcasts, recording course materials, printing out and archiving the assignments. However, since children do not leave the house, in order to observe the spirit and body balance; Spending quality time, organizing various activities, procuring and preparing materials are usually provided by the organization of the mother in the household (9).

Women in Hygiene and Sterilization

Ensuring hygiene and sterilization more carefully than in the pre-epidemic period is a new addition to women's household labor. Among the 14 rules published against the risk of COVID-19, especially the articles 1, 8, 9, 10, 12 and 13 are related to hygiene and sterilization (11). However, the sterilization of purchased foods, packaged products, fruit-vegetables, door handles, floors and touch surfaces causes many women to be exposed to many chemicals for a long time. It is necessary to consider how this situation will affect the health of women in the future. Especially if his wife or he / she is in a risk group, he / she will need to give more importance.

Women in Family with Curfew Restricted

Care of family members and relatives who are under a curfew (under 20, over 65 or with chronic diseases), who are in the risk group due to chronic diseases or who cannot go out under the precaution, shopping work, hygiene conditions during the epidemic process, whether they live in the household or not management and organization are the responsibility of women. It is seen that women are actively operating in this regard both in terms of the management of the process and the organization. Children, young people under 20, the elderly over 65, the sick and the disabled; It is the unpaid care work undertaken by women (9).

Women in a Changing Nutrition Style

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As a precaution during the pandemic process, the preparation of the meals at home and the follow-up of the expiry date and stock of the foods remained the responsibility of the woman. In this process, a significant increase was observed in the sensitivity towards consuming only "home cooking" at home as a precaution. This situation: The increase in the time spent in the kitchen and the fact that the family members are always at home, making more meals led to the production of some foods that were not prepared at home (such as bread) (9).

Epidemic and Violence

Another issue that needs to be addressed in the context of the epidemic process is violence. With the pandemic, the change in the economy, income anxiety, poverty, unemployment, being in the same place and together constantly, not having a wide area of the household, individuals not having a room of their own; These are some of the factors that may increase the tendency of violence in the household (12).

In the report dated March 16, 2020, published by Erika Fraser, one of the UK Social Development Direct experts, it is emphasized that COVID-19 increases the potential of violence against women and girls and there are many reports on this issue. Accordingly, the necessary spatial limitations caused by the epidemic bring along accessibility problems (12).

In April 2020, United Nations Secretary-General António Guterres launched a global ceasefire call on "peace at home", stating that violence is not limited to war. In this call, it was stated that the number of women applying for support services in some countries doubled compared to before the epidemic, and all governments were invited to make the fight against gender-based violence a part of COVID-19 national response plans. In the call, it is stated that the social and economic effects of the epidemic are more devastating for women, it is emphasized that while "homes" should be the safest places for women and girls, they contain the greatest violence, and mention about emergency warning systems that can be installed in pharmacies and markets (8).

Women Employees During the Pandemic Period

With the COVID-19 pandemic, it is aimed to provide social isolation by introducing various prohibitions and restrictions that will support the "stay at home" call, as the environments and situations where people gather collectively around the world increase the rate of the spread of the epidemic (13). Another change as important as the implementation of distance education in the field of education has been the implementation of the practice of working from home in order to prevent disruption to working life. Home-based work has been implemented in many sectors outside of vital work areas. Regardless of whether they are male-female or public-private sector employees during

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the COVID-19 process, many people in the working life have had to adapt to the practice of working from home and to work from home. With the COVID-19 epidemic, it is a fact that women especially have to experience a very challenging and tiring process (13). Women make up more than 70% of healthcare workers in the world and they are fighting in the front lines in the Covid 19 pandemic (14). Most of the female healthcare workers had to deal with household chores such as the education of their children who could not attend school at home, cooking and meeting the increasing hygiene needs while trying to provide services under severe conditions during the pandemic process. In addition, if there is a care responsibility for elderly people at home with chronic diseases, they have come to have problems in fulfilling these responsibilities due to the risk of virus transmission. With these burdens, there has been an increase in women's burnout (15). Considering that female healthcare workers are employed more frequently in areas where patients interact directly with patients, it is observed that the risk of exposure to the disease is higher for women.

Effects of Pandemic on Women's Health

Pandemic; It makes it much more difficult for women to access treatment and health services. Access to information about COVID-19 and critical healthcare services are accompanied by multiple or intersecting inequalities such as ethnicity, socioeconomic status, disability, age, race, geographic location, and sexual orientation that affect decision-making processes related to these services (16). It is not possible for women to reach health needs (necessary medicines and vaccines, maternal and reproductive health services). The provision of services related to sexual and reproductive health, including maternal health services and services related to gender-based violence, is very important for the health and rights of women. Transferring critical resources to other areas in the provision of these services may cause an increase in maternal morbidity and mortality, an increase in adolescent pregnancies, and a significant increase in HIV and sexually transmitted diseases. During the current COVID-19 pandemic, it is estimated that 18 million women in Latin America and the Caribbean will be deprived of regular access to more modern contraceptive methods (17). Special attention should be paid to health services provided to elderly women, victims of gender-based violence, antenatal-postnatal care and delivery services, emergency obstetric and neonatal care services. Necessary infection control measures should be taken.

Conclusion and Recommendations

It is very important to evaluate the impact of the pandemic on women's lives objectively and to implement measures that can serve to improve the current situation in the short and long term. Special attention is required for the health services provided, antenatal-postnatal care and delivery services, emergency obstetric care and neonatal care services. It is of vital importance to take the necessary

measures and develop policies in order to prevent violence. Psychological support service systems for women are extremely important.

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Autopsy and Forensic Sciences Approach in COVID-19 Caused Deaths

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ABSTRACT

The corona virus (COVID-19) infection, which broke out in Wuhan, China in December 2019, has spread to many countries around the World and has reached a serious threat to public health. According to the data, dated December 30, 2020, the total number of cases in the World is 82,439,369, the number of deaths due to corona is 1,799,337 and the number of recovery is 58,444,965. However, the fact that an additional 16,000 deaths were reported between March and June 2020 in the UK alone, whose cause of death was not identified as COVID-19, increased fears that the actual number was higher. The limited number of people tested and the difficulties in performing autopsies suggest that many deaths from COVID-19 remain undetected. According to May 2020 data, only limited studies were reported to provide data based on autopsy. Data from limited number of histological studies have influenced treatment protocols. According to histopathological findings, a significant change in the coagulation system is reported. In this context, the lack of postmortem research led to a delay in revealing what caused death in this infection and elucidating the pathways of infection. At the beginning of the pandemic period, autopsy with a qualified team under safe conditions in our country would reveal the histopathological changes and morphological findings in the cases of COVID-19 death. Therefore, in the light of these findings, it would have been possible to understand what kind of damage the disease have caused, and results could have been achieved without wasting time and with effective measures in treatment and prevention processes.

In this review, our aim is to discuss the question which is "Do we still need autopsy to find the answers to the questions behind COVID-19 deaths?" and to raise another question which is" If we ignore the benefits of the autopsy, do we lockdown science?"

Key words: Autopsy, COVID-19, Forensic Sciences, Histopathology

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INTRODUCTION

The corona virus (COVID-19) infection caused by the new type of corona family, SARS-Cov-2 (Severe Acute Respiratory Syndrome Coronavirus 2), showed itself as pneumonia of unknown cause in Wuhan, China for the first time in December 2019 (1). According to the data, dated December 30, 2020, the total number of cases in the World is 82,439,369 and the number of deaths due to Corona Virus Disease 2019 (COVID-19) is 1,799,337 and also the number of recovery is 58,444,965 (2). It is very important to solve the pathology of the clinical situation caused by the virus in order to reveal the systemic and organ-based damage, develop treatment and prevention methods and to reveal the causes of death and specific pathological features in deaths caused by COVID-19 disease. Detection of virus in the laboratory is possible by reverse transcription real time polymerase chain reaction (rRT-PCR) genetic test and also by antigen and antibody tests (3).

Since, SARS-Cov-2 categorized as an HG3 organism, spreading has significant risk for all healthcare employees (4). The number of autopsies were deceased for COVID-19 deaths because of the fear that SARS-Cov-2 could spread if the autopsy rooms were not standart for infectious diseases (5).

Despite modern diagnostic methods, autopsy is still the gold standard in diagnosis to analyze diseases such as COVID-19 systemically and comprehensively (3). Autopsy will have a key role in understanding the biological properties of SARS-CoV-2 and the pathogenesis of the virus and organ involvement.

Numerious scientific organisations prepared recommendations for postmortem examinations and autopsies. WHO declared that the bodies generally are not infectious. But, in some cases like cholera, Ebola, Marburg and also deceased with COVID-19 might be infectious (3). According to Chinese recommendations three protection levels were determined and for either suspected and confirmed COVID-19 deaths personel protective equipment consist of disposable surgical cap, N95 respirator face mask, disposable latex gloves, full face or powered air-purifying respirator, work uniform are required. While preparing bodies all possible body openings like mouth, nose, ears, anus were filled with cotton or chemically disinfected (3).

In China, where the disease first manifested itself, pathologists who worked with COVID-19 patient autopsies; explained that they gained important information about the cause, etiology and pathology of the disease and that these findings were supported by diagnosis and treatment (6). After these autopsies performed in China, pathologists and clinical experts in the autopsy team reported and discussed the pathological autopsy

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findings and published the COVID-19 Diagnosis and Treatment Program. According to this guide the results supported by the autopsy findings. By preparing a multisystemic support model in the treatment of COVID-19, it is aimed to improve the respiratory function management in the course of the disease, to evaluate the immune function and to emphasize its protection (6).

Histopathological analysis of samples collected from autopsies of COVID-19 patients has contributed significantly to the understanding of this new disease, summarizing the main negative aspects of the disease and thus helping to focus on potential life-saving therapeutic approaches, for example, increasing blood fluidity and improving endothelial integrity in the face of microthromboses detected at autopsies and this treatment approach continues to be included in current guidelines (7). In a recent study conducted with 32 autopsy cases in New York, the variety of pathological findings was shown; in addition to extensive alveolar damage, increased thromboembolism in multiple organ systems was confirmed, and different histopathological patterns were observed in lymph nodes and liver (8).

CONCLUSION

As a result; thanks to postmortem analysis we acknowledge that it is a systemic angiocentric disease affecting the lungs primarily through coagulation and many other biological mechanisms in COVID-19. All these studies are also important in illuminating the link between comorbidity and mortality from COVID-19. The importance of obtaining full and comprehensive autopsy and histopathological material is emphasized in the literature to reveal the course of the disease, especially in young individuals without risk factors (9). An autopsy series conducted in Poland has shown that individuals who were previously healthy can also succumb to this disease (10). Despite many publications, information on pathologies in COVID-19 disease is still very limited. The findings obtained as a result of the autopsies will become clearer as the autopsy studies increase, and other organ / system pathologies caused by the disease will be presented. In order to understand the biological properties of SARS-CoV-2 and the pathogenesis of the disease, full autopsy studies with laboratory and imaging methods and verification are needed (11). Despite modern diagnostic methods, the most important tool at our disposal is autopsy.

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Students Being Covid-19 While Preparing For The University Entrance Exam: Qualitative Research

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Abstract

Aim: In this study, it was aimed to discuss the psychological problems experienced by three young patients who are at the University preparation stage, who have ground glass image in their tomography results showing the symptoms of the disease and who have positive PCR-tests.
Method: The data of this research, which is a qualitative study, were collected as a result of interviews with the participants. The sample was collected by snowball sampling method.
Findings: During the pandemic process, young people who were diagnosed with Covid-19 during the preparation phase of the university were not able to focus on the study in which their social and family relationships were disrupted, they experienced fear, burn out and anxiety, and Students were not able to receive social Support and family Support due to the isolated environment. It was determined that they faced.
Results: As a result, these Students both entered the disease process due to the Covid-19 outbreak and had difficulties in Preparing for the University exam, which would affect their future considerably.

Keywords: Covid-19, university entrance exam, student.

INTRODUCTION

The coronavirus (Covid-19) infection that emerged in Wuhan, China in December 2019 has affected the whole world (1). Spread of the disease by droplets caused a rapid spread. The rapid spread caused the number of infected people to be higher than expected (1,2). After a short time, in March, coronavirus (Covid-19) infection was declared as a pandemic epidemic by WHO (3). Coronavirus (Covid-19) belongs to the same group as viruses that cause Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) (4,5). The virus causes severe acute respiratory tract infections and progresses asymptomatic, mild or severe symptomatic (5,6). The first case was reported on March 11, 2020 in Turkey. As the number of cases increased, various precautions started to be taken and protective measures against the virus continue to be taken. As of January 11, 2021, the total number of cases reported in Turkey is 2,336,476 and the total death count of 22 981 (7). Pandemics that remind people of the reality of death can affect people's psychological health quite negatively. Factors such as staying at home continuously in order to protect against the epidemic, decrease in social relations, when the epidemic process will end, or the factors affecting this process may be unknown (8). Young people preparing for the university entrance exam are an important group who are psychologically affected by this pandemic process. Covid-19 outbreak in the study process before many students preparing for the university entrance exam in Turkey's concerns, decreased self-esteem, experience has demonstrated that individual situations, such as inability to deal with. In addition, it is known that this exam creates a great pressure on students and families, and exam anxiety is central to their lives (9,10,11). The

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Covid-19 pandemic emerges as a major problem during the exam preparation period, when young people have difficulties even in normal times. In this pandemic process, it is predicted that it is necessary for adolescent health to determine the negativities to be experienced when a fatal disease threat (Covid-19) occurs in front of students. Nurses who know the possible risks in advance and are well-equipped about the developmental period of adolescents are the best occupational group that can provide support to adolescents during the epidemic process. Therefore, the article; It was prepared to guide nurses in the evaluation of adolescent health in this process and to contribute to the determination of support needs of young people.

METHOD

The Population and Sample of the Research: The population of all young people preparing for the university entrance exam is formed. Sample; Covid-19 positive young people, who are in a study center in Gaziantep province and can be reached via social media, were volunteers to participate in the study. Participation in the study was based on volunteerism.

Collection of Research Data

The data of the study were collected by phone calls and interview forms created in Google forms due to the epidemic. The forms sent to the participants were completely filled in with the participant's approval. The data were collected between 1-10 August.

Question form

It consists of the demographic data created by the researcher and the questions about the impact of the Covid-19 process on the exam preparation process of young people (psychological conditions, social and family relations, exam preparation process).

Data Analysis

Descriptive analysis technique was used to analyze the data. Immediately after the interview with the participants was completed, the responses of the participants were evaluated. Notes were taken during the interview. Participants' responses were given as they are, respectively.

Ethical Aspect of the Research

In order to conduct the research, permission was obtained from the Ethics Committee of Kilis 7 Aralık University on 17.07.2020 (2020/20 permission number). In the digitally prepared form, the purpose of the research, the benefit and the harm to the participant were stated and volunteering was taken as a basis. This study has been planned and conducted in accordance with the Helsinki Declaration Principles. This study was prepared based on the consent and voluntariness of the participants. After the article was written, it was shared with the participants and the participant stated that the feelings and thoughts were conveyed as they wanted. In addition, the participants thanked the authors for conveying their experiences and having the opportunity to be heard.

RESULTS

Participant 1:

18-year-old, female, living with a nuclear family, good economic situation, preparing for the university entrance exam for two years. She stated that she experienced conditions such as diarrhea, fever, loss of smell and shortness of breath, ground glass image on tomography (Figure 1), CRP elevation, PCR-test positivity (Table

1) as signs of Covid-19. In addition, the patient does not have a chronic illness. The patient sees the measures taken for Covid-19 insufficient because she is a Covid-19 patient, her preparation process and psychology are negatively affected, her social and family relations are disrupted, she is constantly arguing with her mother and is tired, she stayed in the hospital for six days, and then she was treated in isolation at home, She reported that she used the 200 mg plaquenil drug, which is also used in the treatment of malaria for 5 days, morning and evening, and that her relatives also had Covid-19. She stated that she thought she would die when she found out that she was sick and she was very afraid. She stated that she was worried about not being able to take the exam because of her illness, that her labor would be wasted, she was very sad and afraid that they would not take her to the exam. While the patient stated that she was in very intense anxiety and was afraid of infecting someone with Covid-19 disease, she said that she was tired of this situation and felt exhausted and tired, and that she could not focus on her lessons. The patient used the expression "When will this life be beautiful or when will it be laughing at me? I am tired now".

Participant 2:

18 years old, female, living with nuclear family, medium economic situation, preparing for university entrance exam for 1 year. As a symptom of Covid-19; She stated that she experienced conditions such as fever, sore throat, cough, lack of smell and taste, ground glass image on tomography (Figure 1), high CRP, and PCR-test positivity (Table 1). In addition, the patient does not have a chronic illness. The patient sees the measures taken for Covid-19 insufficient, and because she is a Covid-19 patient, her preparation process and psychology are negatively affected, her social and family relationships are disrupted, she feels very lonely in this process, she cannot cope with her stress, she stayed in the hospital for five days, and then she was isolated at home. She stated that she had been treated and used 200 mg of plaquenil, which is also used in the treatment of malaria for 5 days, morning and evening, and that her relatives also had Covid-19. She said that when she found out that she was sick, she panicked, did not know what to do, and was terrified. She stated that she was afraid of not being able to take the exam due to her illness and that she did not want to infect someone with Covid-19 in the exam. The patient stated that she was in a very intense anxiety due to the uncertainty about whether to take the exam, and that she occasionally cried involuntarily and could not study due to this anxiety.

Participant 3:

21 years old, male, living with nuclear family, medium economic situation, preparing for university for 3 years. As a symptom of Covid-19; He stated that he experienced symptoms such as fever, sore throat, cough, ground-glass image on tomography (Figure 1), high CRP, positive PCR-test (Table 1). In addition, the patient does not have a chronic illness. The patient sees the measures taken for Covid-19 inadequate and stated that since he was a Covid-19 patient, the process of preparation for the exam and his psychology were negatively affected and his social and family relations were disrupted. He stated that he could not communicate with the family during this process, he had to live separately from them, it was very difficult not to receive family support and to stay in a single room in isolation, he constantly cried for no reason, and could not study. He stated that he stayed in the hospital for five days and then was treated in isolation at home and used 200 mg of plaquenil, which is also used in the treatment of malaria for 5 days, in the morning and evening, and that his relatives, friends and acquaintances outside of himself also had Covid-19. He said he was very scared when he found out that he was sick. He said that he was unable to cope with the fear of illness and death, as well as exam anxiety, and felt intense anxiety and burnout. He also stated that he could not sleep due to the uncertainty about whether to take the exam after the illness and that he had difficulty focusing on studying.

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Table 1. Laboratory Results of the Cases

Değerler	Values	Normal range
1. Case		
MPV	**12.1**	6-10
LYMPH%	**18.4**	25-50
ÜRE	25	17-43
KREATİNİN	0.58	0.51-0.95
CRP	**5.4**	0-5
PT	12.7	9.4-14.2
INR	1.03	0.8-1.2
APTT	27.5	16.9-31.9
AST	20	0-35
ALT	12	0-35
PCR-TEST	**POSITIVE**	
2. Case		
MPV	**14.8**	6-10
LYMPH%	**17.4**	25-50
ÜRE	30	17-43
KREATİNİN	0.65	0.51-0.95
CRP	**6.8**	0-5
PT	11.2	9.4-14.2
INR	1.04	0.8-1.2
APTT	21.5	16.9-31.9
AST	29	0-35
ALT	17	0-35
PCR-TEST	**POSITIVE**	
3. Case		

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MPV	**15.8**	6-10
LYMPH%	**19.4**	25-50
ÜRE	24	17-43
KREATİNİN	0.75	0.51-0.95
CRP	**6.8**	0-5
PT	12.8	9.4-14.2
INR	1.01	0.8-1.2
APTT	28.8	16.9-31.9
AST	24	0-35
ALT	18	0-35
PCR-TEST	**POSITIVE**	
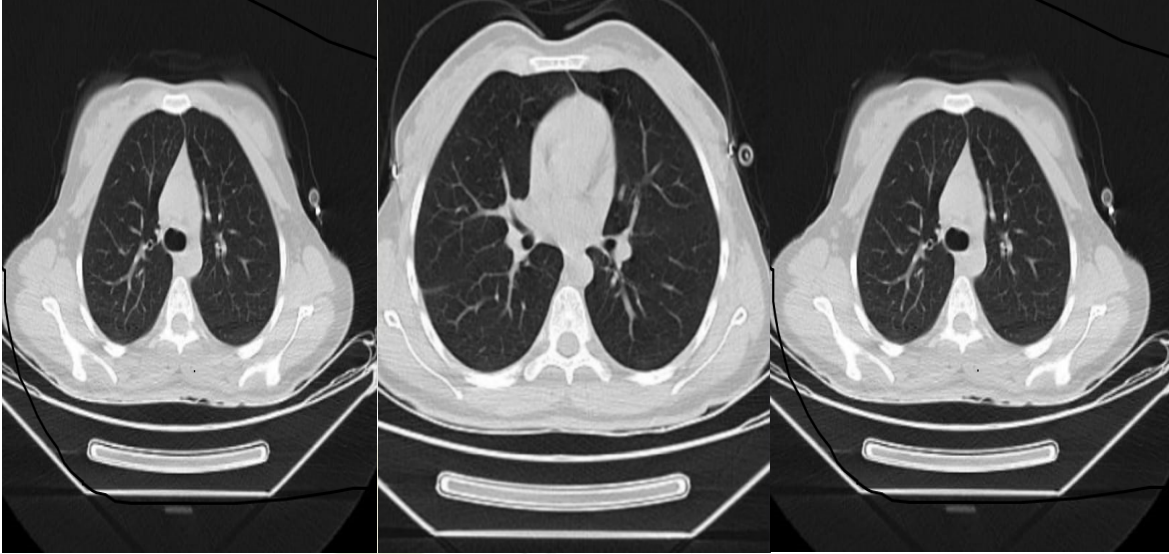
Figure 1. Patients' Tomography Results at the Diagnosis Stage

DISCUSSION

When we look at the Covid-19 symptoms of the cases; It was observed that they experienced conditions such as fever, diarrhea, loss of smell and taste, shortness of breath, sore throat, cough, ground-glass image on tomography (Figure 1), high CRP, and PCR-test positivity (Table 1). In the study of Üstün and Özçiftçi (2020), the most common symptoms of Covid-19; It has been reported that there is fever, cough and breath (12). Studies conducted in China have found that people positive for Covid-19 have high levels of stress, anxiety and depression (13,14). It was stated that the cases in the article experienced feelings of loneliness, fear and anxiety. In addition, the subjects state that their psychology is impaired and their social and family relationships are negatively affected. In the study conducted by Kwek et al to determine the psychological status and quality of life of those treated for SARS disease after 3 months, it was determined that their quality of life was low (15). Studies show that depression, anxiety and quality of life are negatively affected during epidemic processes. People experience stress as a natural, normal and necessary response when faced with a dangerous situation. Emotions experienced with stress are especially feelings of anger and anger. If the stimulants that cause stress cannot be dealt with, the feeling of pessimism emerges as a secondary emotion. The most prominent psychological disorders that occur in individuals as a result of stress; anxiety, depression, insomnia and fatigue (16,17).It was reported that our cases experienced similar situations. During epidemics, it has been reported that fear of getting sick and death, stigma and despair are experienced (18,19). In addition, stress disorder, panic attack, anxiety, depression, and psychotic symptoms have been diagnosed in individuals who are in quarantine at home and socially isolate themselves (20,21). In addition, it was showed that our cases had a very difficult process due to uncertainties about the exam and their concerns about their health. Cao et al. (2020), it was determined that students experience stress due to fear of Covid-19 disease, their psychology is impaired and they cannot study (22). One of the most important problems in the Covid-19 epidemic process is the concerns people experience. Uncertainties about the future, disease transmission, fear of contagion prevented students from focusing on their lessons (23,24). The cases in this article stated that they had difficulties focusing on studying, feared death, and were worried about transmitting the disease. The increasing number of cases announced every day, the speed of spread of the virus compared to other viruses is fast and deadly, and the dates for exams are not clear, and the dates given change have increased the students' anxiety, burnout, and fear of Covid-19 (24). The students stated that they were afraid of not being able to take the exam due to illness and that they could not focus on studying with this fear. They also explained that they felt tired, sad, anxious and exhausted.

CONCLUSION

The university entrance exam, which is known to negatively affect the self-confidence of young people, cause them to feel lonely, give excessive importance to the opinions of others and prevent individualization, has become more pressure on young people in the Covid-19 epidemic and caused anxiety that young people cannot cope. In this process, it was determined that the students were psychologically and sociologically affected negatively, they had difficulties in studying, and they were concerned about Covid-19 and not being able to take the exam. In addition, it was determined that students had burnout and anxiety during the illness process and their family relationships were negatively affected by this process. As nurses, we must understand the concerns and fears of young people, remember that they are preparing for a very important

exam for their future lives, and provide the young people with the necessary support, considering the difficulties they may face during the pandemic process. An important conclusion from this study is that the patients are very young and have had their share of the Covid-19 outbreak. In addition, the presence of Covid-19 in individuals around the cases has been very useful in reminding us of the necessity of measures to be taken.

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Determination of Nursing Students' Opinions on Covid-19 Vaccine

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ABSTRACT

Objective: For university students embracing a digital age and exposed to multimedia, the sources and their reliance on coronavirus vaccine information can play an important role in accepting vaccination practice. The study was conducted to determine the views of nursing students on the coronavirus vaccine.

Methods: The cross-sectional study was carried out in the Faculty of Health Sciences of a university in the spring semester of the 2020-2021 academic year. Research data were collected by reaching 250 students from 1, 2, 3 and 4 grade nursing department students. An online survey was used to understand their perceptions and attitudes towards coronavirus vaccination. Descriptive analysis and linear regression analysis were used to investigate vaccine information sources among university students and to examine how coronavirus vaccine acceptance was correlated with the source of information and level of trust in each resource.

Results: In the study 76.00% of the students participating in the study were female students, 44.40% of the students were first year students, 41.20% used mass media as a source of information on vaccines, 62.80% were undecided about finding the coronavirus vaccine safe and again 55.20% of them were undecided about considering vaccination.

Conclusion: It has been concluded that the mass media are at the forefront among these resources where nursing students use more than one source to obtain information about the coronavirus vaccine. However, students' confidence in the coronavirus vaccine and largely indecisive when it comes to vaccination is closely related to the use of mass media as a source of information.

Keywords: Coronavirus; Vaccine Administration; Nursing students

INTRODUCTION

While the COVID-19 outbreak seriously affects normal social and economic activities, it continues to put pressure and burden on most health systems worldwide (1). Along with the recent developments, it is mentioned that a few vaccines, which are still being studied, are in phase 3. clinical trials and their promising effects (2). When safe and effective vaccines are available to control the COVID-19 outbreak, it is important to ensure large-scale applications of these vaccines. Vaccine acceptance is a critical factor affecting vaccine intake. The health information of the population where the vaccine will be administered has been directly associated with the vaccine acceptance (2,3).

Hesitation about vaccination continues to increase worldwide (4). WHO has identified this situation as one of the ten biggest global health threats in 2019 (WHO, 2020). In many countries, hesitation and misinformation about vaccination constitute important obstacles to vaccination (5,6,7).

It shows that determinants of vaccine acceptance are more than one and various in the literature (6). The source of the information obtained at the point of vaccination, the way of using this information, the degree of reliance on the source of information, and its frequency may affect vaccine acceptance (9,10,11). If people do not trust the source, they will doubt the information, and this doubt will shape their attitudes, perceptions and potential actions they take (8,910,11).

University students exhibit behaviors that endanger health due to their feeling of invincibility. University students embracing a digital age and exposed to multimedia have a perception that COVID-19 is not a serious health threat. This situation directly affects their decision to be vaccinated (10, 11).

In order for individuals and hence societies to improve their health, access to information and media frequently take part in the use of this information (11). Media tools have advantages such as quick access to information about people's health or the opportunity to reach many people at the same time. Undoubtedly, it is stated that these advantages make significant contributions to the transfer of correct health information and correct behaviors to the society, to make people aware of the health services provided, to improve positive health behaviors, to raise awareness on issues such as individual and public health, and in short, to improve health awareness (12, 13, 14, 15).

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However, studies suggest that concerns about infodemics are increasing and the spread of misinformation and conspiratorial beliefs through various channels in the COVID-19 epidemic may significantly reduce the acceptance of the COVID-19 vaccine (15,16,17).

This study aims to explore the sources of information on the COVID-19 vaccine among nursing students, assess their trust in different sources of information, and examine how the sources and trust of COVID-19 vaccine information correlate with the acceptance of a COVID-19 vaccine.

METHOD

Research type

This research was conducted in a descriptive and cross-sectional manner in order to determine the views of nursing students regarding the COVID-19 vaccine.

Sample of the study

The cross-sectional study was carried out in the Faculty of Health Sciences of a university in the spring semester of the 2020-2021 academic year. Research data were collected by reaching 250 students from 1, 2, 3 and 4 grade nursing department students. An online survey was used to understand their perceptions and attitudes towards COVID-19 vaccination. Sampling selection was not made in the study, and the entire population was included in the sample.

Ethical issues

Ethics Committee Approval was obtained before conducting the research. The student nurses who accepted to participate in the study were informed about the purpose and process of the study and their verbal informed consent was obtained. The study was carried out according to the principles of the Declaration of Helsinki.

Data collection tools

"Individual Identification Form" was used in collecting research data. This form consists of two parts. The first part includes the socio-demographic characteristics of the students, and the second part includes questions about the COVID19 vaccine. In the first part of this form created by the

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researchers, there are four questions about socio-demographic characteristics such as age, gender, class, and income, and in the second part, there are three questions about the source of information about the COVID-19 vaccine, the status of finding the vaccine safe and considering vaccination.

Evaluation of research data

Descriptive analysis and linear regression analysis were used in order to investigate vaccine information sources among university students and to examine how acceptance of COVID-19 vaccine is associated with the information source and level of trust in each source. It has been taken as 0.05.

RESULTS

When the distribution of the students included in the study according to some introductory characteristics is examined; It was determined that 76.00% of the sample are female students, 37.20% are 20 years old, 44.40% of the students are 1st grade students and 65.60% of them have a very good income (Table 1).

When the opinions of the students about the COVID-19 vaccine are examined; It was concluded that 41.20% of them used mass media as the source of information for the vaccine, 62.80% were undecided about finding the COVID-19 vaccine safe, and 55.20% were undecided about considering vaccination (Table 1).

When the results of the linear regression model are examined; Higher income ($\beta = -0.261$, $p = 0.001$) and being a first-year student ($\beta = -0.273$, $p = 0.018$) were negatively associated with higher levels of COVID-19 vaccine acceptance. When the source of information about the COVID-19 vaccine was questioned, its use on social media was negatively associated with vaccine acceptance ($\beta = -0.07$, $p = 0.037$), while health professionals ($\beta = 0.151$, $p = 0.023$) were positively associated. Confidence in COVID-19 vaccine ($\beta = 0.775$, $p = 0.001$) was positively associated with COVID-19 vaccine acceptance (Table 2).

DISCUSSION

In our study conducted to determine the views of nursing students regarding the COVID-19 vaccine; It was determined that 55.20% of the students were undecided about vaccination. When the literature is reviewed, a large part of the society reveals that it is unwilling to be vaccinated against COVID-19 (4,5).

University students embracing a digital age and exposed to multimedia have a perception that COVID-19 is not a serious health threat (30). In this direction, our study supports the literature with the result that 24.40% of the nursing students did not think of vaccination and 55.20% were undecided.

When nursing students' use of information sources for the COVID-19 vaccine was examined, it was determined that they obtained information from multiple sources, including health institutions, personal networks, social media and health professionals. It was determined that students' use of social media negatively affected vaccine acceptance. This result emphasizes the importance of eliminating misinformation on social media. In this context, it is predicted that the acceptance of COVID-19 vaccines will increase when correct and appropriate interventions are made.

It was determined that using healthcare professionals as a source of information positively affected students' vaccine acceptance. It was also concluded that as the sense of confidence in the COVID-19 vaccine increased, the vaccine acceptance of the students also increased. When the literature was reviewed, it was reported that the patients received more information from the internet or from their relatives about the vaccine acceptance (13,18,19).

In line with our study results, the reasons and hesitations of the society for not accepting the vaccine should be addressed and vaccine literacy should be established at this point. Effective strategies from scientific research are needed to disseminate accurate information from health authorities about the COVID-19 vaccine and to ensure interaction and information sharing with the public at the point of vaccination and to encourage the purchase of COVID-19 vaccine.

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Table 1. Distribution of Nursing Students by Some Introductory Features of the COVID-19 Vaccine

		n	**%**
Age	18	30	12.00
	19	55	22.00
	20	93	37.20
	21+	72	28.80
Gender	Female	190	76.00
	Male	60	24.00
Class	1th Grade	111	44.40
	2th Grade	36	14.40
	3th Grade	48	19.20
	4th Grade	55	22.00
Income status	very high	89	35.60
	high	71	28.40
	Middle	19	7.60
	Low	71	28.40
Vaccine Information Source	Health institutions	38	15.20
	Mass Media	103	41.20
	Personal Social Networks	92	36.80
	Health Professionals	17	6.80
Finding the Vaccine Safe	Safety	34	13.60
	Hesitancy	157	62.80
	Unsafety	59	23.60
Considering Vaccination	Refusal	61	24.40
	Hesitancy	138	55.20
	Acceptance	51	20.40

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Table 2.Regression Analysis of Nursing Students for COVID-19 Vaccine

	B	S E	β	t	p
Gender	-0.014	0.058	-0.009	-0.243	0.808
Age	-0.002	0.014	-0.006	-0.148	0.883
Annuval İncome	-0.14	0.34	-0.261	-4.25	0.001*
Grade	-0.150	0.020	-0.273	-7.491	0.001*
Types of information sources					
Health agencies	0.02	0.09	0.01	0.18	0.860
Mass media	-0.14	0.07	-0.08*	-2.09	0.037
My personal social networks	0.14	0.09	0.05	1.62	0.106
Healthcare providers	-0.16	0.10	0.151	-1.54	0.023*
Safe to Vaccine	0.861	0.042	0.775	20.517	0.001*

p < .005*

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Midwifery Training During the COVID-19 Pandemic: Same or Different

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ABSTRACT

The COVID-19 pandemic was first identified in 2019. It was declared a pandemic by the World Health Organization (WHO) on March 11, 2020. During the pandemic process, it was decided to suspend education for a while in universities and other educational institutions in many countries Following the statement made by the Ministry of Health on March 11, 2020, the Council of Higher Education (YÖK) decided to temporarily terminate formal education at universities and to switch to remote synchronous or asynchronous education as of March 25, 2020. Departments such as midwifery, nursing, and medicine, which provide education in the field of health, quickly switched to distance education, which hampered their practical education processes. Midwifery and nursing practices were maintained with three different strategic plans published by WHO. The first plan is the involvement of universities and health service providers in each other's management and operations, and the second is that the faculties develop joint appointments with the healthcare providers of the faculties and the staff teach in the faculties. The third is that universities contribute to education by making joint projects with health service providers. However, in Turkey, the Council of Higher Education reported last year students in the medical field will continue to clinical practice training. The Council of Higher Education has left the decision of midwifery education clinical practices to the departments and the senate. While some universities put their students into practice with the decision of senate, some continued

synchronously. The purpose of this review is to examine the impact of the COVID-19 pandemic on midwifery education.

Key Words: the COVID-19 pandemic, midwifery education, COVID-19 and midwifery applications.

INTRODUCTION

COVID-19 first appeared in the world in 2019 and was declared as a pandemic by World Health Organization (WHO) on March 11, 2020. Society has been deeply affected by the global epidemic of COVID-19 and there have been drastic changes in business continuity around the world. Countries have urged people to stay at home to prevent the spread of the virus. This caused universities to switch to an online education system, and students ' education was moved to a home environment away from school and clinics. Most affected by this educational system is undoubtedly clinical Applied Educational Sciences (1).

Midwifery is a mother, baby, woman-oriented, patient-based professional profession with close contact and intense emotional communication. Midwifery training is based on observation and experience, but also in the form of a master apprentice relationship, while today it is fed by evidence. In this process, it has become a branch of Science with ethical codes within a specific disciplinary framework and an educational process with midwifery education models (2,3). Midwifery education is based on one-to-one practice or monitoring of practice in institutions such as hospitals, family health centers, community health centers, in order for students to gain patient care and clinical experience. The European Union (EU) directive (2005) and the International Confederation of Midwives (ICM) (2013) set global minimum standards for midwifery education (4). The fulfillment of these standards is mandatory for completion of midwifery training and graduation. One of the biggest challenges in the pandemic process is how to continue to provide mandatory hours in education according to the EU directive (2005/36 / EC) and to meet the required minimum graduation criteria (5).

In the distance learning process and the COVID-19 pandemic, students had to move away from the practice labs and clinical experience at the school. The pandemic's requirements disrupted clinical training and threatened workforce continuity. The COVID-19 pandemic is likely to continue for another four to five years (5). Therefore, it is crucial to prepare midwifery students for their advanced professional life (6). This review was written to illustrate the state of midwifery education during the COVID-19 pandemic.

Theoretical Part of Midwifery Undergraduate Education During COVID-19

During the pandemic process, radical changes have emerged in midwifery education as countries have started to take national measures such as the suspension of education in universities and the transfer of education to the digital platform (7). At first, some universities thought of postponing the education process; however, following the introduction of the online education system, the theoretical part of the trainings began to be provided with online programs. The education system, which was face to face before the pandemic, now requires rapid digitalization. This rapid transition to an online environment has been painful for many academics, while the process of digitalization can be easily maintained for lecturers with previous experience (8). It is believed that all universities have switched to synchronous or asynchronous online education, and the field of midwifery education continues theory courses in a similar way as well.

While the digitization of theoretical education allowed students to continue their education, it created an obstacle for students living in the countryside who did not have a computer, Web access and a suitable environment at home to benefit from this education (9). In addition, digitalization of education is also a problem for evaluating and rating students (9). In evaluating students, some countries use grading system based on previous grades and clinical practice, while others have taken an approach to conducting assessments online. Student evaluations made in this way are suitable for competencies such as analysis, critical thinking, or synthesis, and are insufficient for evaluating students' clinical competence (8). It is believed that midwifery students may also have experienced these problems in theory classes.

Clinical Application Problem of Midwifery Undergraduate Education During COVID-19

Midwifery education is a clinic-based and practical department. Clinical practice is more intensive to increase the level of professional knowledge and skills at midwifery training stage. It is an educational program in which management power is gained by evidence and based on basic adult learning principles (4). Approximately 50% of midwifery training is focused on clinical training as apprenticeships and internships. This situation plays a critical role in the acquisition of basic and professional skills of midwifery students (10).

As the spread increased during the pandemic process, students with clinical practice were sent home. Some clinic managers have advised educators that students should practice in clinics and be exposed to the virus (11). According to this, while clinical practices in some countries continue as usual without interruption, in some countries the implementation part of the training has been postponed without any expectation about when

clinical applications can start (12). All international student placements have also been cancelled due to the global epidemic. Although the current situation puts students in financial difficulties, it additionally prevents students from obtaining qualifications in the International Health System (13).

Over time, standards were established in managing the epidemic process, while different approaches to the clinical practice of students emerged. In some countries, it has begun to receive support from midwifery students in order to support the staff who are active in the clinic in the intensive process by agreeing between health institutions and universities. The positive aspect of this is that students involved in the field can work in cooperation with inter-professional teams and gain experience that they did not have before. In some countries, the contract for health care assistants for midwifery students is still ongoing; however, it has not been put into clinical practice (14).

Clinical applications of midwifery and nursing education have been supported by three different strategic plans published by World Health Organization. First is the involvement of health care providers in each other's management and functioning. The second practice is for faculty to develop joint appointments with health care providers and staff to teach in faculties. The last practice is that universities contribute to education together by making joint projects with health care providers (1,9).

It was decided by the Council of Higher Education that universities in Turkey should be suspended from formal education and switched to remote synchronous or asynchronous education on March 25, 2020. It has caused disruptions in the clinical practice of education, especially in patient-oriented departments such as midwifery, nursing and medicine. In this process, the Council of Higher Education has taken a decision on the practice of nursing senior students (15). It also announced that students specializing in medicine, dentistry and pharmacy would participate in clinical practice (16). Despite this, it has not issued a statement for midwifery departments. The Council of Higher Education left the decision of clinical practice in midwifery education to departments and senate. Some universities have taken a decision by senate to put students in practice in clinics, while others have continued in sync.

The lack of security in midwifery education clinical practice, with the impact of the COVID-19 pandemic, will pose a serious threat to future workforce demand. Digital systems such as simulation training, virtual reality and telehealth can be effective training methods to overcome this deficiency of midwifery students in clinical practice (8,9).

Completing and Graduating Bachelor of Science in Midwifery During COVID-19

The application problem experienced by students in the COVID-19 pandemic is especially of intense concern for senior students to meet the minimum requirements for completing and graduating from the program. In countries with clinical practice disabilities, graduation process takes place after the final exam, and in other countries, if the senior academician approves. Students who have completed the minimum requirement of the EU Directives will be allowed to finish the program after three academic years, provided that they reach the target in theory courses. These students will be able to graduate before the specified date and contribute to the workforce by entering the field (8).

Midwifery students are eligible to graduate after completing the midwifery criteria in the legislation of the Council of Higher Education and also completing mandatory summer internships in the summer of the third year of undergraduate With the decision of the Council of Higher Education, the birth criterion for midwifery graduates can be reduced from 40 births to 30, if the number of births cannot be reached due to the lack of women giving birth, on the condition that the student helps 20 more births (17). However, there is no opinion for other criteria. This process can also be applied in the COVID-19 pandemic. Similarly, this decision is also left to the senates of universities, thus it suggests that each university will have different graduation requirements.

CONCLUSION

The COVID-19 pandemic has led to a rapid and dramatic interruption in midwifery education, particularly in clinical practice. The best approach should be adopted for both students and academicians in order to eliminate the shortcomings of politicians in midwifery students in theoretical and clinical practice immediately. Regardless of the underlying problem, midwifery associations and councils around the world should take this responsibility and try to support clinical training.

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Oral Presentation No: 39418

Retrospective Analysis of Placenta Accreta, Increta and Percreta Cases

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ABSTRACT

Purpose: To analyze the maternal and perinatal outcomes of cases with hysterectomy with the diagnosis of placental invasion anomaly.

Methods: Between 2012 and 2019, 48 patients who underwent hysterectomy with the diagnosis of placental invasion anomaly in the Department of Obstetrics and Gynecology, University of Health Sciences Tepecik Training and Research Hospital, Turkey were retrospectively analyzed.

Results: Between 2012 and 2019, 31.645 of 69.504 deliveries were performed by vaginal and 37859 by cesarean. Placenta percreta was found in 22, placenta accreta in 14, and placenta increta in 12 of the patients with placental invasion. Hysterectomy was performed in 48 cases with the diagnosis of placental invasion. A total of 34 and subtotal hysterectomy were performed in 14 of the cases with hysterectomy. Of the patients with hysterectomy, 10 had wound infection, 8 had bladder injury, and 5 had disseminated intravascular coagulation. There was no maternal death.

Conclusion: In placental invasion anomaly, the placenta is not easily separated from the postpartum uterine wall. It may bleed profusely when trying to separate manually. If conservative treatments fail to stop the bleeding, hysterectomy is essential.

Keywords: Placenta, percreta, accreta, increta

INTRODUCTION

Placenta accreta, increta, and percreta are terms used to describe abnormal trophoblast invasion into myometrium. In the current literature, all three pathologies are classified under the heading placenta accreta spectrum (PAS). The pathogenesis of PAS is the invasion of the placenta to the myometrium and beyond, mostly due to defective decidualization in the scar area secondary to previous cesarean section. PAS is clinically important. Because in PAS cases, the placenta is not separated spontaneusly. Attempting manual detachment can lead to life-threatening massive bleeding and hysterectomy. The aim of our study is to analyze the maternal and perinatal outcomes of patients with hysterectomy with the diagnosis of PAS.

METHODS

48 cases who underwent hysterectomy with the diagnosis of PAS in the Department of Obstetrics and Gynecology, University of Health Sciences Tepecik Training and Research Hospital between 2012-2019 were

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retrospectively analyzed. The data of the cases were obtained from computer-based files and laboratory records.

RESULTS

31.645 (45.6%) of a total of 69.504 births between 2012 and 2019 were vaginal, 37.859 (54.4%) were by cesarean. Hysterectomy was performed in 48 cases with the diagnosis of PAS.

Fig 1. Number of births by years

Fig 2. Placenta accreata spectrum (PAS) by years
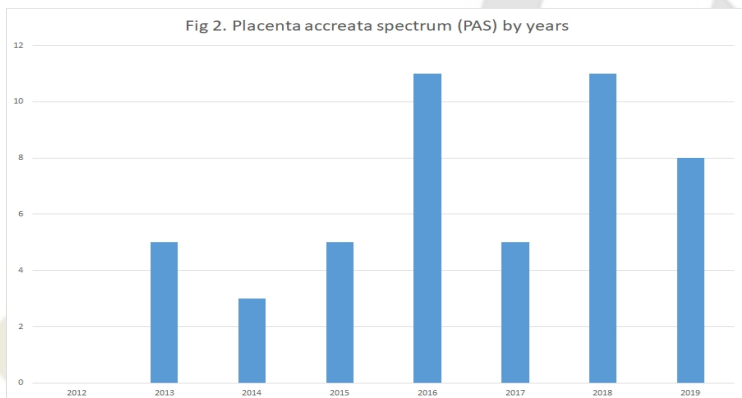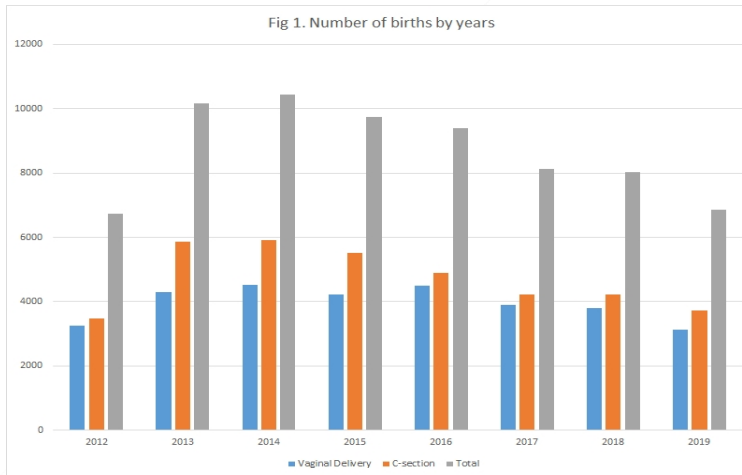
The mean age of the patients was 32.2 ± 4.9, mean gestational age was 35.3 ± 3.7 weeks, mean birth weight was 2590.1 ± 659.7 grams (g). Almost all of the cases were multiparous and all cases had a history of previous cesarean section. 31 cases (64%) delivered preterm (<37 weeks). Blood and blood products were transfused to almost all patients during the perioperative period. The most common indication for hysterectomy was placenta percreta in 22 cases (45.8%). Others are placenta accreta in 14 cases (29%), and placenta increta in 12 cases (25%). 34 (71%) of the hysterectomies are total and 14 (29%) are subtotal. The average length of stay in the hospital was 6.9 ± 3.4 days. After hysterectomy, the most common complications were postoperative fever in 10 cases (20.8%). The others were bladder injury in 8 cases (16.6%), disseminated intravascular coagulation (DIC) in 5 cases (10.4%). There was no maternal mortality. Perinatal mortality was observed in 1 case (2.1%).

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Table 1. Demographic and medical characteristics of patients complicated with placenta accreta spectrum (PAS)

	Abnormal Placentation (n=48)
Maternal age (year) (mean±SD)	32.2±4.9
Parity (n,%)	
Nulliparous	1 (2%)
Multiparous	47 (98%)
Previous CS history (n,%)	48 (100%)
Gestational age (week) (mean±SD)	35.3±3.7
Preterm Delivery Prevalence (<37 weeks) (n,%)	31 (64.6%)
Hysterectomy Type (n,%)	
Total	34 (70.8%)
Subtotal	14 (29.2%)
Transfusion Unit (n,%)	
Number of Patients Given Erythrocyte Suspensions	47 (97.9%)
Hospitalization (day) (mean±SD)	6.9±3.4
Complications (n,%)	
Postoperative Fever	10 (20.8%)
Bladder Injury	8 (16.6%)
Disseminated intravascular coagulation (DIC)	5 (10.4%)
Birth weight (g) (mean±SD)	2590.1±659.7
Perinatal Mortality (n,%)	1 (2.1%)

Abbreviations: Hb: hemoglobin ; ICU: intensive care unit ; CS: caesarean section ; Preop: preoperative ; Postop: postoperative

DISCUSSION

In the placenta accreta; villi pass through the decidua to the myometrium, in the plesanta increta; deep into the miyometrium, and in the placenta percreata, there is invasion of the entire myometrium and serosa. These pathologies, which are called placenta invasion anomalies in the old literature, are called placenta accreta spectrum (PAS) or abnormal placentation in the current literature. Worldwide, the prevalence of PAS is 0.17% (1). Its frequency has increased 10 times in the last 50 years (2). Significant increase in PAS prevalence is due to the increase in cesarean delivery rates (3). In our hospital, the cesarean rate is 54%. According to the oldest data we could access, our cesarean rate was 21% in 2008. Our cesarean rate has increased 2.5 times in the last 12 years. This is because complicated pregnancies are referred to our hospital, which is a tertiary center. The cesarean rate in Turkey, is similar to our hospital and, which was 29.4% in 2003, increased 1.8 times in 2013 and reached 51.9% (4). In the literatur, placenta accreta is the most common form of PAS (63%) (1). In our study, unlike this, placenta percreta is the most common form. The reason for this is the patients with percreta diagnosis who were referred from other hospitals to our hospital. The most important risk factor for PAS is cesarean (5). In our study population, all patients who underwent hysterectomy with the diagnosis of PAS have a previous cesarean section. Another risk factor is multiparity (6). Almost all of our patients are multiparous. The most important clinical finding for PAS is that the placenta does not separate spontaneously after the birth, and there is a life-threatening massive bleeding when manual separation is attempted. Emergency cesarean hysterectomy was performed in all of study group. Our patients clinically demonstrated antenatal bleeding (those with placenta previa) or postpartum hemorrhage due to unsuccessful separation of the placenta. Percreta cases were diagnosed prenatally or intraoperatively. The consequences of massive bleeding; potential complications of emergency peripartum hysterectomy and transfusion, hysterectomy and transfusion, DIC, acute respiratory distress syndrome (ARDS), renal failure and maternal mortality. In our study, blood and blood products were transfused to almost of all patients during the perioperative period. There were no transfusion complications. The most common complications associated with hysterectomy is postoperative fever. Others are bladder injury and DIC. Preterm delivery is common in pregnant women complicated by PAS (7). 64% of patients delivered preterm. Perinatal mortality was observed in 1 (2.1%). In the management of pregnancies complicated by PAS, total hysterectomy was preferred if the placenta was located in the lower uterine segment. Total hysterectomy was performed in 34 (71%) of the cases. In the literature, total hysterectomy is recommended in pregnant women complicated by PAS (8). Subtotal hysterectomy was performed in 14 cases (29%) in which the placenta was located anterior, posterior and fundal.

CONCLUSIONS

In the last 50 years, parallel to the significant increase in cesarean deliveries globally, the number of pregnancies complicated by PAS is gradually increasing. Cesarean deliveries increase the risk of PAS, hemorrhagic shock, uterine rupture, transfusion, hysterectomy and maternal death. The major indication for

emergency cesarean hysterectomy is PAS. The main goal should be to prevent unnecessary cesarean sections and to reduce cesarean rates.

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The Analyze of the Papers on Coronavirus Disease 2019 of Surgical Journals in the Turkish Academic Network and Information Center Index

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ABSTRACT

Purpose: We aimed to evaluate the papers on Coronavirus disease 2019 (COVID-19) in surgical journals in the Turkish Academic Network and Information Center (ULAKBIM TR) index.

Methods: Fifty-three journals in the "Surgery" and "2020" categories in the ULAKBIM TR index were included in the study. The characteristics of the journal, paper type and the number of citations were analyzed.

Results: Of the 53 journals, 16 (30.2%) were indexed in the ULAKBIM TR, 31 (58.5%) were in the international-other and 6 (11.3%) were in the web of science. Thirty-five journals had papers on COVID-19. Overall, there were 220 papers, 1355 citations. The number of citations per papers was 6.16 for all journals. The distributions of citation according to journal indexes were as follows: 2 (0.014%) ULAKBIM TR, 377 (27.82%) international-other, 976 (72.17%) web of science. Three journals had a special issue on COVID-19. There were 83 papers, 1001 citations in these studies. Of the 884 citations (83.3%) were in the journal indexed in the web of science. The number of citations per publication was 12.06. Journals without special issue on COVID-19 had 137 papers and 354 citations, and the number of citations per paper was 2.58.

Conclusion: As a result, there are many papers about COVID-19 in surgical journals indexed in the ULAKBIM TR. On the other hand, the fact that the journal has both the special issue on COVID-19 and its indexing in the web of science database significantly increases the number of citations.

Keywords: COVID-19; database; indexing; medical manuscript; surgery

INTRODUCTION

In the last days of 2019, cases of pneumonia of unknown etiology characterized by bilateral infiltrates in the lungs, were reported in Wuhan, Hubei province, China (1). Many studies have shown that the agent is a new type of coronavirus [novel coronavirus (nCoV)] and the agent is named as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (1,2). This disease caused by this new virus was named "COVID-19" by the World Health Organization on February 11, 2020 (3). The high risk of transmission of asymptomatic

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people together with symptoms in 20% of the patients caused this virus to spread in the population in a very short time in different countries and this situation has been accepted as a pandemic since 11 March 2020 (2,3). Comorbid diseases, older age, and high morbidity and mortality in immunocompromised patients have caused the world to focus on diagnosis and treatment.

The first case in Turkey was reported on 11 March 2020 (4). Since this date, with the rapid increase in the number of patients, it has resulted in the analysis of data on COVID-19 in Turkey as well as in other countries. The Turkish Academic Network and Information Center (ULAKBIM TR) index is a national database developed by committees consisting of experts and academicians in the relevant field, in order to enable scientific access of researchers according to the journal evaluation criteria (5). This database consists of journals in main fields such as science and social sciences and sub-branches such as dentistry, pharmacy, engineering, basic sciences, health sciences, veterinary medicine, social sciences and humanities (5). As in the International Health Sciences-Medical Journals related to the COVID-19 pandemic, this database contains articles in many types of papers such as original article, case report, review, and letter to the editor. In literature, there are papers about COVID-19 pandemic, in the surgical journals as well as in the internal medicine journals. On the other hand, there is no clear information about the papers related to COVID-19 pandemic of surgical journals in the ULAKBIM TR index database.

The aim of this study is to analyze the papers on COVID-19 of surgical journals in the ULAKBIM TR index.

METHODS

Search Strategy, Inclusion and Exclusion Criteria

Journals in the "Surgery" and "2020" categories in the ULAKBIM TR index database (https://app.trdizin.gov.tr/statistics/listAcceptedJournals.xhtml) were included in the study. The journals whose information could not be reached and belonging to non-medical branches were excluded. The journal and paper information was obtained from the web pages of ULAKBIM TR index and journal, and the number of citations was determined with using the "Google Scholar" web page (https://scholar.google.com.tr/).

Characteristic of journals, paper type and number of citations were analyzed. As a defining characteristic, the number of annual publications, special issue on COVID-19, and the total number of papers published per year were examined. Articles as a paper type; original article, case report, review, and letter to the editor.

Statistical analysis

SPSS (Statistical Package for Social Sciences for Windows, Ver.25, IBM, USA) statistical package program was used for calculations. Descriptive statistics for continuous variables; expressed as mean, minimum and maximum values. Categorical variables were expressed as numbers and percentages.

RESULTS

In the study, 56 surgery journals were analyzed, and a total of three journals, two of which have unavailable information, and one on dentistry, were excluded. Of the 53 journals, 16 were indexed in the ULAKBIM TR, 31 were in international-other, and 6 were in the web of science. It was observed that 22 (41.5%) of these journals did not publish their last issue in 2020 yet. Thirty-five journals had publications about COVID-19 pandemic (8 ULAKBIM TR, 21 international-other, 6 web of science). In these journals (n = 35), the total number of papers on COVID-19 was 220 (79 articles, 9 case reports, 100 reviews, 32 letters to the editor), the number of citations was 1355 (1-884), and the number of citations per paper was 6.16. It was determined that 20 journals were not cited at all. In the distribution of citations according to journal indexes, it was seen that 2 of them were to ULAKBIM TR, 377 to international-other, and 976 to web of science. Overall, of the 1355 citations; 238 were articles, 1062 were reviews, 55 were letters to the editor, while no reference was found to case reports. There were special issues on COVID-19 of three journals (Journal of Ear Nose Throat and Head Neck Surgery, Anatolian Clinic Journal of Medical Science, and TUBITAK Turkish Journal of Medical Sciences). In these journals, there were a total of 83 papers (24 articles, 1 case report, 56 reviews, 2 letters to the editor), and it was found that the number of citations were 1001 (6-884) and the number of citations per paper was 12.06. For journals without special issue on COVID-19, the total number of papers were 137 and the number of citations were 354, and the number of citations per paper was 2.58. The journals' data about indexed, the overall number of citations and papers whether the special issue on COVID-19 or not were shown in Table 1.

Table 1. The journals' data about indexed, the overall number of citations and papers

Journal Characteristic	Journals with the special issue on COVID-19 (N=3)				Journals without the special issue on COVID-19 (N=50)
	A	B	C	Total	Total
Total Paper Number	44	58	245	347	3123
	COVID-19-related papers				
Original Article	2	9	13	24	55
Case Report	1	-	-	1	8
Review	13	22	21	56	44
Letter of the Editor	-	2	-	2	30
Total	16	33	34	83	137
Total Citation Number	6	111	884	1001	354

A: Journal of Ear Nose Throat and Head Neck Surgery

B: Anatolian Clinic Journal of Medical Science

C: TUBITAK Turkish Journal of Medical Sciences

DISCUSSION

Considering that the aims of scientific publication are to hypothesize, research, find and present, it is inevitable that there will be papers about COVID-19, which emerged within in 2020 and caused a pandemic. Therefore, all kinds of information from the genetic design of this virus to its treatment are still up-to-date today, and any information about COVID-19 needs to be shared in scientific journals. There are many general and specific journals in the field of Health Sciences-Medicine in the ULAKBIM TR index database. Journals within the scope of surgery specific to our branch were analyzed and evaluated. We found that there is no homogeneous distribution when considering the annual number of publications, total number of papers and paper types. This result did not come as a surprise to us, as there are journals with different target audiences. We have determined that the total number of journals is 53 and 35 (66.03%) journals contain papers related to COVID-19. We think that it is not correct to make an objective interpretation for this ratio due to there is no control group in the present study. However, when we found at the rate of publishing papers on COVID-19, especially, we determined that there are journals published in the web of science database. On the other hand, we have noticed that 45.45% (n = 100) of the papers (n = 220) of these 35 journals on COVID-19 are reviews, and we think that this is due to the lack of access and availability of sufficient clinical data to write other types of papers.

One of the conditions that increase the popularity of scientific journals is its index (6). The citation rate per paper published by the journals is called "h-index" and it also means the "power" of the journal (7). In our study, the number of citations in 220 papers was 1355, and the number of citations per paper was 6.16. This rate cannot be said to be low, but considering the heterogeneity between the citation numbers (1-885) and the indexes of the cited journals (2 ULAKBIM TR, 377 international- other, 976 web of science), we can say that the highest share was created by journals published in the web of science database. We think that the large database in which these journals are indexed and having more readers both nationally and internationally play a major role. In addition, the journal indexed in the web of science database were the papers of Professors in the Scientific Committee for COVID-19 pandemic in Turkey. Hence, we can say that these factors provide a significant increase in the number of citations per paper.

In our study, it was determined that the Journal of Ear Nose Throat and Head Neck Surgery, Anatolian Clinic Journal of Medical Science, and Turkish Journal of Medical Sciences published a special issue on COVID-19. There were a total of 83 papers, and similar to the papers in other journals, the majority (67.47%) consisted of reviews. With the number of 1001 citations in these journals, the citation rate per paper was found to be 12.06, and compared to 2.58, which is the rate in other journals that did not publish special issues, it was observed that the number was reached approximately five times. On the other hand, the number of citations received by these three journals is 6 (international-other index), 111 (international-other index) and 884 (web of science), respectively; the number of papers was 16, 33 and 34, respectively; and the number of citations received per publication was 0.4, 3.36, and 26, respectively. We found that the journal, which was indexed in the web of science database and had a special issue on COVID-19, received the highest

rate in many fields. Therefore, we can say that these two situations give a lot of references to the TUBITAK Turkish Journal of Medical Sciences.

Our study has some limitations. First, the sample size was small because the journals in the only surgical field of ULAKBIM TR index were analyzed. Second, the number of citations to papers other than COVID-19 could not be assessed, as the study analyzed only papers on COVID-19. Therefore, no comparison could be made with the number of citations of other papers in the same journal. Third, the referring journals did not have index information. Fourth, considering that the last analysis date of the journals is 23 December 2020; therefore, 22 journals have not published their last issue until this date, it should not be ignored that there may be changes in the number of papers and citations.

In conclusion, there are many papers about COVID-19 in the surgical journals indexed in the ULAKBIM TR. On the other hand, the fact that the journal has both the special issue on COVID-19 and its indexing in the web of science database significantly increases the number of citations.

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Oral Presentation No: 39672

Experiences of Manager Nurses Working in Pandemic Hospital During Covıd-19 Process: Qualitative Study

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ABSTRACT

Aim: The purpose of this research is to determine the feelings, thoughts and experiences of the executive nurses working in the pandemic hospital regarding the Covid-19 process.

Method: The universe of the research consists of the manager nurses who see in the training and research hospital serving as a pandemic hospital in Ankara. In the study, face-to-face interviews were made with 22 manager nurses, who accepted the interview, using a semi-structured interview form, and data were collected. In the interview form, the participants were asked about their feelings, thoughts, experiences and difficulties they experienced during this process. The obtained data were analyzed using content analysis technique. In addition, quotations were made from participants' opinions in order to increase the internal reliability and validity of the research findings.

Findings: 91.0% of the participants are female, 95.45% are married, 81.0% are undergraduate. The average age of executive nurses is 42.72, the average working time is 21.45, and the average number of children is 1.7. They announced that they volunteered in pandemic hospitals during the Covid-19 process and loved their profession.

Results: According to the research results; It was observed that the manager nurses working in the pandemic hospital experienced fear, anxiety and anxiety due to the uncertainty in the process. Executive nurses stated that they were physically and mentally affected by the loss of patients and the loss of their colleagues and relatives due to Covid-19.

Keywords: Covid-19, Manager Nurse, Pandemic, Hospitals, Qualitative, Turkey.

INTRODUCTION AND CONCEPTUAL

Covid-19 is an infectious disease caused by the new type of coronavirus associated with severe acute respiratory syndrome (SARS) (1). Covid-19 was reported as the cause of the coronavirus outbreak in Wuhan, China (2), where it was first reported on December 31, 2019. Because of the rapid outbreak involving most countries around the world, the World Health Organization (WHO) declared this disease a pandemic on March 11, 2020 (3). Pandemic management process in nursing services; it is a critical process that means the maintenance of the individual's health, making it valuable, and treating it when it is impaired, through the nursing service personnel, providing manpower and financial resources and using them economically (4-5-6-7). In the case of the Covid-19 outbreak and other possible crises, executive nurses have a key role in preparing for the crisis, managing the crisis process effectively and planning and implementing the necessary improvement steps afterwards (8).

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Executive nurses are vital for reducing disease-related mortality rates, ensuring timely care by providing need-oriented and evidence-based, and for healthcare professionals to care for patients in a safe working environment. Managerial arrangements (personnel planning, occupational health safety precautions, teamwork, etc.) are carried out by executive nurses in order to maintain the existing health services expected in this process, to prevent the effects of Covid-19 and to respond quickly to the pandemic (9). The Covid-19 pandemic has significantly affected the management of nursing services and patient care processes, and as a result of the rapid increase in the number of critical patients and needs to be met, executive nurses also had to make a sudden organizational change (10).

There are many duties of executive nurses and nurses working in the field. Executive nurses have the task of using multimedia network platforms to make work plans in the Covid-19 process, to encourage staff participation to train, and to improve their ability to respond to the pandemic. Unlike in the past, due to the strong infection power of the virus, nurses have to be alone in the room after they finish their work to reduce cross infection. In this case, nurses may feel lonely, anxious, and fear. Therefore, executive nurses help nurses to activate their social support systems. In addition, the leaders of nurses guide nurses to adjust their psychological conditions scientifically (11).

Executive nurses have to work with high personal durability, low Covid-19 anxiety, and they have to support building personal durability among nurses. Executive nurses should try to strengthen nurses' positive coping strategies, support their self-efficacy, and ensure cooperation among nurses when dealing with stressful work situations such as pandemics. In the Covid-19 process, executive nurses can help their colleagues to provide social support, create a sense of security and alleviate their fears. Nurses' mental health and psychological well-being will be supported and their morale will be increased by sharing work experiences, listening to their concerns and providing empathic support. Executive nurses should provide adequate organizational support to their colleagues through the implementation of a safe work environment, adequate personal protective equipment, providing accurate and timely information about the disease, and implementation of Covid-19-related training. These organizational practices are critical to protecting nurses' physical and mental health (12).

In the literature, there are many suggestions for nurses to go through the pandemic process better. Huang et al. (13) stated that hospitals should focus on providing psychological support to nurses and training in coping strategies. In the study conducted by Liang et al. (14), it is stated that nurses' workload should be reduced and rest should be provided for their physical and mental health. Zerbini et al. (15) state that healthcare workers, especially those who are in direct contact with Covid-19 patients, are at higher risk in terms of psychological burden. In this process, they stated that there should be special programs to the nurses for their needs, giving time outside of work and not being put in danger due to long working hours. In addition; they suggested that work environments should be improved by providing psychosocial support in the workplace, keeping work teams stable, improving communication and recognition, providing clear guidelines and social support.

In the study of Huang and et al.; it is emphasized that the virus is a major threat to healthcare workers, nurses are at the forefront of care and therefore they are more susceptible to the infection, so working with flexible hours plays a vital role in reducing infection (13). Liu et al. (16) state that it is important

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to strengthen multidimensional social support for nurses, guide coping styles and encourage positive emotions during the pandemic process. The International Nurses Association (ICN) emphasizes that executive nurses should be included among the priorities for the Covid-19 pandemic and that politicians should benefit from the expertise of executive nurses (17).

Of the nurses at the front of the outbreak; they need strong executive nurses, regular coordination, and a say in decisions made about them (18-19-20). The pandemic process, expressed as Covid-19, revealed the fact that nurses and executive nurses have a critical importance in strengthening the health care system, providing more qualified and safe health services, protecting and improving public health (21).

METHODOLOGY

n outbreaks considered as pandemics such as Covid-19, executive nurses working in hospitals take important roles in the planning and preparation of the process. The purpose of this research is to determine the feelings, thoughts and experiences of the executive nurses working in the pandemic hospital regarding the Covid-19 process.

The universe of the study is composed of the executive nurses working in the education research hospital serving as a pandemic hospital in Ankara. The research was carried out with 22 executive nurses who accepted the interview. The data were collected by face to face interview with a semi-structured interview form. In the interview form, the participants were asked about their feelings, thoughts, experiences and difficulties they experienced during this process. In this study, the interview text was coded in a general framework and within the framework of the literature after repeated reading. The obtained data were analyzed using content analysis technique. Researchers' comments were also added to the findings. In this way, the "Description", "Analysis" and "Interpretation" steps of the research were formed. In addition, quotations were made from participants' opinions in order to increase the internal reliability and validity of the research findings.

FINDINGS AND DISCUSSION

91.0% of the participants are women, 95.45% are married and 81.0% are undergraduate. The average age of the executive nurses is 42.72, the average working time is 21.45, and the average number of children is 1.7. Participating executive nurses explained that they volunteered in pandemic hospitals during the Covid-19 process and loved their job.

Questions were asked to the executive nurses within the framework of the variables determined within the scope of the study and their opinions were taken.

Difficulty, Workload

The executive nurse K1 emphasized that the difficulty of raising the awareness of the patients, excessive workload and having their children in a difficult situation because of intense working conditions caused the low motivation.

"It is a very difficult process, it was very tiring to raise patients' awareness, in addition that they want us to be with them like normal treatment. Most of all, during the period when all employees

switched to the flexible working system, our full and higher work, our children staying alone at home, and changes on the closing and opening of day care centers caused us to change the daily work lists. These external influences in the Covid 19 process, which is already very tiring, intense and require concentration, reduced our motivation and deteriorated our enthusiasm to work "(Executive Nurse K1).

Executive nurses K1 and K22 stated that it was sad that their colleagues got sick, that they had difficulties due to inadequate employment, and that their colleagues became sick due to the deterioration of their immune system.

"Our nurse friends caught Covid-19 and decreased our number gradually. 5 of 11 nurses working in the ward were positive in the same month. 4 of them had to be hospitalized. Both the troubles our colleagues suffered greatly upset us, and it was very tiring for us to keep their workload on the remaining 6 people. During this process, we had to put our house and our children in the second plan. We spent 14 days working twice for the sick and sick friends to heal. Our friends returned after 14 days. One week later, another one could return. Our 3 friends started working after 1 month because they had heavy Covid 19 disease. Those who started to work got to work before their troubles went away in order to relieve the burden of those who stayed behind"(Executive Nurse K1).

"It was a pity that most of my colleagues got sick in this process, and at the same time, they could not be replaced. We had to work hard because of the missing employee. It disrupted our immune system and motivation. Many of our friends got sick and were treated. In short, this process could have been better overcome with more staff" (Executive Nurse K22)

Executive nurses K17, K20 and K5 pointed to the difficulty of the process and cooperation.

"We are going through a very difficult process. I believe that these days will pass with cooperation and support for each other" (Executive Nurse K17).

"There was intensity due to the pandemic process and outsiders not following the rules. In addition, we encountered difficulties in our shifts due to the lack of personnel because of the illness of our employees' (Executive Nurse K20.)

"During this period, the training of newly joined friends was completed in a longer term as we could not manage the process from the chambers in the orientation training. Therefore, the experienced team had to perform more" (Executive Nurse K5).

Sacrifice, Devotion

Executive nurses K1 and K22 stated that they showed their sacrifices by working harder for their patients and patient colleagues to regain their health, K2 worked voluntarily, K6 did not have financial expectations, and P8 stated teamwork and dedication.

"We spent 14 days working twice for the patients and our sick friends to recover. Those who started to work got to work without getting past their troubles to ease the burden of those left behind. It reminded us how selfless, loyal and difficult our job is" (Executive Nurse K1).

"We did our best in treatment, follow-up and psychological support to our patients who are looking forward to us behind closed doors. They give a difficult test as we do" (Executive Nurse K22).

"I work voluntarily in this process. We do our best to meet all the needs of all patients who apply to our hospital. In this process, we provide maximum benefit and use all the possibilities we have"(Executive Nurse K2).

"During this period, I did our duty without any financial expectation" (*Executive Nurse* K6).

"I think that what matters in the Covid 19 pandemic is teamwork and that it is adopted by all employees. Considering that the imprudence or lack of knowledge that can be done in every field from cleaning personnel to nurses, security guards and doctors will affect all hospital staff, such as the overthrow of dominoes, the importance of education becomes clear once again. Despite the fact that there are many people working devotedly in this process, our employees, who focused on problems rather than solutions, decreased our motivation" (Executive Nurse K8).

Trust to Management

Participating executive nurses have a common opinion about the successful management of the process, the correct planning and trust to the managers.

"I think the Covid-19 process is well managed in our hospital" (Executive Nurse K3).

"Our hospital's early coordination regarding the management of this process, providing information, planning and training, and always being behind us has given us support and strength" (Executive Nurse K4).

"With the flexible working and staff support of our administration, we managed this process more easily" (Executive Nurse K5).

"I sincerely thank all our managers who have helped us to perform our profession fondly, and I come to my job fondly" (Executive Nurse K7).

"I think the management of our hospital during the Covid-19 pandemic process is very successful. Priority assessment was made at the beginning of the process with all responsible persons who are experts in their fields. Needs are determined. Personnel planning was made. The needs were determined by the management by making continuous and frequent field visits therefore, it was resolved quickly."(Executive Nurse K8.)

"Although there were organizational problems in the first place, this problem was solved quickly. People were organized with the least contact of the staff. There was no problem regarding protective equipment and working hours. The administration listened to all our problems and tried to find a solution within the framework of appropriate conditions. They made us feel that they understood us on unsolved issues. Process management was successful" (Executive Nurse K9).

"When we first met, there was the anxiety-fear against the unknown in the whole team. However, it was overcome with a prudent and patient management attitude. We are going through mentally and physically eroding process. However, I think that we pass this exam in process management" (Executive Nurse K10).

"In a pandemic process that we have not encountered before, there was stress at first. Later, I believe that we have progressed successfully in the process by raising the awareness of the staff by the

administration and by the good management of the process and the elimination of the deficiencies" (Executive Nurse K20).

"In this process, I think that health services are coordinated regularly and work is distributed equally. In this process, administration tried to find a solution by being on the field with us and listening to the complaints. Their attitudes made employees pleased. We work with flexible working hours as much as possible. For this reason, we use our workforce more efficiently" (Executive Nurse K11).

"The images we saw from the press and social media worried me a lot. Lack of space in hospitals, equipment shortage of healthcare workers, etc. However, as our hospital, I became very hopeful when I saw that the infection rules were followed in the process, the necessary equipment was provided in full, and we were constantly supported by the head physician and head nursery. We are enough for us Turkey" (Executive Nurse K12).

"In this process, I think that before our hospital becomes a pandemic hospital, the hospital management made it ready by taking the necessary measures. As a person involved in the process, I see with my eyes what our administration has done for us. I appreciate on my behalf" (Executive Nurse K13).

"The management process is progressing very successfully" (Executive Nurse K14).

"We are going through a difficult process. The management team of our hospital is excellent, they work devotedly by providing the necessary support and equipment to all employees. This facilitates our performance and enables us to work more devotedly. We will be patient and overcome" (Executive Nurse K15).

"I think our hospital managed this period well in line with its possibilities. We are going through a difficult process. However, I think we can overcome it more easily by doing our best and paying attention to social isolation" (Executive Nurse K16).

Fear, Anxiety, Stress

It has been observed that executive nurses have feelings of fear, anxiety, anxiety, stress and uncertainty during the Covid-19 process.

"It is a very difficult and long process, I was very anxious at first. I had concerns about the safety of my teammates and their willingness to work" (Executive Nurse K5).

"When we first met, there was anxiety and fear against the unknown in the whole team" (Executive Nurse K10).

"The lack of space in hospitals, which we saw from the press and social media, and the equipment shortage of healthcare professionals worried me a lot" (Executive Nurse K12). *"We have feelings of anxiety, worry and uncertainty during the pandemic process we have been in for a long time. Either ourselves or our relatives became sick, and passed away. The feeling that we are not given the necessary value while working in the front lines has affected our motivation"* (Executive Nurse K18).

"In a pandemic process that we have not encountered before, there was stress at first" (Executive Nurse K20).

"We were faced with a situation that we have never experienced before. There was anxiety and stress against the unknown. But we tried to create the motivation that would be ready for even the worst case. Since the beginning of the cases was slow, we did not have much trouble. Of course, it was not that easy for us to feel that we are ready" (Executive Nurse K21).

Happiness

It was determined that the executive nurses K7 and K22 were happy with their role in the Covid-19 process.

"I think the Covid 19 process as a war process. We will overcome this war as a team. I am very happy when I do my best in this process" (Executive Nurse K7).

"The prayers of the patients were the best feelings that motivated and made us happy (Executive Nurse K22).

Leadership

Executive nurses stated that they fulfilled the leadership role in the Covid-19 process in the best way.

"From our side, it was a time when we faced very tense and serious problems. But at this stage, it is up to us to undertake the leadership role as usual. We had a hard time dealing with this at first, since it is a process that the whole country and the world have recognized for the first time. But we quickly exceeded the adaptation period. Right now, patients and we as nurses have made our system work very well. We learned and taught how to deal with Covid-19. I regard it as the hospital that manages this process best" (Executive Nurse K19).

The Covid-19 process was a challenging process, and it still continues. I did my best to manage this process and keep the motivation of my colleagues high" (Executive Nurse K22).

Hope

In the interviews, it was observed that the executive nurses were hopeful about the process to go through with cooperation.

"Obviously, I think that it should be known that this process was carried out very well and that the problems experienced were eliminated as quickly as possible. We carry out our work by considering both our own health and the health of our family. Difficulties never get in the way of our work. I believe we will get through this process with together (Executive Nurse K2).

"We don't have any difficulties in the management process. All kinds of moral support and facilities are provided. I believe we can overcome it all together" (Executive Nurse K15).

Not Getting the Value of the Nursing Profession It Deserves

Participating executive nurses K1 and K9 think that their profession does not get the value they deserve.

"My expectation from our administration is to express out loud that nurses are not invisible during the Covid-19 process and that the real heroes of the process are nurses. It helps us reach wherever the highest position that can be reached. The nurses are the most tired and worn out in this difficult process. The spiritual equivalent of our labor is receiving the prayers of the patients the most. But our efforts must have a material reward, and it is our right to demand this from our state. This should not be ignored. This is our expectation" (Executive Nurse K1).

"Although we sometimes feel that the nursing profession is not given due importance and we are unhappy, these feelings stemmed from general issues outside of our administration and the fact that we face a solution-oriented management made this process a little easier" (Executive Nurse K9).

Working with Protective Clothing

Executive Nurse K19 emphasized the difficulty of working with protective clothing.

"Lives lost alone after Covid 19 and the difficulties we had about how to endure them surrounded us. Especially the clothes we wore destroyed us. I feel literally cornered in the clothes. Not being able to approach the patient without getting dressed made us very difficult." (Executive Nurse K19).

Uncertainty

Executive nurses stated that the uncertainty about treatment and transmission routes during the Covid-19 process created anxiety and that they received the support of their administration on this issue.

"We did not have any difficulties in the management of this process in our hospital. Lack of clear information about the treatment and transmission routes of the disease made me hesitant" (Executive Nurse K4).

"We experienced the anxiety and uncertainty of working in another unit because the unit we worked in was shut down. The difficulties we experience are normal in this extraordinary situation. Our suggestions were taken into consideration, and solutions were found for those that could be solved. During this process, the non-oppressive administrators relieved us" (Executive Nurse K9).

Being Covid-19 of Employees

Participating executive nurses stated that their colleagues caught Covid-19 increased their fear, anxiety and workload.

"Having friends diagnosed with Covid-19 positive increased fear and anxiety in the ward. Our administration has supported us in this regard" (Executive Nurse K5).

"The number of our healthcare professionals who are positive for Covid-19 is increasing day by day. The number of employees in the field decreases and the workload increases. I think that measures should be taken for this" (Executive Nurses K16).

"It has been difficult to try to alleviate the intense anxiety of my colleagues. When we got sick among us, I had a hard time making a working plan. The reason why we do not experience any shortage of personnel and materials in this process is sensitive management, adequate information and training. Not feeling the lack of these issues made it easier for us" (Executive Nurse K21).

CONCLUSION AND RECOMMENDATIONS

The Covid-19 outbreak, which was declared as a pandemic because of occurring at a global level by the World Health Organization, has affected the health systems of countries. The life and working styles of workers in the health system have changed. The life and working styles of executive nurses, who have important roles in the health sector, have also changed. Executive nurses have had many experiences during the Covid-19 outbreak.

In this study conducted during the Covid-19 process, the feelings, thoughts and experiences of executive nurses were discussed with the interview method. Executive nurses working in the pandemic hospital have experienced and lived positive and negative emotions together during the Covid-19 process. They stated that they experienced positive emotions and experiences in the variables of sacrifice, devotion, happiness, leadership, hope, motivation and trust in managers determined within the scope of the study. However, they experienced negative emotions and experiences in the variables such as difficulty, workload, fear, anxiety, stress, and low motivation. Executive nurses stated the difficulties they experienced as the workload, not getting the value the nursing profession deserves, the sadness of losing the patients they care for, the necessity to work with protective clothing, the uncertainty of the process, and being sick of their colleagues.

They stated that they fought heroically during the Covid-19 process and continued to do so. Ho et al. (22) stated in their study that uncertainty causes fear, anxiety and despair. In the study conducted by Wang et al. (23), it was stated that 16.5% of the participants showed symptoms of depression, 28.8% of them anxiety and 8.1% of them showed symptoms of stress. There are also studies in the literature on the effects of outbreak processes on healthcare workers. In their study, Li et al. (24) explained that during the outbreak period, healthcare workers were negatively affected by the fact that they were away from their families, they were constantly faced with the risk of contracting disease because of working with diagnosed people, and their workload was heavy.

In the interviews with the executive nurses in the study, their suggestions regarding the Covid-19 process and what to do next were also asked. Executive nurses offered suggestions on personal rights, psychological support, being tested and motivation.

"I want the personal rights of nurses to be improved" (Executive Nurse K3).

"As a healthcare staff, I would expect regular PCR and antibody testing. In this long process, I think we are a group with a high risk of disease and transmission without symptoms. I want to make sure we don't carry Covid-19 to our home and our children" (Executive Nurse K6).

"We, as healthcare professionals, are always on the field and fulfill our duty in the best way as much as possible. The necessary precautions should be taken, psychological support should be given intermittently and motivation meetings should be held"(Executive Nurse K10).

"It was difficult for the employees to adapt. Maybe, motivating activities can be done from now on against such chaos situations"(Executive Nurse K14).

"While all kinds of nursing services are expected without interruption from healthcare workers who have been tired and demoralized for 10 months, the number of healthcare professionals should be increased. I suggest reducing the number of patients per healthcare worker. To increase motivation,

improvements in personal rights, awards and activities should be provided. During this period when all civil servants work flexibly and with working hours, our shifts should be reorganized or remunerated "(Executive Nurse K18).

"Motivating activities can sometimes be organized for us. In short, my wish will be to get rid of Covid -19 as soon as possible with the vaccine and reach well-being"(Executive Nurse K19).

"I think increasing the number of nurses will be good for the motivation of our employees. In addition, it would be nice to improve the additional payments and personal rights that motivate our employees in this difficult process"(Executive Nurse K20).

"I suggest eliminating the staff insufficiency, increasing the additional payments of the healthcare workers, and if this is not possible, giving small rewards (money, gifts, etc.)" (Executive Nurses K22).

Fulfilling the material and moral demands of executive nurses working under intense and weary working conditions and emotional depression such as stress, fear, and anxiety can enable the pandemic process to be carried out more successfully. Since the research is limited to a certain number of executive nurses working in the pandemic hospital, it is not possible to make generalizations. However, the study will be able to guide the experiences lived and what needs to be done in such outbreak periods.

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Covid-19 Pandemic and Mental Health: Literature Review

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ABSTRACT

It is clearly known that the COVID-19 pandemic has negative effects on all humanity. Women also faced problems related to reproductive health, pregnancy, childbirth, and the postpartum period. During the COVID-19 pandemic, women's mental health should be evaluated carefully as well as their physical health. The purpose of this review is to examine the effects of pandemic on the mental health of women in the perinatal period in line with literature. In studies conducted before the pandemic, it was stated that the prevalence of anxiety was 15.2% and prevalence of depression was 11.9% in women in pregnancy and postpartum periods. In another study, it was stated that prevalence of postpartum depression was 12%. In studies conducted during pandemic period, it was found that frequency of stress, anxiety, and depression increased in pregnant and postpartum women, and anxiety level was higher in those with high-risk pregnancy compared to those without. In a systematic review and meta-analysis, 23 studies were examined, and it was stated that the rate of postpartum depression was 22%, rate of anxiety in pregnant women was 37% and rate of depression was 31%. As a result, the mental health of women in perinatal period is adversely affected. Pregnant women should be evaluated more carefully in terms of psychology by healthcare professionals in every stage of pregnancy and postpartum period during the COVID-19 pandemic. The potential effects of outbreaks on perinatal mental health should be identified, recognized as a public health problem, and specific interventions should be implemented to ameliorate and prevent negative effects. Tele-health services should be increased and women-centered care should be provided.

Keywords: COVID-19, pregnancy, postpartum period, mental health

Introduction

The virus, which emerged in Wuhan, China in December 2019 and called Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), spread all over the world very quickly. The global pandemic caused by this virus was declared as a pandemic by the World Health Organization (WHO) in March 2020 (1,2).

The mortality rate due to the Covid-19 pandemic is between 3% and 15% (3), and it is clearly known that the pandemic has negative effects on all humanity (4). In global data, the case fatality rate due to COVID-19 is higher for men (4.8%) than women (2.8%) (5-7). Maybe men are getting sick or dying more, but women suffer the burden of this pandemic even before they get sick, and this pandemic negatively affects all aspects of

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women's health. The World Health Organization (WHO) reports that women's health is affected more negatively than men in this process (8). Although women's health is generally important during the pandemic, the health of women in pregnancy, childbirth, and postpartum periods is also important.

Hormonal and physical changes during pregnancy cause respiratory problems and weakening of the immune system in pregnant women (9,10). Therefore, pregnant women are at higher risk of a viral infection than the other population (11). In order to reduce the risk of illness and contact during the pandemic, it has been suggested to reduce face-to-face follow-ups during pregnancy. During this period, pregnant women have concerns about their follow-up, delivery and postpartum period. The process affects pregnant women not only physically but also mentally (12,13). Not knowing the effects of COVID-19 on the fetus is also a source of concern for pregnant women. On the other hand, staying at home as a result of the quarantine decision taken due to the pandemic has further increased the responsibilities and burden of women and increases their risk in terms of mental problems. (14). In line with all these information, scientific studies that reveal the effects of COVID-19 on women in pregnancy, childbirth and postpartum periods gain value. The purpose of this review is to examine the effects of the pandemic on the mental health of women in the perinatal period in line with the literature.

Pregnancy and postpartum period is a period in which psychosocial changes occur. In systematic review and meta-analysis studies conducted before the pandemic, it was stated that the anxiety prevalence of women in pregnancy and postpartum period was 15.2% (15) and the prevalence of depression was 11.9% (16). In another systematic review, the prevalence of postpartum depression was reported to be 12% (17). The quarantine measures are taken during the pandemic and the disruptions in medical practices negatively affected the mental health of women in the perinatal period. In the studies conducted during the pandemic period, it was found that the frequency of stress, anxiety and depression increased in pregnant and postpartum women, and the anxiety level was higher in those with high-risk pregnancy compared to those without. In a systematic review and meta-analysis by Yan, Ding, and Guo (2020) (18), 23 studies were examined; It was stated that the rate of postpartum depression was 22%, the rate of anxiety was 37% and the rate of depression in pregnant women was 31%.

The study conducted by Kahyaoğlu-Süt and Küçükkaya (2020) (19) to evaluate the prevalence of anxiety and depression in pregnant women in the pandemic and related factors was conducted on 403 pregnant women using a web-based questionnaire. As a result of the study, the frequency of anxiety was 64.5% and the frequency of depression was 56.3%. Physical activity status, discomfort in visiting the hospital for follow-up/follow-up visit during the pandemic, and knowledge about COVID-19 were identified as factors associated with anxiety and depression. In a similar study conducted by Stepowich et al. (2020) (20), It was stated that the stress and anxiety experienced by pregnant women and mothers in the postpartum period were at moderate to high levels. In the study, the anxiety level was found to be higher in the first trimester of pregnancy compared to other trimesters and postpartum period.

Ayaz et al. (2020) (21) aimed to compare the levels of anxiety and depression in the same pregnant women before and during the COVID-19 outbreak. In the study, the pre-pandemic depression anxiety scale mean score was 184.78 ± 49.67, while this mean score was 202.57 ± 52.90 during the pandemic. As a result of this

study, it was found that the pandemic negatively affected the mental health of pregnant women and increased the level of anxiety and depression symptoms. Sinacı et al. (2020) (22) aimed to compare anxiety levels in pregnant women with and without high-risk pregnancy during the COVID-19 outbreak. During the COVID-19 pandemic, an increased prevalence of anxiety was found in high-risk pregnant women compared to pregnancies without risk factors. The highest anxiety score was found in pregnant women with the risk of premature rupture of membranes and preterm labor.

Geren (2020) (23) evaluated the severity of anxiety and depression caused by the COVID-19 pandemic in pregnant women in her specialty thesis. There were 322 pregnant women in the study. In the study, Spielberger State-Trait Anxiety Inventory (STAI) was used to evaluate anxiety and Beck Depression Inventory-II (BDI-II) was used to assess depression status. As a result of the study, it was determined that the average score of the state anxiety scale of pregnant women was 41.7 ± 5.56 and the average point of trait anxiety was 47.68 ± 5.85, and the state anxiety score was statistically significantly higher in primigravida pregnant women compared to multigravid pregnant women (p=0.027). According to BDI-II, 69.3% of the pregnant women had minimal depression, 12.4% mild depression, 12.4% moderate depression, 5.9% severe depression level. As a result of the study, 30.7% of the pregnant women had clinically significant depression and it was stated that the pandemic could have a significant effect on the increase in the frequency of perinatal depression (23). Antenatal depression is an important issue for maternal and infant health. If antenatal depression is not treated, the risk of postpartum depression increases even more (24). Since antenatal and postpartum depression will adversely affect the mental health of the mother and the growth and development of the baby, pregnant women should be evaluated more carefully during pregnancy follow-up in the COVID-19 pandemic.

In another similar study (25), 1987 pregnant women participated in the study evaluating the increasing depression and anxiety symptoms in pregnant women during the COVID-19 outbreak in Canada. In the study, 37% of the pregnant women had clinically high depression and 56.6% had clinically high anxiety symptoms.

Being in the postpartum period during the pandemic period and dealing with both baby care and housework has been an exhausting process for women. There is a study conducted in Turkey to reveal how the pandemic has an impact on women's exertion. The words of a puerperant woman in this study are as follows: *"It was very difficult to be puerperant during the pandemic. While I couldn't recognize myself, I had to take care of the baby and there was no one to support. If there was no pandemic, I could have gone through this process much easier. I have been home since March, I can take two more years of unpaid leave. I want to return to work when the process is over. I would love to have a helpful person to support me in this process, when my husband is at home, he provides support, but it is not enough. If there was no pandemic or if we weren't so anxious, I would definitely find a caregiver. Even if I had found a caregiver, I could get back to work sooner."* (26). As can be understood from these words, the restriction of access to support systems due to the pandemic has further increased the existing burden of mothers.

There are 212 women in the study in which Güvenç et al. (2020) (27) aimed to evaluate the level of anxiety, depression, and knowledge in postpartum women during the COVID-19 pandemic. As a result of the study, the prevalence of depression was found to be 34%, and it was found that the COVID - 19 outbreak increased

the prevalence of depression in women in the postpartum period. In the study, a statistically significant difference was found between fear of being infected with COVID-19 for mothers' babies and postpartum depression.

Early evidence suggests that the COVID-19 outbreak has a negative impact on the mental health of pregnant women and mothers, including depression, anxiety, and stress (20,25,28). Some attempts should be made for prenatal, intrapartum, postpartum, neonatal, and early parenting periods to improve maternal and neonatal mental health during the pandemic (28). These;

- Advocate for pregnant women to have an emotional support person present with them (doula, partner, family member) when receiving perinatal care and ensure that supports are available for all women.

- Provide woman-centered care during telehealth visits, ensuring that the woman's priorities are addressed and that she has adequate support in navigating altered prenatal care services.

- Provide education for families on the latest evidence on how COVID-19 affects pregnant women and infants, as well as infection control and safety measures they can expect throughout their care experiences (information should match the literacy level and preferred language of the woman).

- Assess for preexisting mental health or substance use disorders and connect women with mental health services early in pregnancy.

- Screen for domestic and intimate partner violence and provide women with referrals to mental health and social services, as well as intimate partner violence advocacy organizations, which can provide safety planning, cognitive behavioral therapy, and other ongoing support.

- Acknowledge that labor and birth in a pandemic are not what the mother expected or planned for and that feelings of anxiety, sadness, grief, fear, or loss are normal.

- In the light of social distance and infection control measures, initiatives should be taken to give women a positive birth experience.

- Encourage the use of mindfulness as a strategy to reduce stress and to support control over aspects of pregnancy that can be addressed, such as positive health behaviors and using positive cognitive framing.

- Facilitate technology-based mechanisms for family and support person interactions, such as telephone and video calls.

- Avoid separating mothers and infants unless required by clinical condition.

- Promote skin-to-skin contact (e.g., skin-to-skin care) and breastfeeding to the extent safely possible.

- Use virtual methods of follow-up to screen for postpartum depression, anxiety, and posttraumatic stress symptoms in the first days and weeks after birth.

- Become familiar with community-specific programs and resources that support mothers' mental and emotional health during childbearing and parenting transitions.

- Advocate for mental health resources and support for pregnant and postpartum women who are health care or other frontline workers (28).

Health professionals need to evaluate pregnant women and women in the postpartum period more carefully in terms of psychology during the COVID-19 pandemic. Special interventions should be made for pregnant and postpartum women to alleviate the effects of the pandemic on mental health. Doctors/nurses/midwives should provide evidence-based information to pregnant women about the effects of COVID-19 on pregnancy and the postpartum period. Psychological support should be provided to pregnant and postpartum women with mental health problems. (19, 29,30).

CONCLUSION

As a result of the literature review, it was found that pregnant women had increased anxiety and depression scores during the COVID-19 pandemic. The pandemic affected not only women in pregnancy but also women in the postpartum period. As a result, since the COVID-19 outbreak negatively affects women's health in all areas, it is necessary to carefully evaluate women's mental health as well as their physical health in this process. At the same time, there is a need for psychological evaluation and support of women in this critical process to reduce these negative consequences.

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Determining the Relationship between Covid-19 Disease and Vaccine Knowledge and Attitudes and Covid-19 Anxiety Level

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ABSTRACT

Purpose: Covid-19 virus pandemic shows symptoms such as impaired taste, pain, fever, respiratory failure in those who suffer from the disease, and cause serious health problems that require intensive care treatment, even death. The virus affects individuals not only physiologically but also psychologically, causing illness and fear of death, various levels of anxiety and depression symptoms. This study was conducted to determine the anxiety experiences of individuals and related factors of Covid-19.

Methods: In the study conducted between September and January 2020 in the Turkish Republic of Northern Cyprus, a survey including data, 10-question socio-demographic characteristics (age, gender, etc.), 16-question information about Covid-19 disease and vaccine, and attitude questions. The Likert-type "Coronavirus Anxiety Scale-Short Form" developed by Lee, consisting of a form and 5 questions and adapted to Turkish by Biçer (2019), was obtained from various social media platforms through the Google form application. No sample selection was made in the study, and volunteers (n = 396) were reached with the appropriate sampling method. The independent variables of the research; The socio-demographic characteristics of the participants and their knowledge and attitude towards Covid-19 disease and vaccine, and the dependent variable is the Covid-19 anxiety levels. The data were evaluated in the SPSS 21.0 statistics program. Ethical approval was obtained from the Near East University ethics committee (YDU / 2020 / 85-1183), written consent was requested from the participants.

Results: The average age of the participants is sd = 27.00 ± 9.90, 67.4% of them are female, 79.8% of them are university graduates. Covid-19 anxiety level is 11.84 ± 1.5, slightly above the average. A statistically significant relationship was found between fear of approaching Covid-19 disease (t = 135177, p = 0.001) and stimulation to physical distance (t = 14916, p = 0.001).

Conclusion: In this study, the anxiety level was found to be slightly above the middle. In the literature; It is stated that moderate anxiety has a positive effect on the person's behavior. It was evaluated that the anxiety level above the average obtained in the study would have a positive effect on the individuals to be aware of the seriousness of the Covid-19 disease and to comply with the prevention rules.

INTRODUCTION

Covid-19 virus, after being first identified in China in December 2019, spread to many countries in a short time and turned into a pandemic (1). Although the Covid-19 virus is a respiratory disease, among the common symptoms of patients; fever, dry cough, dyspnea, headache, and loss of taste and smell. The disease caused by the virus is seen in all age groups, but especially the elderly who are in the risk group against the virus, with chronic diseases, immune system problems, etc. It progresses more severely in individuals with disease, causing serious health problems such as respiratory failure and even death (2). According to the Center for the Protection and Prevention of Diseases (CDC) in the USA, COVID-19 infects individuals who are in close contact (approximately two meters) as a result of the secretions spread to the environment as a result of the infected individual coughing or sneezing. In addition, it increases the risk of catching the virus through the mouth, nose or eyes when contacting any infected ground or object (3). The high mortality rate (2.3%) of the virus has increased the sensitivity of individuals to the risk of getting sick, created fear and panic in the society, and caused economic losses and social problems between individuals (4-5)

There is no specific treatment for the Covid-19 virus, and the treatment is supportive and aimed at preventing secondary infections or complications (6). For example, it is the reduction of body temperature and relief of complaints such as shortness of breath (7). It is recommended that rules such as wearing a mask, maintaining social distance and regular hand washing are recommended to protect against the virus (3). Vaccine studies; It continues in 11 countries including the United Kingdom, United States of America and China, and many vaccines have started vaccination applications (8). But; Even for the routinely used vaccines with proven efficacy (measles, polio, rubella, etc.), there are various concerns in the society regarding their side effects, content and protection. In fact, these concerns can go up to the dimension of "vaccination opposition". It is worried that a similar attitude and prejudice will be in question within the Kovid-19 vaccine.

Studies of past epidemics and pandemics show that anxiety, health anxiety and safety avoidance behaviors are common during epidemic processes. Studies show that more than 50% of the

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participants have anxiety and anxiety during the virus-derived epidemic process (9-12). The transformation of the physiological threat and destruction caused by COVID-19 into a pandemic causes stress, insomnia, anxiety and depression symptoms on individuals.

In this study; It is aimed to determine the knowledge, attitudes and behaviors of individuals about Covid-19 disease and their anxiety levels.

Research Questions

Individuals;

1. What are the knowledge and attitudes and behaviors about Covid-19 disease and vaccine?

2. What are the Covid-19 anxiety scale level mean scores?

3. Is there a relationship between their knowledge and attitudes about Covid-19 disease and vaccine with Covid-19 anxiety scale mean scores?

MATERIAL & METHODS

Research Type

This research was carried out as a cross-sectional relationship seeking study.

Place and Time of the Study

The research was carried out in the Turkish Republic of Northern Cyprus between September 2020 - January 2021.

Sampling

No sample selection was made in the study, and volunteers (n = 396) to participate in the study with the appropriate sampling method formed the sample of the study.

Data Collection Tools

Tools used to collect data;

1. Socio-Demographic Question Form: A socio-demographic question form consisting of 10 questions determines the characteristics of individuals such as age, gender, educational status.

2. Covid-19 Disease and Vaccine Questionnaire: It consists of 24 questions developed to determine the knowledge, attitude and behavior of the participants for Covid-19 disease and vaccine, which was created by examining the literature (13-14).

3. Coronavirus Anxiety Scale-Short Form: The Coronavirus Anxiety Scale-Short Form, consisting of 5 questions prepared in Likert type and developed by Lee, was adapted to Turkish by Biçer (15) in 2019 and its validity and reliability were tested.

Inclusion Criteria

Can speak Turkish,

Individuals who volunteer to participate in the study will be recruited.

Exclusion Criteria

Can't use a computer or smart phone,

Individuals who do not have access to the internet will not be included in the study.

Study Independent Variables

The socio-demographic characteristics of the participants and their knowledge and attitudes towards Covid-19 disease and vaccine are the independent variables of the study.

Research Dependent Variable:

It is the Covid-19 anxiety scale score of the individuals.

Statistical analysis

The data were evaluated in the SPSS 21.0 statistics program. The data were calculated as frequency and percentage for categorical variables, and mean and standard deviation for continuous variables.

Nonparametric Mann-Whitney U and Kruskal Wallis Tests were used to compare research variables. The study was conducted with a 95% confidence interval and 0.05% margin of error.

Ethical Consent

Ethical permission in the study was obtained from the Near East University Ethics Committee (YDU / 2020 / 85-1183), permission to use the scale from the researcher, and written permission from the participants.

RESULTS

Table 1.

When Table 1 is examined, it is seen that the average age of the participants is 27 ± 9.9, 67.4% (n = 267) are women and 79.8% (n = 316) are university graduates. One of the family members of 71% (n = 281) and 90.8% (n = 360) of the participants stated that they did not catch Covid-19. He stated that 95.7% of the participants (n = 379) did not lose a family member due to Covid-19.

Table 2.

When Table 2 is examined, it is determined that 67.2% of the participants (n = 270) do not smoke, 61.9% (n = 245) of them do not have any chronic disease in their family and 87.4% (n = 346) do not have any chronic diseases that will adversely affect them if they are caught with Covid-19. . Participants; 90.7% (n = 359) followed the rules of wearing a mask, 37.4% (n = 148) were indecisive that physical distance and crowded environments affected the risk of Covid-19 transmission, 85.4% (n = 338) paid attention to physical distance, They stated that 46.5% (n = 184) were not in environments that could transmit Covid-19 and 45.2% (n = 179) were not at risk of Covid-19 due to their job or occupation.

Table 3.

When Table 3 is examined, 40.7% (n = 161) of the participants stated that there is no effective treatment for Covid-19 yet, 86.6% (n = 343) were afraid of getting Covid-19, 76.3% (n = 302) If had

the Covid-19 vaccine, would feel safe, 60.9% (n = 241) of them would not decrease that they would get sick even if they were vaccinated, 68.2% (n = 270) would protect those around them if they were vaccinated, 47.7% (n = 189) of the vaccine 67.7% (n = 268) of the vaccine would be especially beneficial to risky groups, 51.5% (n = 204) would hide the serious risks of the vaccine from the public, 73.2% (n = 290) were positive about the vaccine in the media. The news was exaggerated, 60.6% (n = 240) of the results of the protection of vaccines are not yet certain, 37.4% (n = 148) of the vaccines were unstable to reduce deaths caused by Covid-19, 37.1% (n = 147) of the vaccine against the virus 58.6% (n = 232) of them will not be able to access accurate information about Covid-19, and 75% (n = 897) of vaccines are mostly pharmaceutical companies stated that it would be in the interest of.

Table 4.

When Table 4 is examined, it is determined that the minimum score that can be obtained from the Covid-19 Anxiety Scale Short Form is 0, the maximum score is 20, and this study obtained a minimum of 4 and a maximum of 17 points. The scale score average of the study is 11.84 and the standard deviation rate is ± 1.5.

Table 5.

When Table 5 is examined, when the socio-demographic characteristics of the individuals are compared with anxiety; A statistically significant difference was found between the answer they gave to the question of gender (p = 0.020), the status of having the pneumococcal vaccine (p = 0.009) and the question of catching Covid-19 (p = 0.005). (p <0.05).

Table 6.

When Table 6 is examined, a statistically significant difference was found between the questions related to vaccination, if I vaccinated I do not have to wear a mask (p = 0.025) and those with chronic diseases should get the vaccine (p = 0.140) and anxiety. (p <0.05)

DISCUSSION

Anxiety is a condition caused by the troubles and stress experienced by individuals, causing serious illnesses, and creating physiological and sociological problems as well as psychological. Anxiety is a condition that sometimes requires professional support, ranging from a very mild sense of tension to a degree of panic (16). China's Wuhan spreading emerging all over the world in the city and causing restrictions in the TRNC and Turkey from March 2020 Covidien-19 virus, fatigue, mild combined with fear in society, anorexia symptoms and causes anxiety in intensive level (17). It is observed that epidemic situations cause traumatic effects in humans and subsequently, stress and anxiety levels in individuals increase (18). The reactions of individuals to a disease and the adaptation process are related to the way they perceive the disease (19). Therefore, how stress is perceived in the event of an epidemic and the behaviors they will exhibit are important in terms of the prevalence of the epidemic, its rate of spread and possible loss of life.

Fear and anxiety are observed in all individuals as a reaction to the disease in studies with high participation in the early days of the epidemic in our country and the USA (20). The measures taken against this virus, whose transmission and spreading rate and its type are changing, always stand out for treatment purposes, whereas the mental health needs of individuals affected by the pandemic are ignored (21). In addition to causing great vital and economic losses, the epidemic also causes many psychosocial risks (22). Therefore, since the first day of the pandemic, it has been observed that the increase in the number of deaths and serious patients among people, as well as the negative media reports, increased anxiety along with serious fear, anxiety, insecurity and uncertainty (23).

In this study; the average age is 27. It was observed that the majority of the participants were women (Table 1.) It was determined that the anxiety of the participants due to Covid-19 was slightly above the middle (Table 4.).

When the findings were examined, it was determined that the majority of the participants were university graduates and did not catch Covid-19. In the literature, it has been observed that there are studies examining the relationship between Covid-19 and anxiety, but with different groups such as

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university students, doctors or nurses as a population group (24-25) Similar to the results of this study, the anxiety levels of the participants were found to be slightly above the middle in the literature.

It is stated that above-moderate level of anxiety protects individuals from risky conditions and increases productivity (26). However, there are studies showing that there is a relationship between compliance with the measures recommended by experts (mask, physical distance, hygiene, etc.) and anxiety in order to prevent the spread of the epidemic (27-28). It is stated that a moderate level of anxiety will be effective in avoiding the disease and obeying the rules, which is recommended by experts on Covid-19 disease. On the contrary, low or high levels of anxiety will prevent individuals from exhibiting effective behaviors due to underestimation of the disease, violation of rules, ignoring or inadequate self-efficacy, and lack of motivation (28). For example, in a study conducted in Italy in the influenza epidemic, it was found that participants with low income and education level comply more with protective measures because the risk of virus transmission is high (29). However, Balkhy et al. (2020) found that a high level of anxiety does not lead to compliance with the measures recommended by experts (30). In this study, similar to the literature, almost all of the individuals stated that they obeyed the rule of wearing a mask and more than half of them stated that the mask protected from Covid-19. Again, the participants stated that they obey the physical distance in order to be protected from Covid-19 and do not enter environments with high Covid-19 risk.

In the literature, on the one hand, it has been found that chronic respiratory and cardiac patients have high levels of depression and anxiety (31), on the other hand, there are studies showing that most adolescents with chronic diseases have low anxiety (32). Contrary to expectations, in this study, it was determined that the anxiety levels of the participants did not change depending on whether they had a chronic disease. The fact that individuals who indicate that they have a chronic disease follow the precautions recommended by the experts and that they follow the isolation rules in their lives are effective in their anxiety levels being similar to those without chronic diseases.

When the literature is examined, those living with people with chronic diseases are the individuals with the highest anxiety level. It has been determined that it is caused by the risk of coronavirus disease transmission to loved ones (33). In the study of Güloğlu et al., When the anxiety levels of the

participants were examined in terms of whether there was someone with chronic disease in their family or not, a significant difference was found between them (p> 0.005) (34). In this study, it was observed that there was no difference in anxiety levels according to whether a family member has a chronic illness or not. This may be because pandemic rules are followed and crowded environments are not entered.

In the literature, it is stated that vaccine producers have made huge gains regarding vaccine opposition and vaccine rejection reasons, which leads the vaccination applied all over the world and the side effects of vaccines are hidden (35). They argue that vaccine manufacturers manipulate studies on this issue by providing research grants or financial support. In this study, more than half of the participants stated that the serious risks of the vaccine were hidden from the society, 40% of the vaccine could pose serious risks in the long term and the vast majority of the vaccine production would be beneficial for pharmaceutical companies the most (Table 3). However, companies producing vaccines also produce drugs for diseases (36).

In a systematic review of 145 studies published in the European Union; It has been found that the biggest concern in the society about vaccination is about vaccine safety and often leads to the opinion that the risks of vaccines outweigh the benefits (37). In this study, more than half of the participants stated that the content of the vaccine was not safe (Table 3). The reason for this situation may be the vaccine opposition that has been suggested in recent years (38). There are doubts about the possibility of vaccines for both short-term adverse reactions and long-term adverse effects (37). These safety concerns can cause parents to refuse vaccinations altogether. The media, which reports problems with vaccine components such as thiomersal, aluminum and formaldehyde, and that vaccines can cause autism, brain damage or behavioral problems, cause parents to be more cautious and more concerned about the safety of vaccines. In this study, as well, almost half of the participants stated that the vaccine may have risks in the long term and more than half of the results regarding the vaccine's protection are not yet certain (Table 3). Again, the idea of anti-vaccination can be stated as the reason for this situation (39-40).

In the studies, their knowledge about Covid-19 and its vaccine, attitudes, and anxiety levels were examined, the results were similar to other studies and it was found that anxiety levels were slightly above the middle. (41-42). However, in Göksü and Kumcakızı's study on Covid-19 and anxiety, they determined the anxiety levels of the participants due to Covid-19 as medium. In this study; A little over the middle of the anxiety level may be a reason why it has been a long time since the first appearance of the disease and the pandemic continues unabated.

In this study, it was found that the anxiety levels of women were higher than men during the Covid-19 epidemic process. When the literature is examined, studies supporting the research result have been reached. In a study conducted by Lau et al. (2005), it was determined that women perceived the disease as more contagious and lethal and experienced higher levels of anxiety (43). Similarly, Wang et al. (2020) also found that women experienced higher levels of anxiety than men as a result of their studies examining the psychological reactions and related factors that occurred in the first stage of the Covid-19 outbreak (44). On the other hand, unlike these results, Zhang et al. (2020) found that the levels of anxiety and depression regarding the Covid-19 outbreak did not differ in women and men in their study with healthcare workers (45). In this study, a significant difference was found between gender and Covid-19 anxiety (Table 5.) (p> 0.005). It seems that the results are similar to the literature.

There are studies in the literature showing that there is a relationship between anxiety and requirements caused by the pandemic, such as wearing a mask and complying with physical distance (26-28). In this study, a statistical relationship was determined between wearing a mask and obeying the rules of physical distance and anxiety average score (0> 0.005). This result; The transmission path of the disease is mortality, and those who are more sensitive about mobitide status have higher anxiety scores and obey the rules of wearing masks and physical distance more. At the same time, anxiety levels can be high, since wearing a mask and following physical distance rules limit their lives.

CONCLUSION:

The average age of the participants in this study was 27, it was determined that the majority were women and they had a high level of education.

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It was determined that 9.2% (n = 36) of the participants caught Covid-19. 12.6% (n = 50) of the participants with chronic disease are in the risk group.

Regarding the vaccine, 66.4% (n = 163) of the participants stated that they believed that if they had the Covid-19 vaccine, they would overcome the disease slightly.

When the coronavirus-induced anxiety levels of the participants were examined, it was found to be slightly above the middle with an average of 11.84 ± 1.5, and a statistically significant difference was found between gender and the items that I do not have to wear a mask if I vaccinate.

Suggestions:

Studies should be carried out with different groups and methods in order to determine the short-medium-long-term effects of the disease information, attitudes and behaviors, the level of anxiety and its effects, and the situation in risky groups and to make preventive interventions.

Study Limitations: The study sample is limited to people with technology and internet access, and the majority of the study (73.1%) is highly educated, the results cannot be generalized to society. In addition, there are many factors that affect the level of anxiety, unmeasurable factors specific to the pandemic.

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Tables

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Table 1. Socio-Demographic Characteristics of Participants (n = 396)

	Qualifications	***n***	***%***
Age	X ss= 27±9.9	(min=17, max= 73)	
Gender	Women	267	**%67.4**
	Men	129	%32.6
Educational Level	High School	26	%6.6
	Under-graduate	316	**%79.8**
	Post-graduate	35	%8.8
	PhD	19	%4.8
Has anyone in your family caught Covid-19?	Yes	115	%29.0
	No	281	**%71.0**
Has anyone in your family died due to Covid-19?	Yes	17	%4.3
	No	379	**%95.7**
Have you caught Covid-19?	Yes	36	%9.2
	No	360	**%90.8**

Table 2. Distribution of Information and Behaviors of Participants on Covid-19 Transmission Risks(n = 396)

Covit 19 Risks Information-Behavior	**Qualifications**	***n***	***%***
Smoking	Yes	126	31.8
	No	270	**67.2**
Chronic illness of the family member	Yes	245	**61.9**
	No	151	38.1
A chronic illness of himself	Yes	50	12.6
	No	346	**87.4**
Mask protects from Covid-19	No	38	9.6

	Not Sure	107	27.0
	Yes	251	**63.4**
I follow the mask-wearing rule	No	1	0.3
	Not Sure	36	9.1
	Yes	359	**90.7**
Physical distance and crowding affect Covid-19 transmission	No	121	30.6
	Not Sure	148	**37.4**
	Yes	127	32.1
I pay attention to the physical distance	No	4	1.0
	Not Sure	54	13.6
	Yes	338	**85.4**
Being in environments with risk of Covid-19 transmission	No	184	**46.5**
	Not Sure	123	31.1
	Yes	89	22.5
Covid-19 transmission risk due to work	No	179	**45.2**
	Not Sure	55	16.9
	Yes	162	40.9

Table 3. Distribution of Participants' Information, Attitudes and Behaviors About Covid-19 Disease and Vaccine (n = 396)

Num.	Qualifications	No		Not Sure		Yes	
		n	%	n	%	n	%
1.	Covid-19 has no effective treatment yet.	116	29.3	119	30.1	**161**	**40.7**
2.	I'm afraid of getting Covid-19.	24	6.1	59	14.9	**343**	**86.6**
3.	I don't want to be in the same environment with someone who is Covid-19 positive.	33	8.3	58	14.6	**305**	**77.0**

No.	Statement						
4.	As the Covid-19 vaccine becomes widespread, quarantine practices will decrease.	136	36.3	**155**	**39.1**	105	26.5
5.	If I get the Covid-19 vaccine, I will get through the disease lightly.	49	12.4	84	21.2	**163**	**66.4**
6.	If I get the Covid-19 vaccine, I will feel safe in my social relationships.	26	6.6	68	17.2	**302**	**76.3**
7.	If I get the Covid-19 vaccine, my anxiety will decrease.	**241**	**60.9**	87	22.0	68	17.2
8.	If I get the Covid-19 vaccine, I can protect the people around me.	57	14.4	69	17.4	**270**	**68.2**
9.	Protection with the Covid-19 vaccine is cheaper than treatment.	119	30.1	88	22.2	**189**	**47.7**
10.	Covid-19 vaccine will be especially beneficial for risky groups.	47	11.9	81	20	**268**	**67.7**
11.	Even if Covid-19 vaccines have serious risks, they are hidden from society.	46	11.6	146	36.9	**204**	**51.5**
12.	Covid-19 vaccines can have serious risks in the long term.	82	20.7	155	39.1	**159**	**40.2**
13.	Positive news about vaccines is exaggerated in the media.	33	8.3	73	18.4	**290**	**73.2**
14.	Results regarding the protection of vaccines are not yet conclusive.	58	14.6	98	24.7	**240**	**60.6**
15.	I know the ways of transmission and protection of the Covid-19 virus.	63	15.9	97	24.5	**236**	**59.6**
16.	Covid-19 vaccines will reduce deaths caused by Covid-19.	121	30.6	**148**	**37.4**	127	32.1
17.	Covid-19 vaccines will reduce the contagiousness of the virus.	**147**	**37.1**	122	30.8	127	32.1
18.	I follow the rules to be protected from Covid-19.	57	14.4	119	30.1	**220**	**55.6**
19.	My health is appropriate to have one of the Covid-19 vaccines.	68	17.2	116	29.3	**212**	**53.5**

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20.	I can get accurate information about the benefits of Covid-19 vaccines.	106	26.8	107	27.0	**183**	**46.2**
21.	I can get accurate information about the risks of Covid-19 vaccines.	**232**	**58.6**	84	21.2	80	20.2
22.	Even if Covid-19 vaccines have serious side effects, they are hidden from society.	49	12.4	108	27.3	**239**	**60.4**
23.	The rich will reach the vaccine first.	48	12.1	83	21.0	**265**	**66.9**
24.	Vaccines will benefit pharmaceutical companies the most.	34	8.6	65	16.4	**297**	**75.0**
25.	Those who recover from Covid-19 do not need to be vaccinated.	**223**	**58.8**	114	28.8	49	12.4

Table 4. Distribution of Covid-19 Anxiety Scale Short Form Mean Scores (n = 396)

	Anxiety Scale		In This Study		Mean	Sd
	Min	Max	Min	Max		
Anxiety Scale Score	0	20	4	17	11.84	±1.5

Table 5. Comparison of Sociodemographic Features with Anxiety (n = 396)

		n	%	U*	p
Gender	**Women**	267	67.4	14947.5	0.020
	Men	129	32.6		
Pneumococcal Vaccine	**Yes**	15	3.8	1805.5	0.009
	No	380	96.0		
Caught by Covid-19	**Yes**	36	9.2	4803.5	0.005
	No	360	90.9		

U*: Mann-Whitney U

Table 6. Comparison of Vaccination Questions with Anxiety (n = 396)

Qualifications		n	%	t*	p
If I Get Vaccinated, I Will Not Have to Wear a Mask	Yes	47	11.9	7.403	0.025
	Not Sure	81	20.5		
	No	268	67.7		
Those with Chronic Disease Should Have It	Yes	240	60.6	3.931	0.140
	Not Sure	98	24.7		
	No	58	14.6		

t*: Kruskal Wallis

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Women's Mental Health in the Shadow of the Pandemic

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Abstract

The Covid-19 pandemic, which affects the world, has become the only agenda of all humanity. The Covid-19 pandemic affects not only the physical health of individuals, but also the psychological health and well-being of the entire population, whether infected or not. In this period of many uncertainties, pandemic causes many problems in individuals such as intense stress, anxiety and worry. Although all members of the society were negatively affected during the pandemic process, children, adolescents, the elderly, women and healthcare workers were the most affected. In the literature, conditions that adversely affect mental health have been observed, especially during the periods when the epidemic first appeared and the number of cases increased. Fear of getting sick, uncertainty, fear of spreading the disease to him / her family, and evaluating that the place where they live is unsafe are a source of intense anxiety for women. Important problems during the pandemic process start with the dramatic change in lifestyle and habits, especially with the isolation and quarantine process. The fear of separation from loved ones, loss of freedom, uncertainty about the course of the illness, and stigmatization can have dramatic effects on women's mental structure. The tragic consequences of deaths in this period, such as the inability to perform cultural and religious rituals, and the inability to say goodbye to their relatives, cause the mourning process to be postponed and not completed. In such a situation, it is thought that women, like other members of the society, will have long-term psychological effects. In addition to all these, situations such as the closure of many workplaces during the pandemic process, the unemployment of themselves and / or their family members, the decrease in production and the decrease in access to various products increase the unrest among women. The purpose of this review is to shed light on the effects of the pandemic process on

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women's mental health and to make suggestions on what can be done to protect and improve mental health.

Keywords: Covid-19, Epidemic, Pandemic, Woman, Women's Mental Health.

INTRODUCTION

COVID-19 is an infectious disease caused by coronavirus 2 (SARS-CoV-2) and was declared as a pandemic by WHO on 11 March 2020 (1, 2). Various measures are taken all over the world to stop the epidemic; on the other hand, new drug and vaccine production studies to prevent the disease continue (1-3).

The social, political, economic and psychological reflections of the Covid-19 pandemic have been an undeniable reality that is suddenly located in the middle of our lives. Not knowing the exact cause of its emergence, the inability to control the virus and the potential risk of all individuals in the world have transformed the epidemic into a global trauma and women (2,3). In the face of such a big event; individuals are likely to exhibit various psychiatric symptoms. It is inevitable that trying to keep up with the daily routine that changes with the pandemic affects the spiritual life. Because COVID-19 not only physically threatens the body, but also affects mental health, social interaction networks and economic factors (2,4). In addition, social isolation, which is the basic and necessary precaution against the epidemic, has significantly changed the lifestyle and habits of individuals. It is thought that this change will be permanent to a certain extent in the long run. Social relationships decreased and the feeling of loneliness increased due to compulsory isolation (4,5). Considering the protective role of social relationships in mental health, the negative psychological effects of the epidemic have become inevitable. People who may be exposed to more negative consequences in the Covid-19 outbreak; elderly, youth, women, students (6,7). In particular, it has been found that caught by family members, a relative or an acquaintance with the Covid-19 virus increases the anxiety of women (3). In such a situation, it is thought that women, like other members of the society, will have long-term psychological effects.

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The aim of this review, which has been prepared nowadays in the fight against Covid-19 infection, is to draw attention to women's mental health in the Covid-19 pandemic and to share the suggested strategies and to make suggestions on what can be done to protect and improve women's mental health in the light of these strategies.

MENTAL HEALTH

According to the definition of the World Health Organization, mental health is a state of physical, mental and social well-being in which the individual can cope with life stress, work productively and efficiently by using his / her own potential and contribute to the society (8). Mental health; it is seen as a component of health (2).

Three important points are emphasized when defining mental health (2). The first of these emphasized; Rather than focusing on clinically diagnosed mental disorders, it is the transition to mental well-being approach, which is a more comprehensive phenomenon than mental health. Although not having any illnesses is not sufficient for mental well-being, establishing healthy relationships with the environment, and the ability to make daily decisions and choices are required. In addition, the ability to lead a satisfying life is an integral part of mental health and mental well-being (9).

The second important point emphasized; It is the investigation of biological, genetic and social factors in the examination of mental health and diseases. Mental well-being is not only affected by individual characteristics. It is also affected by the socioeconomic structure of individuals and the environment they live in (8).

The third important point is; It is the necessity of protecting mental health as a basic and universal human right (10). Mental health, as an integral part of health, is a fundamental human right to protect the well-being of people with mental disorders and those at risk of poor mental health, and to provide an environment that supports mental health for all, with a perspective of social justice (11, 12).

FACTORS AFFECTING MENTAL HEALTH

There are three important factors affecting mental health and mental well-being. These; individual characteristics and behaviors, social and economic conditions and environmental factors.

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- Low self-esteem, lack of communication skills, cognitive and emotional impairment, presence of medical illness, and substance use can be counted among individual characteristics and behaviors.

- Exposure to violence and abuse, neglect and family conflicts, loneliness, loss of a relative, low income and poverty, difficulties and failures at school, job stress and unemployment are among the social and economic conditions.

- Injustice and discrimination, social inequalities and gender inequalities, inadequate access to basic services, exposure to war and other disasters can be counted among environmental factors (13).

In addition, factors such as poverty and stress, genetic predisposition, previous or present physical environment, some personal physical and psychological traumas, childhood traumas can cause negative effects on mental health (14).

MENTAL HEALTH IN THE WORLD

The effects of mental illnesses on the global disease burden should be examined in order for the practices to be made in the field of mental health to be more effective. When mental diseases are examined in terms of the global burden of disease, the most common and increasing prevalence of mental disorders is depression. The Institute of Health Metrics and Evaluation (IHME) (2017) data suggest that 970 million people in the world have any mental disorder and 175 million people have a substance use disorder. Based on these data, it is estimated that approximately one out of every 7 people has a mental illness (15).

It is estimated that mental illnesses are more common in women than men, and 503 million women worldwide have at least one mental illness. The difference between male and female gender; While it is approximately 1.5 times in favor of the female gender in major depression and anxiety disorder, it changes in favor of the male gender in substance and alcohol abuse (15)

In The Diagnostic and Statistical Manual of Mental Disorders (DSM-V), mental disorders are `` a clinically significant disorder in the cognition, emotion regulation and behavior of the person, indicating that there is a disruption in the mental, biological or developmental processes underlying

mental functioning. It has been defined in a multidimensional way as a "specific syndrome with a disorder" (16).

The World Health Organization emphasized the necessity of a multidimensional approach to mental health with the slogan "No Mental Health, No Health" in the World Health Organization Mental Health Action Plan: well-being, stress, emotions, development, crime, human rights, policies, discrimination-exclusion. many factors have been addressed with health. In the report, the high level of disability and mortality of people with mental disorders in the world is emphasized. The most striking example is that patients with major depression and schizophrenia die 40-60% earlier than those without this disease. For this reason, it was emphasized that urgent action should be taken regarding mental illness (17).

According to the "Investing in Mental Health" report, another study of the World Health Organization (WHO), 1 million people commit suicide every year and approximately 450 million people struggle with mental disorders. These figures reveal the share of mental diseases in the disease burden (18). Again, according to WHO, 5 out of 10 causes of disability in the world are mental disorders (17).

MENTAL HEALTH IN TURKEY

National Mental Health Action Plan prepared in 2011 in Turkey within the scope of community mental health approach was adopted and community-based service model was introduced. In this context, Community Mental Health Centers (CMHS) were opened to implement the community-based service model. It is among the duties of these centers to provide psychosocial support services to patients with mental problems, to provide follow-up and treatment, to provide follow-up, treatment and patient-family training when necessary, and to provide an effective and accessible service (19). In this transition period, the positive results of community mental health services also affect the quality of the service, planning, organization, financing, and the manpower providing the service (19).

According to the Mental Health Profile Study, it was found that 18% of the population had a lifelong mental illness, and the rate of problematic behavior at the clinical level in children and adolescents was 11%. When the causes of burden of disease at the national level are distributed

according to the main disease groups, it is seen that the psychiatric disease group takes the second place with 19% after cardiovascular diseases (20). According to WHO estimates in 2008, lifelong incidence of neuropsychiatric disorders in Turkey is 17% (20). Although mental disorders may seem individual-based at first glance, they are a factor affecting the whole society. However, due to insufficient reliable data and information relating to the prevalence of mental disorders and the effects are inadequate in Turkey.

Mental health services Judging for Turkey in mental health services in 53.5% Mental and Nervous Diseases Hospitals (MNDH), general hospitals depends on the 27.2% Ministry of Health, are 13.1% university hospitals and 6.2% in the private sector. The number of psychiatric beds per 100 thousand people across the country is around 10. This figure is the lowest among the European region countries. In terms of manpower, the number of mental health and disease specialists per 100 thousand people is 2.2, the number of child and adolescent mental health and diseases specialists is 0.28, the number of psychologists is 1.85, the number of social workers is 0.92. Among the WHO European Region countries, there is 12.9 mental health experts per 100 thousand people. Again, in terms of psychologists, while there are 63.3 psychologists in Austria, 47.2 in Finland and 38 in the Netherlands per 100 thousand people, Serbia and Macedonia have the closest number to our country with 2 (19-21).

MENTAL HEALTH IN WOMEN

The prevalence, course and problems caused by mental illnesses show significant differences between genders. Some mental illnesses that are common in society such as phobias, post-traumatic stress disorder and panic disorder, anxiety disorders and depression are more common in women than in men. Mental health of women is a part of their physical health. All over the world, women are the most exposed to stress, starting from childhood, due to negative experiences such as violence, maltreatment, or coercive factors such as hormonal changes, birth, and overwork (14).

According to the WHO's "Women and Health" report; While women are less affected by alcohol and substance-related disorders than men, they are more affected by anxiety and depression. Worldwide, 73 million adult women are affected by major depression each year. It has been reported that 40% of adult women in high-income countries receive treatment for moderate and severe mental

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disorders, as well as 14% in low-income countries (22). Mental Health Profile of Turkey research (1998), the depression and anxiety disorders in women (9.8% and 8.9%) were detected much higher than men (22,23).

When the factors affecting mental health in women are examined; Education level, marital status, working life, socioeconomic level, fertility characteristics, presence of physical illnesses, migration and epidemic diseases were found to be effective (22,23).

COVID-19 PANDEMIC AND WOMEN'S MENTAL HEALTH

COVID-19 is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and was declared a pandemic on 11 March 2020 (1-3). Various measures are taken all over the world to stop the epidemic; On the other hand, new drug and vaccine production studies to prevent the disease continue.

The social, political, economic and psychological reflections of the Covid-19 pandemic have been an undeniable reality that is suddenly located in the middle of our lives. The Covid-19 epidemic, which threatens both physical and psychological health of individuals, has a mortality risk ranging from 0.5% to 3%, and has changed our lives with irreversible consequences shortly after its emergence (3). Not knowing the exact cause of its occurrence, the inability to control the virus, and the potential risk of all individuals in the world transformed the epidemic into a global trauma and women (2,3). In the face of such a big event; individuals are likely to exhibit various psychiatric symptoms. It is inevitable that trying to keep up with the daily routine that changes with the epidemic affects the spiritual life. Because COVID-19 not only physically threatens the body, but also affects mental health, social interaction networks and economic factors (4,5).

In addition, social isolation, which is the main measure against the epidemic, has dramatically changed the lifestyle and habits of individuals. It is thought that this change will be permanent to a certain extent in the long run. Two of these changes are distance learning and workplaces offering employees the opportunity to work from home. Social relationships decreased and the feeling of

loneliness increased due to compulsory isolation (5). Considering the protective role of social relationships in mental health, the negative mental effects of the epidemic have become inevitable (3). Disease outbreaks affect not only the physical health of individuals, but also the psychological health and well-being of the uninfected population. (5). Tragic consequences such as failure to perform cultural and religious rituals and not being able to say goodbye to relatives in the deaths of this period cause the mourning process to be postponed and not completed (24,25). Therefore, it is predicted that the psychological effects of the epidemic will be long-term (3,25).

In individuals infected with SARS-CoV-2, the fear of death, health anxiety and the feeling of exclusion caused by stigma affect the mental health of women. Being separated from their relatives during the social isolation process applied by people against the possibility of COVID-19, and not being able to do many activities carried out in normal times during this period cause anxiety and many mental problems related to anxiety (3, 24, 25). Considering the economic effects of the pandemic, the increasing unemployment with the closure of many workplaces in the world during this period, the decrease in access to various products, especially basic food caused by the decrease in production, in some service sectors, although the group receiving salaries receives their salaries intermittently, the increasing increases also increase the unrest. In addition, people who experience the death of a family member due to COVID-19 may not have the opportunity to have a funeral ceremony according to their cultural tradition, which can disrupt the mourning process, which creates a risk for the consequences of the grieving process (25).

It is not always possible for spiritual harmony to continue in the face of an unusual situation. Studies conducted include alcohol and drug consumption during the epidemic process; It shows that potentially addictive behaviors such as virtual gaming and gambling and domestic violence are increasing (COVID-19 pandemic is a strong risk factor for mental and behavioral disorders such as depression, post-traumatic stress disorder (PTSD) and alcohol use disorder (26,27).

People who may be exposed to more negative consequences in the Covid-19 outbreak; elderly, youth, women, students, migrant workers (6,7), and those in prison and the homeless (28). Cao et al. (2020) stated that living in urban areas instead of rural areas, living with the family, and having a

stable and regular income of the family are protective factors in the Covid-19 process. In the same study, it was determined that family members, relatives or an acquaintance caught the Covid-19 virus increased the anxiety of women (29). In such a situation, it is thought that women, like other members of the society, will have long-term psychological effects. In addition to all these, situations such as the closure of many workplaces during the pandemic process, the unemployment of themselves and / or their family members, the decrease in production and the decrease in access to various products increase the unrest among women.

CONCLUSION

It is predicted that the global virus epidemic, called COVID-19, is one of the important breaking moments in world history, with this disaster, societies and states will change their reflexes, and this disaster will permanently transform the international system and the economy. This pandemic is a period of crisis that shakes the social and economic order, damages established values, and increases feelings of uncertainty, fear and anxiety.

It is important to identify and support individuals in high-risk groups such as children, adolescents, the elderly, women, healthcare professionals, psychologically diagnosed and in the process of treatment, who may be more adversely affected by the epidemic at the point of prevention and intervention of the negative consequences of stress and traumatic experiences caused by the pandemic. Intervention strategies should be developed by using technology and digital resources (telephone, "online" applications, "online" programs, video conference calls) in mental aid (28). In this way, it is seen as an effective support to identify mentally risky groups and to provide information and psychoeducation, as access to individuals in the society will be easier. In addition, by drawing attention to the importance of multidisciplinary work in the epidemic process, it was emphasized that psychiatrists, psychologists, healthcare professionals, neuroscientists, virologists and other working branches should take steps together and by feeding each other (30). It will be beneficial to know and implement psychodispute strategies that can positively affect the recovery of individuals diagnosed during the epidemic process by employees in all health branches at a basic level. In combating the

epidemic, it is important to use limited opportunities in the most effective way, and to make careful contact with patients and individuals in the community (3).

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Examining the Role of Fathers in Preparing Children for the COVID-19 Pandemic

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ABSTRACT

Purpose: In the study, it was aimed to examine the role of fathers in preparing children for the COVID-19 pandemic process.

Method: Qualitative research techniques were used in this research. There are 30 fathers in the research group. The research was carried out using the interview technique. The unstructured interview technique, one of the interview techniques, was used. The content analysis method was used for the statistical analysis of the interviews.

Results and Conclusion: The themes of education, fear, support, and precaution were determined using the content analysis method. As a result of the research, it was determined that the priority of fathers is the health and safety of their children. In addition, it was determined that although education is very important for children, distance education is not enough, but they think that children should continue education from home rather than getting sick due to the epidemic. It has been determined that fathers try to be comfortable and make life easier so that their children do not experience fear and anxiety due to the pandemic. It has been determined that fathers have an approach to protect their children, to give confidence and to provide discipline. Fathers think that the pandemic process affects children negatively. It was observed that fathers developed appropriate and effective methods to support their children. It has been determined that they are good role models for their children and that fathers turn into social guides and counselors for their children during the preparation for the pandemic process.

Key words: paternity role, COVID-19, father-child communication, child development, content analysis

INTRODUCTION

As of March 2020, various restrictions have been made by the Ministry of Health to prevent the spread of the COVID-19 epidemic disease in Turkey. These restrictions include practices such as curfew,

the obligation to wear a mask, the closure of schools, flexible working practices in the public, curfews for citizens over the age of 65, and the closure of shops (1). Such measures taken to reduce the possibility of transmission of the virus can have different effects on people's lives. According to Duan and Zhu (2), the coronavirus outbreak can cause individuals of all ages to experience fear, loneliness, panic, anxiety and depression. Because people move away from social situations, acquire false information, fear being sick, feel ashamed and guilty.

Although the effect of the pandemic on family dynamics is currently unknown, research results in Canada have revealed that staying in-home quarantine within the scope of COVID-19 measures increases the level of domestic stress and family members feel anxious (3). COVID-19 disease will likely have long-term adverse effects on children and their families. Children love to be in crowded places and spend time with their friends. Worries such as lack of information and inability to fully explain this process to children can cause parents to feel anxious and uneasy. Children have the ability to easily observe what is happening around them. Therefore, they can easily understand the anxiety, fear, and anxiety experienced by their parents, friends, and other people around them (4). For all these reasons, it is necessary to prepare children for the pandemic process. Due to the flexible opening of schools, the increase in the number of patients, seasonal influenza, the ongoing COVID-19 pandemic, children needs to be emotionally empowered and prepared for the process.

Their families are primarily responsible for preparing children for this process. Because the people children trust the most are their parents. Children model their parents' behavior, problem-solving skills, and their reactions and attitudes to events (5). The communication between the parents and the child ensures that the child feels safe. In other words, their parents not only offer social opportunities to the child but also guide their children as a model (6). The positive and qualified attention of parents who are consistent in their thinking and behavior plays an important role in settling the understanding of the discipline in children, building self-confidence, developing the leadership structure, becoming a social being, and gaining a positive personality in friend relationships (7).

There is no current study in our country that reveals how the measures taken during the COVID-19 pandemic affect children. In addition to children, there is no research that reveals how the process is reflected in parents. However, it is thought that there is a need for research directly participated by parents in order to better understand their experiences in the process, to determine whether there has been a change in the perception of parenting, to understand and reveal their perspectives. For this reason, the study aimed to examine the role of fathers in preparing children for the COVID-19 pandemic process. It is believed that it will make a significant contribution to the field as it is one of the first studies to be done in this context.

METHOD

Research Model

Qualitative research technique was used in this research. The research was carried out using the interview technique, one of the qualitative research methods (8).

Participants

This qualitative research was conducted in Ankara city center with 30 fathers in the study group. The non-probabilistic purposeful sampling method was used to determine the study group. In this sampling method, when selecting individuals to be interviewed, it is evaluated whether they are directly related to the subject to be investigated (8).

Participation in the study was based on volunteerism. A signed informed consent form was obtained from each parent who volunteered to participate in the study.

Data Collection

The research was carried out using the interview technique. Interview technique is defined as the method of revealing the experiences, attitudes, feelings, goals, thoughts, comments, reactions, and perspectives of individuals involved in research on a certain subject. The purpose of this method is to try to understand and reveal the individual's point of view (9).

In the study, the use of unstructured interview technique among interview techniques was preferred. During the interviews, issues that are thought to reveal the role and attitudes of fathers in preparing children for the COVID-19 pandemic process were discussed. Among these issues are the anxiety, the precautions they take, the situations they try to pay attention to in the process, whether they feel competent or not, what their priorities are when preparing their children for the pandemic process, the difficulties and conveniences they experience, what their duties and responsibilities as fathers in the pandemic process are.

Participation in the research is voluntary. Informed consent was obtained from each father prior to the interview. The consent form includes information explaining the content, nature of the interviews, who will be interviewed, and the researcher's expectations, as well as explaining that the participants can stop the interview whenever they want and that they can make video calls at the scheduled date and time.

Interviews were conducted online. Online interviews were conducted via smartphones, computers and tablets. Programs and applications such as Google Duo, Google Meet, Skype, Zoom, FaceTime and Microsoft Teams were preferred for making online calls. Each interview lasted between 50-60 minutes. The answers given by the fathers during the interview were recorded by the researcher.

Data Analysis

A descriptive approach has been adopted in the analysis of the data obtained from this qualitative research. One interview was conducted with each father. The content analysis method was used for the statistical analysis of the interviews (10).

In order to ensure the reliability of the research, an inter-coder reliability study was conducted on the data obtained. Interview records and at least 20% of the notes taken were examined by another coder. Based on the analyzed data and codings, an analysis was made with the formula Reliability = Consensus / (Consensus + Disagreement) X100 (11). The result was 86% and the study was deemed reliable.

Ethical Approval of the Study

For the research, Ethics Committee Approval was obtained from the University of Health Sciences Hamidiye Scientific Research Ethics Committee with the decision number of 11.09.2020 and number 16/10.

RESULTS AND DISCUSSION

After the interviews to determine the roles of fathers in preparing children for the COVID-19 pandemic process, the themes of education, fear, support and prevention were determined with the content analysis method.

The findings obtained are presented under theme headings:

Socio-demographic findings

30 fathers participated in the study. 23 of the fathers have one (77%) child, and 7 (23%) have two children. The ages of the children range from 6-10 years. 19 of the children are girls (51%) and 18 of them are boys (49%).

7 of the fathers are high school graduates (23%), and 23 of them are university graduates (77%).

All fathers are working. During the pandemic, 15 of them continued to work flexibly (50%) and 15 of them continued to work full time (50%).

All of the fathers went through the pandemic process with their spouse and child/children.

The number of fathers who have a garden/terrace or other outdoor areas in their house is 15 (50%).

Education

All of the children go to school. Children have continued distance education since March 2020. In the new academic year, schools were gradually opened, and children attend school face-to-face 2 days a week and distance education on other days.

Eight of the fathers think that they have more difficulties in mainraining their child's attention during online lessons compared to normal school. They stated that their children were constantly on the move

while sitting at the desk, after a short while, the children were distracted, and they began to play with the objects around and to linger.

B1: *"Always fidget"*

B2: *"I say to my son listen your teacher. He says the teacher does not appear. Then he plays with his pencil"*

B3: *"he doesn't follow lessons by sitting at his desk. He's lying in his bed listening to lessons like he's listening to music."*

Twelve of the fathers stated that they did not have any idea about how online lessons were conducted because they worked during the day. Other fathers stated that their children were in their rooms during the online lesson, left their rooms after the lesson was over, and they did not observe them during the lesson so that their children would not be distracted.

Twenty two of the fathers felt that their children did not feel more tired during online lessons compared to normal school. The situation was stated that attending classes from home is much easier than children getting up in the morning and getting ready to go to school. It was stated that it was not an exhausting process as children do not have to use school vehicles to go to school, do not go early and wait in the school yard and do not carry their school bags.

Eight of the fathers think their child is less willing to go to online school compared to the regular school. According to most fathers, children are more curious and excited about online school than regular school (n = 22, 73%).

B15: *"She has a lot of interest in computers. We used to restrict it in the past, now she says I am listening to a lesson and do homework. She always in front of the screen"*

B17: *"She has been told a lot that you both want me to work and you're not taking tablets. All my friends have tablets, they listen to lessons, I do not listening. We bought tablets, and his interest in classes grew. She eagerly waits in front of the tablet for the start of the lesson"*

B23: *"I think he likes school because of the tablet. Last year he had various excuses for not attending school. Now a tablet in his hand tells us to shut up, I'll listen to the lesson"*

Twenty-seven (90%) of the fathers think that online education does not affect school life negatively. It is claimed that it is the right decision for their children to be educated at home rather than sick. It was expressed that children attending online lessons, attending school on certain days and doing their homework will not affect their education life negatively. On the other hand, 10% of the fathers think that the children have moved away from the educational discipline, they do not give the necessary importance to the lessons and they have turned online lessons into "games". Therefore, they stated that their education life was negatively affected and two years of education were lost.

In addition, 23 of the fathers (77%) think that distance education is not enough for children. Fathers said, *"I know that distance education is not enough, but I don't want my child to be sick. This year, there is nothing to do. Health is important"*. It is known that environmental effects, communication and social changes have an impact on human behavior (12). Although fathers attach importance to the education of their children, they prefer distance education rather than opening schools, which can be explained by the fact that they are affected by the pandemic.

Fear

In the interviews, all fathers stated that they are not afraid of being sick with COVID-19. Half of the fathers emphasized that they were not afraid of getting sick, but of going to the hospital for treatment. The other half stated that they were afraid that their wife and child would get sick.

Seven of the fathers (23%) stated that they felt uneasy and insecure, and they were afraid that something bad might happen and be unemployed. They also stated that in addition to feeling nervous or jumpy inside, they also had concerns about their children's health and education. Other fathers, on the other hand, stated that this is a process, they should be regarded as normal and they try to be comfortable and make life easier because they think that fears and worries will only cause discomfort. When evaluated in general, it was seen that fathers had an approach to protect their children, to give confidence and to provide discipline. Millings (13) argued that in recent years, parental roles have changed and fathers have undertaken the responsibility of raising children beyond just being a financial resource to meet the physical needs of their families. When the statements made by fathers within the scope of the theme of fear are evaluated from this perspective, it can be said that the father model, which contributes to all developmental areas of children, was adopted by the fathers who participated in the study. In addition, Özgündüz (14) stated that parents' positive model behaviors have a positive effect on children's behavior. The attitudes and behaviors of their parents are important in the children develop positive emotions, the attitudes they adopt towards their social environment and school, their motivation and desires, and their expectations about themselves and their future (15). Due to the growing interest of fathers, children's entrepreneurial behavior and empathy skills are positively affected (16).

During periods of covid-19-like epidemics, it is common for families to experience financial stress. Rising unemployment rates, the collapse of economic markets, and inadequate financial aid packages from some governments can drive many families into financial turmoil. In times of pervasive economic turmoil, financial stress affects families directly through individual job loss and indirectly through national economic uncertainties (17). Among fathers, there are those who express that they feel uneasy, insecure, and afraid of being unemployed. This result is consistent with the literature.

Support

All fathers think that the pandemic process affects their children negatively. Fathers stated that there were significant changes in children's fear and anxiety compared to the past. Fathers have stated that

fear and anxiety that did not exist in children before emerged, such as fear of the dark, worrying when I could not reach, the thought of whether I was sick, the thought that my mother and father were sick, fear of death and loss. In addition, it has been stated that children develop obsessions about cleaning, hand washing, contact and social distance.

B8: *"She became more obsessive about cleaning and contact"*

B13: *"Our hand and touch problem started. No matter how much his mother and I are paying attention to, he records what he heard on TV. he avoids his hand, he does not touch anywhere"*

B18: *"When I return from work in the evening, he runs to hug me when he sees me. Then he suddenly stops in front of me. Can't touch me"*

B25: *"Günlük Korona grafiğini takip ediyor. Her gün kaç kişinin öldüğüne bakıyor. O sadece ölü sayımı takip ediyor"*

B26: *"He has been asking whether there are children who died due to the corona for months"*

B28: *"He doesn't even touch its mother and me. He seriously avoids the touch of his body"*

B30: *"She treats her toys by making them corona patients. Her toys are always masked and sick in their games. In the end, they mostly died"*

All of the fathers thought that the pandemic process affected their children negatively. In this regard, fathers stated that they developed various methods to support their children. Among these methods, there are behaviors such as chatting with their children, spending time together, playing games, reading books, painting, playing Lego, doing sports, doing the activities their children love together, maintaining their daily routines. The interest and sensitivity shown by fathers are effective in the reduction of fear and anxiety experienced by children. This interest and sensitivity can also play a role in children's adaptation to social life in the later stages of their lives. In particular, it has been suggested that activities such as games have an effect on the father schema and offer children the opportunity to see and experience their father's behavior (18). It is important for fathers to bond with their children, to do their favorite activities together, to provide different contributions to the child. For this reason, the activities and content of the activities that fathers do while spending time with their children are also important. When the fathers participating in the study stated that they engage in activities such as chatting with their children, spending time together, playing games, reading books, painting, playing Lego, and doing sports, when evaluated in line with the literature, it is evaluated as a positive result in terms of the benefit of children. Activities such as reading books that will contribute to the cognitive development of children have an important place in preparation for literacy at home. It is stated that the father's participation in this process positively supports the development of children in the long term (19). According to Atay (20), the quality time fathers spend with their children supports learning and intelligence. The fact that the father is a playmate, chatting,

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reading, and touching the child affects the child positively (21). Thus, it is thought that it may also have an effect on children having less fear and anxiety during the pandemic process.

Prevention

It was determined that fathers took various precautions in preparing children for the pandemic process. Among these measures, cleaning has been the most noticeable measure. It was stated that all the fathers interviewed were sensitive to cleaning and hygiene rules, and they tried to check whether their children washed their hands or not put their hands on their faces.

In addition, half of the fathers stated that they only provided information about the pandemic. When asked to give information about the content of the interview with their children, they told that COVID-19 is an epidemic, it is infected with people, it is very sick, should not go out without a mask, should wash his hands, should stay distant from people and friends, should not approach anyone, should not leave the house, should not touch the mouth and eyes and the need to take a bath.

B12: *"I kept them away from crowded environments. I tried to teach them the mask, distance, and hygiene rules and I approached the children more carefully because I went to work"*

B23: *"I informed the children about the virus and told them to observe the hygiene rules"*

While preparing their children for the pandemic process, all fathers stated that their priority was to provide information about cleaning and the virus. It was determined that fathers did not have difficulty preparing their children for the pandemic process. Because even before the pandemic, fathers take care of their children, try to spend time together, love to chat and play games together.

B16: *"We chose to make life easier because we are always together"*

B18: *"I tried to comfort my child by letting her know that she is not in danger at school or outside"*

While the fathers stated that they did not have any difficulties in explaining the precautions they took and the pandemic process to their children, they stated that they had difficulties in implementation. It has been determined that children have difficulties in adapting to the new rules and new life, having difficulties in acting in accordance with the situation, the boredom of staying at home, and fathers having difficulties in terms of not being able to keep up with children's energy. While expressing the difficulties experienced by their children in the process of adapting to the new order, the fathers were asked whether they felt competent or not and 22 of the fathers (73%) stated that they feel competent in preparing their children for the pandemic process.

Fathers stated that they have duties and responsibilities towards their children and they try their best to meet them. It has been determined that protecting their children from the virus is among the primary duties of fathers. For this reason, it was determined that they tried to take all kinds of precautions and apply them at home. Another responsibility has been identified as spending time with their children. Due to the change in social life due to covid-19, not being able to meet with friends and schools being

closed, children get bored too much, so they feel it is the fathers' duty to do something to keep them entertained and amused. When evaluated in general, it was seen that fathers had the approach of meeting the needs of their children, being a suitable role model for their children, and protecting and looking after their family. According to Paquette (22), fathers are a unique window to the outside world in a child's life, and therefore fathers should be active in their children's lives. Although parents have many responsibilities over children, fathers have a different effect on the development of children's social skills (22). Considering the explanations they made within the scope of the precaution theme during the pandemic process, it is thought that fathers turned into social guides and counselors for their children. The things fathers do and their responsibility to prevent their children from being negatively affected by the process suggests that they are good role models for their children. Leidy, Schofield, and Parke (23) state that fathers assume roles that affect interactions outside the family in a child's life. When the data obtained is evaluated within this scope, it can be said that fathers contribute positively to the social development of their children.

CONCLUSION AND SUGGESTIONS

Being a parent is one of the important responsibilities of adults in their lives. There is a social belief that the primary responsibility of fathers is to provide financial support for their families. Meeting the financial needs of the house and earning money have been among the first and most important duties of fathers for years. Fathers' responsibilities over their children began to diversify as women started working life and shared responsibilities within the family. The effects of fathers have begun to be seen in the growth, development and individualization of children, rather than just being a financial resource. There are many studies on the positive effects of father-child interaction on children's development. The pandemic process has brought a different dimension to the changing parenting roles and responsibilities as a result of communal development. In this study, which was conducted to examine the role of fathers in preparing children for the COVID-19 pandemic process, four themes were identified in which the roles of fathers could be examined. These; education, fear, support and prevention. As a result of the research;

- Fathers' priority is the health and safety of their children.
- Although education is very important for children, distance education is not enough. However, due to the epidemic, children should continue education from home rather than getting sick.
- Fathers try to be comfortable and make life easier so that children do not experience fear and anxiety.
- Fathers have an approach to protect, reassure and discipline their children.
- According to all fathers, the pandemic process affected their children negatively.
- Fathers have developed appropriate and effective methods to support their children. The methods applied by their children in order not to be affected negatively from the process and

seeing these among their responsibilities show that they are good role models for their children.

• Fathers turned into social guides and counselors for their children while preparing for the pandemic process.

This research is qualitative research and its results represent only the research group. For this reason, research in which quantitative data can be collected in other studies to be carried out can be designed, work with more groups, and generalize the results. In addition, different studies can be conducted to determine the roles of mothers. Studies comparing the perspective of parents on the process can also be designed.

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Communication In Hospital Pandemic Organization; An Application Example

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ABSTRACT

The pandemic management process is very dynamic and variable, such that sometimes new decisions may need to be made and implemented within hours. In combating the pandemic, it is necessary to deal not only with the difficult conditions brought by the epidemic, but also with social problems. Slowing the progress of the epidemic and patient care commensurate with the hospital capacity are very important in the success of the struggle, and healthcare professionals are at the forefront of this struggle. Transparent, bilateral and easily accessible communication channels between pandemic management who need to make fast and accurate decisions and healthcare professionals fighting with all their might in the field plays a key role in pandemic struggle. At Dokuz Eylül University Hospital, a "Pandemic Communication and Support Unit" (PaCSU) was established to ensure correct and open communication between the management and employees during the pandemic, and the problems experienced by the employees in the field were tried to be detected quickly and on site. During the telephone and face-to-face interviews, problems were learned from the employee themself, these problems were conveyed to the solution partners, the problem was eliminated with a rapid improvement and the employee was informed. Thus, both the problem was detected in the most accurate way from the source, and the problem identified by the employee was eliminated and an environment of mutual trust was established. This situation was reflected in the number of feedbacks within weeks, and the pandemic process was tried to be passed with the least damage by establishing a trust-based bond between the management and the employee.

Keywords: Pandemic, Communication, Trust, Pandemic Communication and Support Unit

INTRODUCTION

Communication is important in many unusual situations and crises. While it is easier for the society to accept the applications that are desired to be carried out with open and empathetic communication management in crisis processes, there may be problems in the implementation of the decisions taken due to the inadequate trust environment in the opposite cases. In times of crisis, it is critical that management responds to needs quickly and in a way that reduces uncertainty. The need to access reliable information and make quick decisions can sometimes conflict with each other and this situation can be difficult for management.

In addition to requiring a crisis management, the Covid-19 pandemic has emerged as a problem that includes many uncertainties specific to the disease. Although there is a great amount of information about the diagnosis, treatment, and prevention methods of the disease, there have been problems with the applicability and practical values of this information in the field. Another problem is that a lot of information is spreading rapidly, although it is sometimes incomplete or incorrect. The World Health Organization (WHO) stated that the struggle with inaccurate information sharing and incomplete communication is as important as fighting the pandemic and named this situation caused by misinformation as "infodemia".[1] Infodemia is defined as "excessive amount of information about a problem that makes it difficult to solve". For this reason, infodemia is a problem that needs to be controlled and managed well with scientific methods[2].

The organization of healthcare services and hospitals are key to combating the pandemic[3]. In this context, two important factors should be underlined in the health sector. First, social precautions such as early diagnosis, isolation, contact follow-up to control the disease in society, as well as treatment and control of patients under appropriate conditions are essential for a sustainable epidemic management. Second, if hospitals encounter a patient density that is above their capacity, there may be disruptions in control measures and this may turn hospitals into contagion centers. From this point of view, WHO has prepared a separate epidemic preparedness plan for hospitals. In this plan, it is emphasized that the importance of communication and that hospitals as service providers have a privileged place in reaching the society. Information management concerns many different hospital activities. This guide recommends managing information from a single source[4].

In order for the management to make a fast and correct decision, it is necessary to monitor what is happening in the society and determine the requirements on time, on the other hand, it must have access to accurate and current scientific information. It has been understood that communication is very important during the Covid 19 Pandemic process. There is a need for open, accurate and timely communication channels both on a global and national scale. With the use of social media during the Covid 19 pandemic process, sharing from excessive and different information sources is seen as positive in terms of accessing information, sometimes it can also lead to decisions that are not based on sufficient evidence[5].

There is a similar situation in terms of pandemic management in hospitals at institutional level. Especially in times of crisis, obtaining scientifically valid and evidence-based information and reaching this information to employees, accepting it by employees and applying it can be at quite different levels. The level of knowledge can be determinant in the attitudes and behaviors of healthcare professionals. In addition to information, it is an important factor that adequate protection measures have been taken by the management, especially for frontline workers, and that this situation is sustainable. Therefore, the information should include not only technical and medical issues but also managerial processes. Therefore, pandemic management has many components and one of them should be communication. A good communication mechanism requires a dynamic process such as removing uncertainties by making quick decisions and making new decisions by reviewing the decisions taken. For these purposes, a "Pandemic Communication and Support Unit (PaCSU)" has been established in DEU Hospital. The purpose of its establishment is to have a center where DEU hospital employees can communicate any problems they encounter during the pandemic process both by phone and face to face. In this way, it was planned to identify the problems experienced in the field on time and to find solutions to the problems. At the same time, it is thought to prevent the spread of false information and to minimize uncertainties.

PaCSU is planned to serve 24 hours a day and 7 days in a week. An infrastructure has been established for employees to make phone calls or face-to-face meetings during working hours, and those to work in the unit have been determined. Posters related to the subject were hung in various parts of the hospital (Figure 1). As the telephone number, the number 28787, which can be reached from the hospital line, has been used. The notifications were recorded electronically and evaluated by unit managers at the end of the day and directly forwarded to the management. In this study, it was aimed to evaluate the applications made to the

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Pandemic Communication and Support Unit (PaCSU) established in Dokuz Eylül University Training and Research Hospital and to examine the problem areas during the pandemic.

Figure 1. Pandemic Communication and Support Unit Announcement Poster

MATERIALS and METHODS

PaCSU has provided services in a physical area that includes a 24-hour call center, where problems can be conveyed face-to-face with the support of the hospital management and the rectorship. In this unit, a call center employee of 7 people, a physician group of 5 from the Department of Public Health, a faculty member in charge of the unit and a workplace nurse from the employee health unit were assigned.

The data used for the study were obtained from the data transmitted to the PaCSU unit and recorded electronically during the 6-week (39 days) active pandemic process. In this process, 321 problems reported were evaluated. The detected problems are classified under 7 headings.

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1. Personal protective equipment (PPE): Problems with the supply of all kinds of PPE and uniforms that need to be changed daily.

2. Managerial issues: annual / administrative leaves, night shifts, additional payment and similar issues

3. Problems reported about food and accommodation

4. Problems with technical malfunction and lack of equipment / devices

5. Protective measures other than personal protective equipment; Problems with environmental disinfection, cleaning ... etc

6. Problems with health-related follow-up, screening and examination

7. Security and other issues

The frequency and percentage distributions of the problems were calculated and the change of each end over time was plotted.

RESULTS:

In the 39 days served, the PaCSU unit received an average of 8.2 notifications per day, and 321 in total. 82% of the notifications were direct phone calls of the employees, 18% were notifications made by the Workplace Health Safety Unit. 173 (54%) calls were resolved on the same day and feedback was given to the caller. Feedback was given to 41 (13%) calls one day later. Figure 2 shows the change of applications number by week. As can be seen from the graph, notifications number of 70, 88, and 78 respectively in the first three weeks decreased gradually and 12 notifications were made in the 6th week.
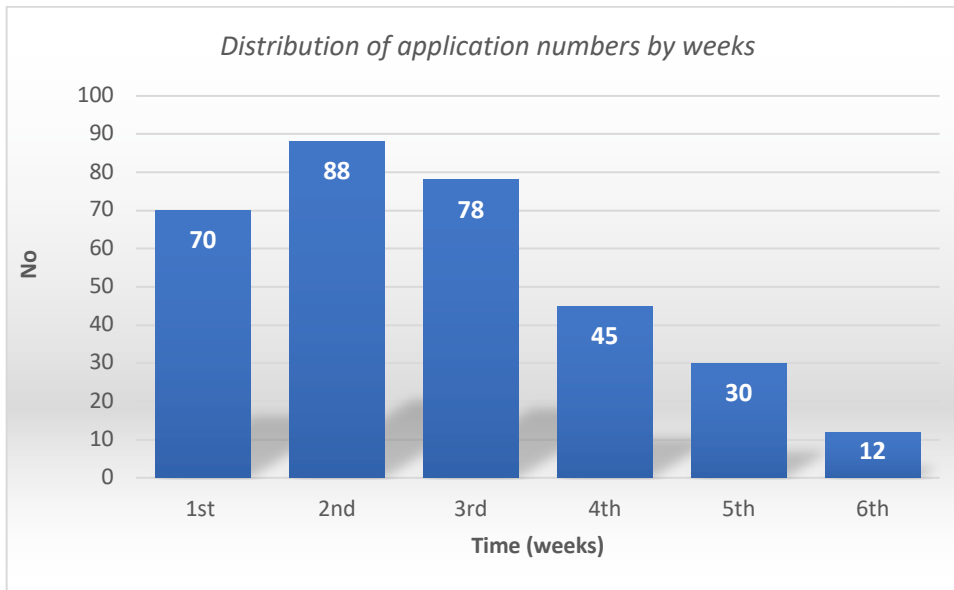
Figure 2. Distribution of application numbers by weeks

When the distribution of the reported problems according to their subjects was examined, it was determined that notifications about personal protective equipment (PPE) (30%) and managerial problems (24%) were the most notified areas. These problems were followed by problems related to health (13%), technical problems (10%), protective measures other than personal protection (10%), and support services such as food and accommodation (8%) (Table 1).

Problems related with	N	%
PPE	96	30
Managerial	78	24
Health	41	13
Technical equipment	33	10
Non-PPE protective measure (cleaning etc)	33	10
Food and accommodation	27	8
Others (security, transportation .. etc)	13	0,4
Total	**321**	**100**

Table 1.: Distribution of applications by problem areas

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The change of the problems by weeks is shown in Figure 3. As can be seen from the graph, with the establishment of the PaCS unit, a high rate of notifications were made regarding personal protection and administrative problems. 51 of the 88 notifications made in the first week were related to personal protective equipment and administrative problems. During the 6 weeks of service, a decrease was observed in all notifications, except for food and accommodation requests, and the number of weekly notifications fell below 5 in all. Requests for accommodation reached the highest level in the 3rd week, and these requests decreased in the last two weeks with the demand being met and announced through appropriate means.
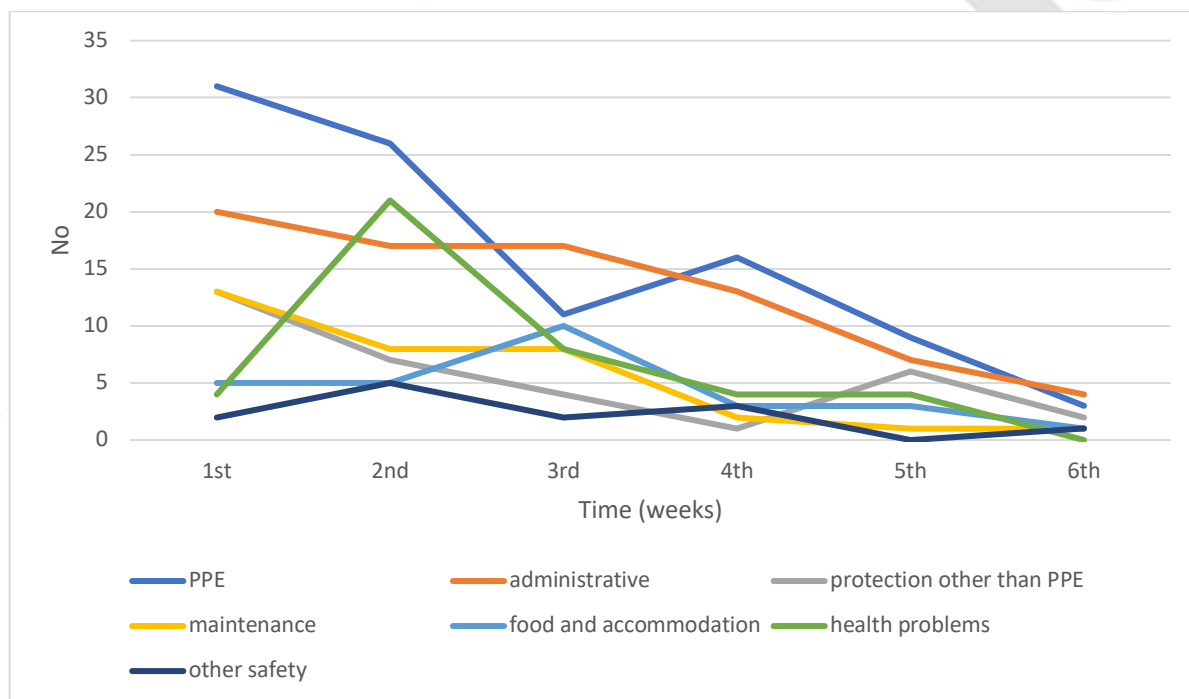
Figure3: Distribution of Notifications by Weeks

DISCUSSION

The pandemic management process is extremely dynamic and variable. New decisions may need to be made and implemented daily, sometimes within hours. Combating the pandemic requires dealing not only with an epidemic, but also with social problems. Major pandemics should be added to list of trust-reducing

catastrophes[6]. Establishing and maintaining a relationship of trust between management and employees plays a key role in controlling the effects of the pandemic in hospitals[7]. Trust is also the basis of risk communication. When this does not occur, there may be great difficulties in the acceptance and implementation of the decisions taken by the management by the employees. Possible wrong decisions can be determined and remedied in the early period only by the existence of open communication channels to be established between employees and management[8].

In this study, the problems identified by the communication and support unit established to serve at a hospital scale during the pandemic process and encountered in the applications were examined. When the findings were examined, it was determined that the priority problems in the early stages of the pandemic were related to health and safety. Many reports have been received, especially regarding the provision and continuity of personal protectors. Among the notifications about protective equipment sent to PaCSU, the front row was the rapid delivery of sufficient and correct protective equipment to the employees. In this sense, it was ensured that the purchased equipment was delivered to the end user in the most accurate and fastest way by contacting the hospital planning, purchasing and storage units for the supply of protective equipment in sufficient quantity and quality. When the content of the problems related to the protective equipment coming to PaCSU in addition to the material supply was examined in detail, it was revealed that it is vital that the procedures required for the use of personal protectors are well defined and transferred to the employees correctly. One of the important observations in the study is the problems with the knowledge and confidence of the employees about the use of personal protectors. Employees have had doubts about during which procedures surgical and respiratory protective masks should be used. In this regard, the Occupational Health and Safety Unit and Infection Control Committee employees provided information on the use of personal protective equipment in the entire hospital, starting from the areas where the notifications were made. Although problems with protective equipment generally decreased with the measures taken as a result of the feedback, they continued until the end of the 6th week (35% at the beginning, 25% at the 6th week). This finding shows that it is important to provide continuous information and training as well as providing personal protectors.

In the following weeks, the problems experienced in the distribution of personal protective equipment were resolved quickly and correctly with the feedback sent to PaCSU, reducing the tension of the employees that they could not reach the protective equipment. As the problems with protective equipment decreased, it left its place to transport problems and accommodation problems of pandemic workers who do not want to carry the risk of contamination to their families. Transport and accommodation problems were conveyed to the management and the transportation problems of the employees were solved by placing shuttle cars at the shift changing hours. In addition, accommodation in a university affiliated hotel was created for employees working in pandemic fields and who do not want to carry the risk of contamination to their families. In the following weeks, our employees, whose pandemic workload increased and the anxiety caused by working in the risky area increased, were provided with psychological support to cope with this situation. Apart from recording and analyzing the feedback from the employees, PaCSU also tried to determine the needs of our employees who were infected and isolated from the first week of the pandemic by calling them. For those who do not want to infect their families with infections, suitable places were built in the hospital, and employees were followed up and treated from these areas.

It is understood from the examples that the Pandemic Communication and Support Unit, which was established shortly after the outbreak started, made significant contributions to the pandemic management process. The rapid detection of the problems experienced by the employees in the field during crisis periods and the implementation of the decisions taken by the management can be achieved through a transparent and reliable communication bond established between management and employees. For this reason, it would be correct to plan in advance how to communicate with employees in times of crisis.

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Disabled Athletes and Pandemics

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Abstract

Purpose: The aim of this study was to compare stress, anxiety, depression and sleep quality parameters on male and female physically disabled athletes during the COVID-19 pandemic.

Methods: 75 (41 male, 34 female) physically disabled athletes over the age of 18, registered with Turkey Physically Disabled Sports Federation, participated. After recording socio-demographic information of the athletes, the perceived stress levels with Perceived Stress Scale, anxiety with Generalized Anxiety Disorder questionnaire, depression with Epidemiological Research Center Depression Scale and sleep quality with Pittsburgh Sleep Quality Index were evaluated. Athletes who did not answer at least one of the questionnaire questions were excluded from the study.

Results: There was no significant difference between the groups in terms of age, sports age and professionalism levels, perceived stress scale, anxiety, depression and sleep quality scores (p> 0.05).

Conclusion: The low stress, anxiety, depression and sleep quality scores of the athletes and the lack of difference between genders may be due to the high level of physical activity. We think that regular training of disabled individuals who do professional sports will have a positive effect on these parameters during and after the pandemic.

Keywords: Para Athletes, COVID-19, pandemics

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INTRODUCTION

Corona virus disease (COVID-19) is a respiratory disease contagious to humans with severe respiratory syndrome (1). First discovered in December 2019 in Wuhan, China's Hubei province, the disease has spread worldwide since its discovery and has been declared a COVID-19 pandemic (2). The current pandemic is an extraordinary public health problem. In order to prevent its worldwide spread, the practices of COVID-19–related curfews and quarantines are applied within certain hours. In our country, curfews have been imposed at certain times, and as an additional precaution, sports halls and pools were closed for a certain period; organized competitions were canceled or postponed to a certain /uncertain future date in order to prevent the spread of the virus because of the large number of spectators and athletes, and the leagues were suspended (3). Postponing or canceling almost all sports leagues and international sports activities in our country and in the world does not only cause sportive results, but also affects multidimensional and serious social and economic problems successively. Although athletes had mild illness and lower risk of death, the restriction of sports activities caused the athletes to get negatively affected physically, psychologically and socioeconomically (4).

It is generally thought that athletes can overcome COVID-19 with milder symptoms. However, although vaccination and drug studies for COVID-19 are continuing, there is no specific treatment and the problems that the effects of the virus may cause in the long term are unknown. For the time being, it is considered that the best solution for COVID-19 is prevention, physical distancing and/or self-isolating. In this period, athletes must comply with prevention strategies both as individuals involved in social life and in terms of their sportive careers (5).

Disabled athletes are more at risk than other athletes depending on the type of disability. Prevention strategies are even more important for athletes with disabilities who have impaired immune function as a result of their illness, use of steroid tablets or chemotherapy. Kidney or liver dysfunction, cardiovascular diseases, lung conditions such as asthma, emphysema or bronchitis, weakness of respiratory muscles or heart function, cancer and mainly neurological damage and swallowing mechanism (bulbar weakness), some neurological conditions such as motor neuron disease, and some myopathies increase the risk of infection, and it is stated that these issues should be addressed properly

well enough in athletes with the problems mentioned above (6-8). Fear of catching the virus (coronaphobia), social isolation and quarantine measures cause poor and inappropriate nutrition, stress, low sleep quality, loneliness, anxiety, depression, loss of physical activity, addictions and negative lifestyle changes. All of these can cause some physiological changes, such as an increase in body fat, decrease in muscle mass and impaired immunity (4,9).

Studies have revealed that hormones are effective on depression, and anxiety disorders are more common in women (10). However, to the best of our knowledge, there is no study that examines the stress, anxiety, depression and sleep-quality of disabled athletes during the pandemic process and compares them with gender. It is of paramount importance to examine all these factors as they may increase the risk of injury and decrease performance after the pandemic. Therefore, the aim of our study is to compare the effects of the COVID-19 epidemic process on the stress levels, anxiety, depression states and sleep quality of female and male disabled athletes.

METHODS

This study was carried out between June and October, 2020 on physically disabled athletes registered in the Association for the Physically Disabled. A online consent form was obtained from the individuals participating in the study within the required explanations, and the questionnaires were carried out online via an online form. While individuals over the age of 18 were included in the study, those who did not answer at least one of the questionnaire questions were excluded from the study.

Athletes who agreed to participate in the study were divided into two groups according to their gender. The general information of the participants (age, education level, whether they have a non-sports profession, sports age and professionalism level) were questioned. The stress levels of the athletes were evaluated using the "Perceived Stress Scale" questionnaire. The scale which consists of fourteen items and two dimensions (inadequate self-efficacy perception and stress/discomfort perception) is scored between zero and four. The Turkish validity and reliability of the scale has been secured (11). The Turkish validity and reliability of the anxiety levels of the athletes were evaluated with the help of the "Generalized Anxiety Disorder-7 (GAD-7)" created by Konkan and his friends (12,13). The scale consists of 7 items that evaluate anxiety according to the frequency of problems experienced in

the last 14 days. In the test with a total of 21 points, each item is evaluated on a 4-point Likert-type scale ranging from "None (0)" to "almost every day (3)". Depression states were evaluated with the scale of "The Center for Epidemiological Studies-Depression (CES-D). The scale published in Turkish by Spijker and his friends includes 20 items scored between 0 and 3, 0 expressing "rarely or never" and 3 expressing "mostly or always", and it is used to measure depressive symptoms and determine individuals at risk of depressive disorder (14-16). The sleep state of the athletes was evaluated with the "Pittsburgh Sleep Quality Index (PSQI)". In the scale which consists of 24 questions did scores were obtained from 0 to 3, and high scores indicate poor sleep quality in the last month. Its Turkish validity was secured by Ağargün and her friends (17,18).

Statistical analysis

All statistical analyzes were performed with IBM SPSS Statistics 22.0 (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.) program. Kolmogorov-Smirnov and Shapiro-Wilk tests were used in the statistical analysis phase. $P = 0.05$ was taken as the critical value. As a result of the test, if the p values obtained for the relevant variables were greater than 0.05, it was accepted that the data fit the normal distribution, if it was smaller, it was accepted that the data did not fit the normal distribution. The "Mann-Whitney U" test, one of the non-parametric methods, was used for intergroup comparisons because the data set did not conform to normal distribution.

RESULTS

A total of 75 athletes participated in the study, 34 women with a mean age of 29.88 ± 10.70 years and 41 men with a mean age of 27.12 ± 10.04 years (Figure 1). The demographic characteristics of the athletes are given in table 1.

It was determined that the PSS scores of the female athletes were 25.53 ± 9.20 points, and the PSS scores of the male ones were 22.85 ± 7.80 points. It was also found that there was no statistically significant difference between the groups in terms of PSS, GAD-7, CES-D and PSQI scores (p=0.337; p=0.859; p=0.856; p=0.065) (Table 2).

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DISCUSSION

To the best of our knowledge, this study is the first to examine the perceived stress levels, anxiety, depression and sleep quality parameters of physically disabled athletes who had to take a break from sports during the COVID-19 pandemic.

When the demographic characteristics of the athletes were examined, there was no difference between the age and sports age of the individuals. In our survey of seventy- five individuals, fifty of them did not have any profession other than sports.

When we look at the "perceived stress scale" scores during the pandemic period in our study, there was no statistically significant difference between women and men. Arslan and his friends, according to their study, emphasized that the conscious awareness levels of women were higher, that there was a negative relationship between conscious awareness and perceived stress, and that depression increased significantly as the perceived stress increased (19). In another study conducted by King and his friends, Exercise training was found to accompany cardiorespiratory fitness accompanied by continuous anxiety and reduction in perceived stress (20). Looking at the studies conducted in the Covid period, Looking at the studies conducted during the Covid period, Fronso and his friends examined the perceived stress parameters of athletes in their study on 1132 athletes and found that the perceived stress levels of professional athletes were lower than non-athletes (21). Although it was found in our study that the PSS levels of the female athletes were higher than that of the male ones, that was not found to be statistically significant. We hold that this is due to the high professionalism level of the athletes having participated in our study.

It was found that the anxiety and depression scores of the athletes participating in our study did not differ significantly according to their gender. Looking at the studies conducted, it was seen that athletes and non-athletes were compared during the COVID-19 pandemic period, and it was also observed that the anxiety and the depression scores were less in athletes and that athletes were less affected by this period (22).

In a systematic review by Mammen and his friends, the positive effects of regular physical activity on stress and depression were emphasized; in several articles discussed, it was stated that physical

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activity could prevent depression in later periods, and that the protective effect of physical activity on depression was higher in women (23,24).

In addition, some studies argue that decreasing the level of physical activity over time increases the risk of depression depending on activity levels (23). When stress and sleep problems, epidemics and disasters occur, their effects can be long-lasting. Previous studies show that those with Ebola virus disease (EVD) and their close-contacts have symptoms of depression and anxiety more than twenty years after the outbreak.

Similarly, severe acute respiratory (SARS) and Middle East respiratory syndrome (MERS) have been shown to have serious psychological effects on a wide population. However, most of the previous studies focused only on infected persons or contacts after the outbreak was over, with fewer reports of the psychological status of the large numbers of people isolated during the outbreak (25). Considering the studies conducted on non-athletes, it can be said that a decrease in sleep quality was observed during the pandemic. But in our study no decrease in sleep quality was observed in physically disabled athletes, and no difference was observed in sleep quality between genders (26).

These study has several limitations. The first limitation of our study was the athletes who participating in the study were not questioned the usage of drugs that could affect their sleep and hormone levels. Another limitation was the marital status of the athletes. We think that being married or parents may affect the parameters in the study.

Our study was conducted on physically disabled athletes, and no significant difference was found on PSS, GAD-7, CES-D and PSQI scores between genders. Evaluating the results of the COVID-19 pandemic, which has become a global health crisis, especially in disabled athletes, who are a disadvantaged group in terms of health, is very important when considering the risks of sports performance and injury. We think that the study can be repeated by questioning whether the levels of physical activity decrease in the future and a comparison can be made by looking at the extent to which the physically disabled athletes are affected when the COVID-19 pandemic process is over.

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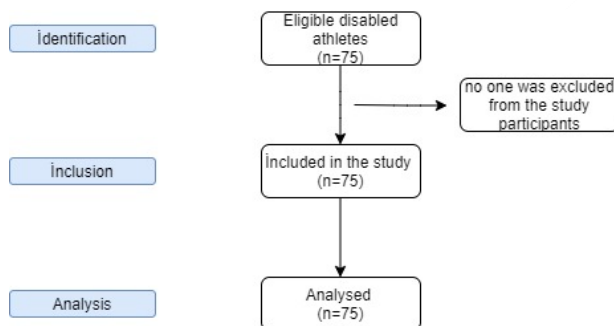
Fıgure 1: Flow diagram of the study

Table 1. Demographic characteristics of participants

Specifications	M (n=41)	W (n=34)	p-value
Age [years], mean ± sd	27,12±10,04	29,88±10,70	0,254
Education level, n (%)			**0,019***
Primary education	4 (%9,76)	6 (%17,65)	
High school	**24 (%58,54)**	19 (%55,88)	
Associate degree	1 (%2,44)	2 (%5,88)	
Degree	9 (%21,95)	**6 (%17,65)**	
Postgraduate	3 (%7,32)	1 (%2,94)	
Non-sports profession, n (%)			0,057
Yes	15 (%36,59)	10 (%29,41)	
No	26 (%63,41)	24 (%70,59)	
Sport age [years], ort±ss	7.81±6.67	8.13±6.81	0,841
Professionalism level, n (%)			
Paralimpic	**11 (%26,83)**	15 (%44,12)	

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National Team	23 (%56,10)	**10 (%29,41)**	
Professional Club	3 (%7,32)	4 (%11,76)	
Amateur	4 (%9,76)	5 (%14,71)	

n: number of individuals; mean: average; ss: standard deviation; * p <0.05

Table 2. Distribution of stress, anxiety, depression and sleep quality scores of the groups

	M (n=41)		W (n=34)			
	ort±ss	Min-Max	ort±ss	Min-Max	Z	p-value
PSS	22,85±7,80	3-40	25,53±9,20	3-55	-0,96	0,337
GAD-7	3,93±4,22	0-16	4,29±5,17	0-21	-0,178	0,859
CES-D	16,02±8,38	2-51	17,76±11,52	0-47	-0,181	0,856
PSQI	5,83±2,62	1-14	4,88±3,19	1-12	-1843	0,065

n: number of individuals; mean: average; ss: standard deviation; PSS: Perceived Stress Scale, GAD-7: Generalized Anxiety Disorder Scale, CES-D: Ces-D Depression Scale, PSQI: Pitsburg Sleep Quality Index

Oral Presentation No: 43050

COVID-19 IN FOOD SAFETY AND ITS IMPORTANCE FOR PUBLIC HEALTH

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Abstract: The novel Coronavirus 2019 (2019-nCoV), which emerged in Wuhan, China, is included in the beta coronavirus family such as SARS-CoV (2002,) and MERS-CoV (2012) coronaviruses. The novel virus was defined as "severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)" on February 11, 2020 by International Committee on Taxonomy of Virus (ICTV) from the World Health Organization (WHO). This name was given to this virus because of its similarity to the coronavirus responsible for the 2003 SARS outbreak. Although these two viruses are related to each other, they differ. Contrary to gastrointestinal (GI) viruses that frequently cause disease, such as Norovirus and hepatitis A, from contaminated foods, SARS-CoV-2,that leads to COVID-19, is not a gastrointestinal virus but a disease-causing virus. The way of foodborne transmission of this virus is not known exactly. Although it is not known exactly what the foodborne route of transmission of this virus is, contamination is caused by infected and/or personnel who do not comply with hygiene rules (cough, contact, etc.) at food processing, production, marketing, and presentation points poses a risk. In this sense, it is stated by the WHO that it will be influential to provide 5 conditions which are;

1. Keeping the food clean

2. Separating raw and cooked food

3. Cooking food thoroughly (well penetrating inside)

4. Keeping food stored at safe temperatures

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5. Using safe water and raw ingredients so that foods are consumed more safely (1).

Keywords: Coronavirus, Covid-19, SARS-CoV-2, foodborne viruses, food safety, public health.

Introduction

Numerous human or animal-borne viruses may spread to the environment and infect people through water and food, mostly through digestion and sometimes through skin contact (1). These viruses have many different families and are usually enteric, and their source of transmission is the fecal-oral route (2, 3). They may cause hemiplegia and even rarely myocarditis and respiratory disease or hemorrhagic fever, which may range from mild diarrhea to severe neurological disorders associated with their infection. Nevertheless, the most frequently reported syndromes due to foodborne viruses are gastroenteritis and hepatitis (4, 5). Viruses that frequently cause various foodborne diseases, furthermore,

a. those with a high incidence of foodborne viral disease according to available data,

b. those causing serious diseases that are important in terms of mortality all around the world,

c. 10 virus families that pose a potential foodborne risk for public health and are important for the threat of poisoning, and the ways of causing infection are presented in (Table 1) (6).

Table 1. Viruses that are, or have the potential to be, transmitted via food and their site of infection in the human body.

Note: Enteric viruses can also be airborne, bloodborne (including vector-borne) or sexually transmitted.

Furthermore, viruses are classified as Group 1 and Group 2 in Table 1 according to the criteria in (Table 2) (6).

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While the viruses that met one or more of these criteria were included in Group 1, in other words, in the priority group in terms of foodborne viral diseases, Group 2 viruses were not found to be suggestive in terms of foodborne diseases (6).

Table 2. Evaluation of potential foodborne viruses against the three pre-defined criteria to identify the viruses of main concern from a food safety perspective.

Important Foodborne Viruses and Transmission

Coronaviruses were identified as the agent of Infectious Bronchitis (IBV) in chickens by a Veterinarian Dr. Oskar Seifried for the first time in 1931, and it was reported that they seriously threatened animal health. IBV is genetically included in the Gamma coronavirus family. It affects not only the upper respiratory tract but also the reproductive system in chickens and sometimes causes nephritis. Interestingly, Sars-Cov-2 causes damage to the kidneys in severe patients (7, 8). In the middle of the 1960s, it was precisely identified that coronaviruses infected humans, birds, mammals and some other animals. In the development of the disease, the primary target of the agent is the epithelial cells in the respiratory system and gastrointestinal system. Seven coronaviruses have been shown to infect humans until today. While common human coronaviruses Betacoronavirus HCoVOC43 and HCoV-HKU1, as well as Alphacoronavirus HCoV-229E cause common cold and severe lower respiratory tract infections in infants and the elderly, the false croup and bronchiolitis caused by Alphacoronavirus HCoV-NL63 in children were found to be significant (9). New zoonotic coronaviruses, such as SARS-CoV (2002, Betacoronavirus, Sarbecovirus subgenus) and MERS-CoV (2012, Betacoronavirus, Merbecovirus subgenus), which cause outbreaks in humans, also appear over time. SARS-CoV-2 is closely related to SARS-CoV and is similar to the genetic structure of Sarbecovirus,

a Betacoronavirus subgenus (9, 5). The viruses that are foodborne transmitted and may be related to all these described are presented in (Table 3) (5).

Table 3. Viruses that may be foodborne transmitted

Noroviruses cause gastro-intestinal diseases in all age groups which are characterised by vomiting and diarrhoea. They are highly infectious and can be transmitted both directly from human to human and indirectly through contaminated surfaces or foods (10).

Rotaviruses are pathogens which cause diarrhoea. Mainly infants can have very severe courses of disease. Outbreaks frequently occur in day care centres. The virus is easily transmitted from human to human but also through contaminated foods (10).

Hepatitis A viruses cause acute inflammations of the liver (hepatitis). Their transmission is either directly from humans to humans or indirectly with contaminated foods serving as transmission vehicle (10).

The comparatively rare disease caused by hepatitis E viruses is very similar to hepatitis A. The virus is found in countries with a low hygiene standard in contaminated drinking water or foods but also in pigs and wild boar in Europe. The possibility of transmission from food made of them, which is insufficiently heated before consumption, is discussed (10).

The influenza A virus H5N1 – also known as "bird flu" – can cause severe general diseases and pneumonia in humans. It originates from infected poultry and can be transmitted through close contact with the latter in individual cases to humans. Transmissions via foods do not seem to play a role (10).

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The disease caused by the influenza A virus H1N1 – referred to as "swine flu" – has a slightly milder course. In most cases it causes a moderately developing general disease in humans affecting the respiratory tract. It is easily transmitted between humans by droplet infection. An involvement of foods at the transmission of this virus is so far not known (10).

Ways of SARS-CoV-2 Transmission to Foods and its Possibility of Infecting People

Towards the end of 2019, a poultry-induced pneumonia case was identified as a new source of coronavirus (2019-nCoV) in Wuhan, China. Then the disease was named COVID-19. The main source of this virus is a seafood market in Wuhan where different wild animals (snakes and marmots) and domesticated (poultry and bats) animals are illegally sold. Thus, it is estimated that the disease can be transmitted from animals to humans. So far, the specific source and reservoir of SARS-CoV-2 have not yet been fully explained (9). At the same time, the World Health Organization (WHO) states that COVID-19 looks like a zoonotic virus originating from bats, however, it passed through an intermediate species to infect humans. Zoonotic diseases are infectious diseases caused by bacteria, viruses and parasites that are directly transmitted from animals to humans. Approximately %75 of the emerging infectious agents are zoonotic. WHO emphasizes the importance of controlling zoonotic diseases by initiating the One Health initiative, however, most of these diseases are not prioritized internationally or by the health systems of most countries (8).

One of the important factors in viral transmission of diseases to people is foods and their contact with the environment (11, 12). Since one-third of the world's population is on lockdown (29 March 2020), global food security alerts have arisen. Various contaminated foods, water, disease-infected food processors, and environment-induced viral outbreaks are reported all around the world each year (13, 14, 15, 16). However, no sufficient evidence on how Sars-Cov-2 causes disease through foods has been found yet. The difficulties of the food industry during the Covid-19 pandemic are still being discussed internationally

(17, 8). One of the main factors in the transmission of viruses to humans in zoonotic diseases is the transmission of the products infected with the target agent caused by the staff in production during the processing foods. Another reason is the contact of food with water contaminated with feces (3).

According to the Centers for Disease Control and Prevention (CDC), the possible transfer of the virus to the main route of transmission occurs by touching a contaminated surface and then touching the mouth, nose, or eyes. It is reported that consumers and employees must wash their hands with water and soap properly for 20 seconds without touching their hands, mouth, nose, and eyes after contacting with money and before eating (18, 19). According to the latest information, it is reported that the virus can live on hard surfaces for up to 72 hours (3 days), depending on the properties of the material (19).

CoV infections cause winter dysentery in beef, respiratory CoVs in dairy cattle and bronchitis, a bird infection in poultry. Nevertheless, the transmission of CoV from animals to humans was strong in SARS and MERS outbreaks. It is suspected of zoonotic involvement (bats and pangolins) similar to current COVID-19. Therefore, it is emphasized that there is a need for more studies to ensure food safety before eliminating the potential risk of SARS-CoV2 during animal production. Because meat dishes (beef, pork, poultry, seafood, etc.) are rich in heparan sulfate (glycosaminoglycans). They highly interact with SARS-CoV2 against tissue epithelial cells. Considering that the viral pathogen can survive for days, even on nonviable surfaces such as cardboard, plastic and stainless steel, is better understood how animal (meat) tissue surfaces can pose critical risks for foodborne transmission of COVID-19. It is considered necessary to evaluate the possibility of transmission of COVID-19 through meat (food) processing by additional studies (20, 21). The control strategies based on internal and external factors such as pH, water activity (aw), redox potential, temperature of foods usually affect the bacterial growth in foods and are used to keep food microbiologically safe. Nevertheless, some of these control measures can be difficult to apply to viruses (21). Because when viral factors are involved in food, viruses can survive in many adverse

conditions such as the acidic state of the stomach, digestive enzymes and alkaline conditions of the intestines and host defense system (22). Therefore, it is important to directly protect foods from virus contamination in virus infections (18, 20) (Figure 1) (23).
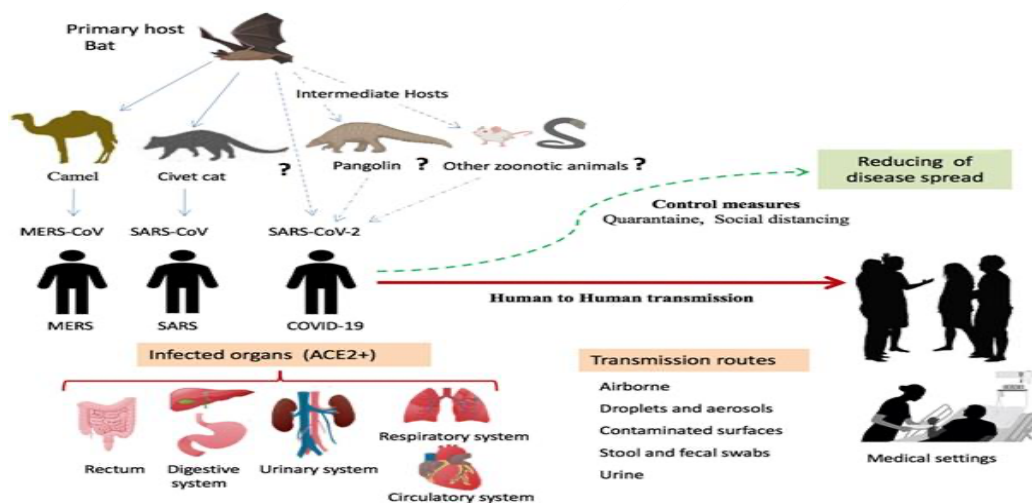
Figure 1. SARS-CoV-2 pass on to humans from bats directly or indirectly ways hosts like rats, pangolins, snakes, and rats. The virus is spread among humans by different routes including droplets, aerosols, *(so risks to food and food safety)* direct contact, and other potential routes like urine, stool, and fecal swabs. Human organs expressing the ACE2 receptor are targets for infection. Abbreviation: infected organs ACE2+, organs having ACE2 receptor.

Considerations Before and During the Consumption of Foods

Unlike bacteria, viruses cannot reproduce in food, therefore, the viral load is expected to decrease over time rather than increasing. According to the results of 22 studies that have been conducted so far, up to 9 days of human CoV on inanimate surfaces such as metal, glass or plastic, surface disinfection Quaternary Ammonium Compounds 200 ppm**.,** peroxide with 0.1% sodium hypochlorite (bleach), 0.5% hydrogen peroxide with 35% vapor is personal hygiene, hand rub or 62-71% ethanol can significantly reduce CoV infection on surfaces (hand rub, food contact surfaces) within 1 minute. In a recent study, it

has been shown that SARS-CoV-2 can last up to 3 hours in the air, up to 4 hours in copper, 24 hours in cardboard, and 72 hours in plastic and stainless steel (18) (Table 4) (23).

Furthermore, the processing of foods by processes such as SARS-CoV ultraviolet light (hard surfaces, packaging film, etc. 200–280 nm; ~10.6 mJ/cm2), exposure to ≥ 75°C hot water, steam, etc. (hard surfaces, food contact surfaces) exposure to ≥ 65°C heat, treatment, exposure to ≥ 65°C heat, treatment and cooking in an alkaline pH (>12) or acidic pH (<3) environment to prevent contaminated food supply is one of the points to be considered to minimize the risk of potential transmission of SARS-CoV-2 (18, 24).

Table 4 Persistence of human and animal coronaviruses on inanimate surfaces, food matrices and in water

Coronavirus is an enveloped virus and covered with an oily membrane. Soap or a suitable hand-washing dishwashing detergent are very effective at dissolving the oil on the surface of the virus, and water is very effective at removing the virus. Products such as fresh vegetables and fruits consumed without cooking should be washed thoroughly under water. If desired, the surfaces can be washed by using a small amount of soap and water and rubbing with a vegetable brush. However, fruits and vegetables that are washed using a little soap should not be consumed without rinsing very well. This method is effective for removing the pathogens on the surface. It is not known whether popular domestic practices such as vinegar are effective in killing the virus (18).

The BfR is not aware of any infections with SARS-CoV-2 via this transmission path. Coronaviruses can generally reach surfaces through an infected person sneezing or coughing directly on them and they can survive there for some time (10, 25). A smear infection to another person appears to be possible if the virus is transmitted shortly afterwards via the hands to the mucous membranes of the nose, eyes, mouth or throat. For protection against virus transmission via

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contaminated surfaces, it is important to comply with the general hygiene rules, such as washing hands regularly and keeping hands away from the face (10, 26).

Coronaviruses can generally reach bakery products or fruit and vegetables through an infected person sneezing or coughing directly on them. They cannot multiply in food as they need a living animal or human host to do this. A smear infection to another person then appears to be possible if the virus is transmitted shortly afterwards via the hands or the food itself to the mucous membranes of the nose or eyes. The BfR is not yet aware of any SARS-CoV-2 infections via consumption of meat products or contact with contaminated meat products. According to the current state of knowledge, farm animals used for meat production cannot be infected with SARS-CoV-2 and, therefore, cannot transmit the virus to humans via this pathway. However, contamination of meat or meat products with coronaviruses could happen during slaughter or during meat cutting and processing. Transmission of SARS-CoV-2 via milk, as for other foods, is unlikely on the basis of current knowledge. The BfR is not aware of any infections with SARS-CoV-2 via this transmission method. And there is no evidence that animal feed is a vehicle for coronaviruses (10).

So far there is no evidence of chains of infection for SARS-CoV-2 through food consumption, including frozen food. The previous coronaviruses SARS and MERS are resistant to cold and can remain infectious at minus 20°C for up to 2 years in a frozen state. According to a new study, SARS-CoV-2 also lost only little of its infectivity after 3 weeks on frozen meat. General rules of hygiene when preparing food should be observed (27).

The World Health Organization (WHO) warns that the hunting of shellfish, especially from water sources contaminated with viruses, should be prevented, hygienic drinking and potable water should be provided, sewage water should not be used in plant growing, sale and consumption of raw

or undercooked contaminated shellfish should be avoided, cooking should be done at least at 90°C for 1.5 minutes, the patients and porter people working in food companies and having a great importance in transmission should be identified and treated, great importance should be given to personnel hygiene, effective cleaning and disinfection programs should be implemented in businesses, precise, fast and economical methods (PCR, Elisa, RIA, ..) should be used to detect viruses from food, and consumers should be informed frequently about food viral infections. The factors affecting the activity of viruses in foods such as heat inactivation, drying, irradiation, inactivation of viruses with chemicals are also important for safe food production (22).

Conclusion

There is still no study reporting that COVID-19 is transmitted via food. According to available epidemiological data, it is reported that this virus is not foodborne. But according to data of the CDC and European Centers for Disease Control (ECDC), it has been indicated that there is no evidence that foodstuffs imported from China will carry the risk of spreading COVID-19 to other countries (8). The WHO says it is "highly unlikely that people can contract Covid-19 from food or food packaging." According to the CDC, the risk of infection by the virus from food products, food packaging, or bags is "thought to be very low." (28).

Furthermore, it has been emphasized that generally all cooked foods are safe because active viruses become inactive after heat treatment, which makes food consumption safe, and that the consumption of raw or undercooked animal products should also be avoided (8). The measures taken to prevent bacterial contamination in order to prevent food infections via viral route may be insufficient, and different measures are required in this sense (28).

Food industries should have Food Safety and Management Systems (FSMS) based on Hazard Analysis Critical Control Point (HACCP) principles in order to manage the risks related to food safety, in which all kinds of public health are taken as criteria even in our homes where food consumption is the most common way of processing, transporting, distributing, storing, selling food and even one of the ways to survive, and to prevent food contamination. Food industries are supported by FSMS, good hygiene practices, cleaning and sanitation, zoning of processing areas, supplier control, storage, distribution and transportation, personnel hygiene and job preconditioning, prerequisite programs that include all essential conditions and activities for hygienic care.

Food processing environments provide a solid basis for the implementation of key hygiene controls at every stage of the food processing, production and marketing chain to prevent food contamination with the Codex General Principles of Food Hygiene 2 (6).

In this sense, it is stated by the World Health Organization (WHO) that it will be influential to provide 5 conditions which are; 1. keeping the food clean, 2. separating raw and cooked food, 3. cooking food thoroughly (well penetrating inside), 4. keeping food stored at safe temperatures, 5. using safe water and raw ingredients so that foods are consumed more safely (29).

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Table 1. Viruses that are, or have the potential to be, transmitted via food and their site of infection in the human body.

Site of Infection	Virus
Neural tissue and nervous system	Enterovirus (EVs), Nipah virus, Poliovirus*, Parechovirus*, Tick-borne encephalitis virus*
Respiratory system	Highly Pathogenic Asian Avian Influenza A virus (HPAI-H5N1), SARS-CoV
Liver	Hepatitis A virus (HAV), Hepatitis E virus (HEV)
Intestinal system	Nörovirus (NoV), Human Rotavirus (HRV), Sapovirus (SAV), Human Astrovirus (HastVs), Adenovirus (Hadv), Aichi virus

* While these viruses have the potential to be transmitted via food they were not considered further by the WHO meeting (2008).

Table 2. Evaluation of potential foodborne viruses against the three pre-defined criteria to identify the viruses of main concern from a food safety perspective.

Clinical syndrome	Priority group*	Basis of priority ranking (based on current level of knowledge)
Gastroenteritis		
Norovirus	1	High incidence, most common foodborne virus
Group A Rotavirus	1	Sometimes foodborne, severe infection in infants/children
Group B, C Rotavirus	2	
Enteric Adenovirus	2	
Sapovirus	2	
Astrovirus	2	
Aichi virus	2	
Hepatitis		
Hepatitis A	1	Sometimes foodborne, severe infection
Hepatitis E	1	Potential public health impact, emerging infection in developed countries, plausible foodborne transmission as potential foodborne zoonoses from pigs
Neurological infection		Bat virus, can cause emerging infections in pigs, humans,

Enterovirus	2	
Nipah virus	1	foodborne transmission
Respiratory infection		
HPAI virus H5N1	1	Potential public health impact, emerging infection, plausible foodborne transmission but direct exposure to infected chickens main risk factor
SARS Coronavirus	1	Potential public health impact, emerging infection, foodborne transmission

NOTES: * Group 1 viruses met one or more of the pre-defined criteria. Group 2 viruses met none of the pre-defined criteria.

Table 3. Viruses that may be foodborne transmitted					
Virus	**Genus**	**Family**	**Genome**	**Common Diseases**	**Transmissions**
Human Norovirus	Norovirus	Caliciviridaes	sRNA	Gastroenteritis	Oral-fecal route, PtP contact, aerosol, FBO, WBO
Human Sapovirus	Sapovirus	Caliciviridaes	sRNA	Gastroenteritis	Oral-fecal route, PtP contact, aerosol, FBO, WBO
Aichivirus	Kobuvirus	Picornaviridaes	sRNA	Gastroenteritis	Oral-fecal route FBO, WBO
Human Astrovirus	Mamastrovirus	Astroviridaes	sRNA	Gastroenteritis	Oral-fecal route, PtP contact, aerosol, FBO
Echovirus	Enterovirus	Picornaviridaes	sRNA	Gastroenteritis meningitis,,her pangina, flaccid paralysis, cranial nerve disfunction encephalitis	Recreational waters WBO
Coxsackievirus	Enterovirus	Picornaviridaes	sRNA	Meningitis, herpangina flaccid paralysis, cranial nerve disfunction, pharyngitis, conjunctivitis	Recreational waters WBO
Hepatitis A virüs	Hepatovirus	Picornaviridaes	sRNA	Hepatitis	Oral-fecal route, PtP contact, FBO, WBO
Hepatitis E virus	Hepevirus	Hepeviridaes	sRNA	Hepatitis	Zoonotic, Oral-fecal route, FBO, WBO
Human Picorbirnavirus	Picorbirnavirus	Picobirnavirdae	dsRNA	Gastroenteritis	Recreational waters WBO
Human bocavirus	Bocavirus	Parvoviridaes	sDNA	Gastroenteritis	Respiratory droplets, Airborne,Oral-fecal route
Norovirus	Norovirus	Caliciviridaes	sRNA	Gastroenteritis	Oral-fecal route, PtP contact, aerosol, FBO, WBO
Sapovirus	Sapovirus	Caliciviridaes	sRNA	Gastroenteritis	Oral-fecal route, PtP contact, aerosol, FBO, WBO
Rotavirus	Rotavirus	Reoviridae	dsRNA	Gastroenteritis	Oral-fecal route, WBO

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Enteric - SARS coronavirus	Coronavirus	Coronaviridaes	sRNA	Pleomorphic Respiratory, Gastroenteritis	Respiratory Droplets, PtP contact,Oral-fecal route
Ebolavirus	Ebolavirus	Floviridae	ssRNA	Gastroenteritis Hemorrhagic fever	Blood or body fluids, Semen from a man who recovered from EVD, Objects, Infected fruit bats or nonhuman primates
Human Enteric Adenovirus	Mastadenovirus	Adenoviridae	dsRNA	Gastroenteritisf ever, respiratory disease	Respiratory droplets, Oral-fecal route WBO
Human Parvovirus	Parvovirus	Parvoviridae	ssRNA	Gastroenteritis	Respiratory secretions, blood and blood products
Poliovirus	Enterovirus	Picornaviridae s	ssRNA	Gastroenteritis flaccid paralysis,fever	fecal-oral route, via salivary and respiratory droplets, and in some cases via conjunctival secretions and skin lesion exudates.
Nipahvirus	Henipavirus	Paramyxovirid ae	ssRNA	Encephalitis, respiratory disease	Contaminated food or directly between people
Tick-borne Encephalitis virus	Ravivirus	Flaviridae	ssRNA	Encephalitis, Meningitis,	Woodland ticks, including *Ixodes scapularis*, *I. ricinus* and *I. persulcatus*,[9] or (rarely) through the non-pasteurized milk of infected cows
Human Coronovirus (SARS, MERS CoV)	Betacoronovirus	Coronoviridae	ssRNA	Respiratory disease, SARS, MERS, Gastroenteritis	Through contacting with stool, vomitus, urine, serum and cerebrospinal fluid
Avian Influenza virus	Influenzavirus	Ortomyxoviridae ,	ssRNA	Influenza, Respiratory Disease	Intranasal or conjunctival inoculation while swimming in contaminated water or, inhalation or ingestion of wateR.

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Table 4 Persistence of human and animal coronaviruses on inanimate surfaces, food matrices and in water 171. (30, 31, 32, 33, 34, 35)					
Virus	**Surface**	**Time**	**Inoculumb (viral titer)**	**Conditions**	**References**
SARS-CoV-2	Copper	4 h	10^5	21–23°C, 40%	(30)
SARS-CoV-2	Cardboard	24 h			
SARS-CoV-2	Stainless steel	48 h			
SARS-CoV-2	Plastic	72 h			
SARS-CoV-2	Nitrile glove	7 d	7.5×10^5	Room temperature	(31)
SARS-CoV-2	Chemical resistant glove	4 d			
SARS-CoV-2	N95 mask	21d			
SARS-CoV-2	N100 mask	21d			
SARS-CoV-2	Tyvek coverall	14d			
SARS-CoV-2	Plastic face shield	21d			
SARS-CoV-2	Cotton	24d			
SARS-CoV	Stainless steel	14d			
SARS-CoV	Plastic plate	5-13d	10^5	22–25°C, 40–50%	(32)
SARS-CoV	Polystyrene plate	9d	10^7	21–25°C	(33)
SARS-CoV	Metal	5d	10^5	Room temperature	(34)
SARS-CoV	Wood	4d			
SARS-CoV	Paper	4-5d			
SARS-CoV	Glass	4d			
SARS-CoV	Paper	24d	10^6	Room temperature	(35)
SARS-CoV		3d	10^5		
SARS-CoV		<5d	10^4		
SARS-CoV	Disposable gown	2d			
SARS-CoV		24h			
SARS-CoV		1h			
SARS-CoV	Cotton gown	24h			
SARS-CoV		1h			
SARS-CoV		5min			

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Vitamins and Micronutrients in the Pathogenesis, Prognosis and Treatment of Covid-19 Disease

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Abstract

Specific treatment hasn't proven against COVID-19 yet. Because of the high mortality and morbidity of Covid-19 patients with immune system disorders; it is increasingly important to try to treat factors that could compromise the proper functioning of the immune system. For the normal activities of immune components, vitamins and minerals must be at an optimal level. In this article, the effects of optimal vitamin D, C, A, E, B vitamins, zinc, selenium, and magnesium levels on COVID-19 pathogenesis, prognosis and treatment were evaluated within the current literature by scanning PubMed. Although there are many studies showing that vitamin D deficiency has an effect on mortality and morbidity in COVID-19 disease a few evidence-based studies showing the effects of vitamin C, A, B, E, zinc, selenium and magnesium levels directly or indirectly on the disease. Balanced nutrition, proper vitamin-mineral supplements and ensuring the proper functioning of the immune system should be evaluated carefully, as it is important in the fight against this disease, which does not have an effective treatment, and this will guide new treatments.

Keywords: Covid-19; SARS COV-2; immunity; micronutrients; vitamins; minerals

Introduction

There is no proven specific treatment against COVID-19. Due to the high mortality and morbidity of patients with impaired immune system; It is increasingly important to try to treat factors that may compromise the proper functioning of the immune system. Vitamins and minerals must be optimal for the normal activity of immune system. In this article, the effects of optimal D, C, A, E, B vitamins, zinc, selenium, magnesium levels on COVID-19 pathogenesis, prognosis and treatment were evaluated in the current literature by scanning PubMed.

Vitamin D

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Vitamin D is a steroid hormone precursor in which 7-dehydrocolycele turns into cholecalceiferole with ultraviolet B effect in its epidermia. It plays a role in a wide range of body systems, including both congenital and adaptive immune responses. Stimulates the expression of anti-microbial peptides such as catalycids and defensins, boosting innate cellular immunity and increases the production of superoxides, pygocytosis and bacterial destruction, while also encouraging the differentiation of monocytes into macrophages. Vitamin D can modune the adaptive immune response by suppressing T helper-1 (Th1) cell function and reducing the production of pro-inflammatory cytokines interleukin -2 (IL-2) and interferon-gamma (INF-γ). Promotes anti-inflammatory cytokines by Th2 cells and indirectly suppresses Th1 cells that direct pro-inflammatory cells to an anti-inflammatory phenotype, as well as stimulates suppressive regulator T cells (1).

There are many studies showing that vitamin D deficiency increases the frequency and severity of COVID-19 infection (2,3,4). It has been repeatedly shown that COVID-19 patients have low vitamin D levels. A study found that people in the northern hemisphere classically have a more common vitamin D deficiency, as they are not exposed to the sun in winter, compared to the summer period in the southern hemisphere during the busiest pandemic months (January-May); accordingly, it has been shown that they have the disease more severely (5). It has also been shown that countries in Spain and Italy with higher prevalence of vitamin D deficiency tend to have a higher load of COVID-19 morbidity and mortality (6) Vitamin D deficiency is linked to concentration and coagulopathy in advanced age, obesity, male sex, hypertension, northern climates, all of which are associated with worse results. Participants with vitamin D deficiency have coagulopathy and suppressed immune function . Vitamin D deficiency has been shown to be associated with exacerbation of lung inflammation and leads to acute respiratory distress syndrome (ARDS) along with respiratory epithelial damage and hypoxia. An inverse relationship was observed between 25-OH-cholecalsiferol levels and risk of acute respiratory failure in critical patients (8,9)

Vitamin C

Vitamin C; lowers proinflamatutuar cytokines, including TNF- α, and increases anti-inflammatory cytokines like IL-10. IL-10 controls inflammation critical to COVID-19 as a negative feedback mechanism with IL-6. In COVID-19 patients, improvement in inflammatory markers was observed following intravenous application of vitamin C (10). Vitamin C has also been shown to play a role in secondary sepsis to pneumonia, which is also seen in COVID-19 (11). Vitamin C levels in serums and leuocytes are depleted at the acute stage of COVID-19 infection due to increasing metabolic demands. High doses of vitamin C supplementation help normalize both serum and leuocyte vitamin C levels. Since vitamin C has multiple pharmacological properties, antiviral, antioxidant, anti-inflammatory and immunomodulator effects, it can have an auxiliary effect in the treatment of COVID-19 (12).

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Vitamin A

The pulmonary, immunomodulator and antimicrobial roles of vitamin A are important in the fight against viral diseases, including COVID-19. Retinoic acid modulates ARDS pathogenesis and pulmonary infiltration of neutrophils by affecting the production of IL1-and IL-1 receptor antagonist by alveolar macrophages. Increased guest sensitivity to influenza and SARS-CoV was associated with a lower concentration of vitamin A in various disease models before. Oral supplementation of vitamin A, along with many other antioxidants, is still being investigated in the treatment of COVID-19 (13).

Vitamin E

Vitamin E, increases the immune function mediated with T lymphocyte by response to mytogens and IL-2. It has been shown to increase neutrophil and natural killer function, which is seen to decrease with age. Oxidative stress is the basis of the biology of ARDS as a result of COVID-19. The oxidine-antioxidant balance varies significantly, which causes excessive lipid peroxidation and disruption of biological membranes. Common alveolar damage, hyacinth membrane formation and pulmonary edema may develop. Vitamin E intake is known to reduce the production of superoxide and perhaps restore balance in favor of antioxidants (13).

Vitamin B 1 (thiamin)

Thiamine can improve immune system function. Since antibodies and T cells are needed to eliminate the SARS-CoV-2 virus, thiamine deficiency can cause inadequate antibody responses and severe symptoms. Thiamine also acts as a carbonic anhydraz isoenzyme inhibitor. High doses of thiamine given to people in the early stages of COVID-19 could potentially limit hypoxia and reduce hospital stay (14).

Vitamin B 2 (riboflavin)

Together with UV light vitamin B2, causes irreversible damage to nucleic acids such as DNA and RNA of microbial pathogens and prevent the copying. Riboflavin and UV light are also thought to be beneficial against SARS-CoV-2 as they are shown to be effective against the MERS-CoV virus (15).

Vitamin B 3 (nicotinamide, niasin)

Niasin is a building block of NAD and NADP, both of are vital during chronic systemic inflammation. Since recent evidence suggests that targeting IL-6 can help control inflammatory storms in COVID-19 patients; It is important to reduce IL-1β, IL-6 and TNF-α by NAD+. Niasin reduces neutrophil infiltration and also exhibits an anti-inflammatory effect in patients with ventilator-induced lung damage.Because of lung-protective and immunity-strengthening roles of niac, it can be used as an auxiliary treatment in COVID-19 patients (16).

Vitamin B6 (pyrodoxic 5′-phosphate, pylyoxin)

B6, an important cofactor in various inflammatory paths; during inflammation, plasma has an inverse relationship with IL-6 and TNF-a. During inflammation, the use of PLP increases, which causes it to run out. Covid-19 patients may therefore be short due to dainflation. B6 support is

claimed to alleviate covid-19 symptoms by regulateing immune responses, reducing proinflamatuvar cytokines, maintaining endowith integrity and preventing hypercoagulation (17).

Vitamin B 9 (folic acid, folate)

Folate is a vitamin essential for DNA and protein synthesis and adaptive immune response. Folic acid; inhibiting furini which associated with bacterial and viral infections; prevents SARS-CoV-2 binding by spike protein, preventing cell entry and virus cycle, can be useful in treating COVID-19-related respiratory disease in the early stages (18).

Vitamin B 12 (cobalmin)

Vitamin B12 is necessary for, red blood cell synthesis, nervous system health, myelin synthesis, cellular growth and rapid synthesis of DNA. Low B 12 levels raise methylmalonic acid and homocysteine, resulting in increased inflammation, reactive oxygen types and oxidative stress. Hyperhomocysteinemia causes endothelial dysfunction, platelet activation and coagulation disorders, megaloblastic anemia, deterioration of myelin sheath integrity and decreased immune responses. A current study has shown that methylcobalamine supplements have the potential to reduce organ damage and symptoms associated with COVID-19. Another study showed that patients with vitamin B 12 (500 μg), vitamin D (1000 IU) and magnesium-given COVID-19 reduced symptom severity and supplements significantly reduced the need for oxygen and intensive care (19.20).

Zinc

Zinc is vital in immune responses to viral infections. Zinc deficiency causes a change in cell barrier function through IFN-γ, TNF-α and fas receptor signal in lung epithelial tissues, as well as in vitro apoptosis. Zinc is important in neutrophil chemotactic activity, has positive effects on NK cells, fagocytosis, oxidative explosion formation and CD4+ and CD8 + T cells. Zinc deficiency reduces the number of lymphocytes and disrupts their function. In fact, zinc supplementation increases the number of T cells and NK cells and increases IL-2 and soluble IL-2 receptor expression. Zinc has been shown to inhibit the synthesis, replication and transcription complex of coronaviruses. It is therefore claimed to be a vital mineral during COVID-19 infection (21,22,23). Zinc has the potential to be a supportive treatment in COVID-19 patients due to its immunomodulator and antiviral properties. Zinc support may increase the effectiveness of other treatments, such as hydroxychloroquine currently being investigated (24).

Selenium

Selenium is an important trace element. The lack of selenium can affect the pathogenicity of the virus, as in addition to the immune response. A main SARS-CoV-2 protease responsible for viral replication has been found to interact with the basic seleno-enzyme glutathione peroxidase1 (GPX1). Ebselenin (a synthetic selenium compound) that mimics GPX has been reported to be a powerful inhibitor of SARS-CoV-2 main protease (25). A study from China found a significant association between selenium status SARS-CoV-2 of infected patients and the recovery rate (26).

Magnesium

Magnesium is the intracellulium lynx that participates in over 600 enzymatic reactions, the most found in the body after potassium. It has a "calcium channel blocking" effect that suppresses nuclear factor-Kβ, interleökin-6, C-reactive protein and other related endocrine disrupters. The kidney regulates potassium loss, increases the functionality of vitamin D. Hypomangnesemia is a relatively common clinical event that is not usually noticed, as magnesium levels are rarely monitored in a clinical setting. Continuous monitoring of ionized magnesium status and reflying it later when appropriate can be an effective way to affect the progression of COVID-19 disease (27).

Conclusion

Based on experience from treatments for SARS and other viral infections, nutritious supplements applied at an early stage of infection can increase the body's resistance to RNA viral infections, which can include severe COVID-19, and against life-threatening cytokine discharge. In the light of current studies, The optimal levels of especially vitamins D,C, A, E, B, zinc, magnesium, selenium have direct or indirect effects on the pathogenesis, prognosis and treatment of COVID-19 disease. Balanced nutrition, ensuring proper functioning of the immune system with appropriate vitamin-mineral supplements can reduce disease morbidity and mortality, as well as direct new treatment options.

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The Effect of Living Style Behaviors on Fertility and Assisted Reproductive Techniques in Covid 19 Pandemic

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Abstract

The highly contagious Covid-19 disease has rapidly turned into a pandemic that affects the whole world. One week after the WHO declared the Covid-19 infection as pandemic, some professional communities around the world have recommended the suspension of assisted reproductive techniques (ART) treatments. Fertility and ART, which have an important place in reproductive health, are an area that can be affected by the pandemic. Recommendations published for this purpose include postponement of treatment programs, management of patients with symptoms of COVID-19, regulation of interventions for the protection of fertility, and attempts to reduce possible emotional effects. The importance given to the support and protection of fertility has increased and the concept of developing healthy lifestyle behaviors has come to the fore. The importance of this issue has increased in the Covid-19 pandemic. Supporting and maintaining fertility depends on the individual's lifestyle. It is necessary to control the behaviors that may affect the individual's health and to regulate by choosing the appropriate behavior. Lifestyle behaviors that are researched to support fertility and offered recommendations for regulation; nutritional problems, inadequate physical activity, smoking, alcohol and caffeine consumption, exposure to environmental harmful substances, stress and sexually transmitted infections. In the Covid-19 pandemic, these lifestyle behaviors are also affected. In the Covid-19 pandemic, it is important to draw attention to the effect of lifestyle behaviors on fertility and the treatment of ART, and to make recommendations for the roles and responsibilities of health professionals in protecting and improving the reproductive health of couples.

Keywords: Covid 19, Fertility, Lifestyle Behaviors, Assisted Reproductive Techniques

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INTRODUCTION

The serious consequences of Covid-19 disease in early 2020 quickly affected the whole world and led to extraordinary measures to be taken worldwide (1). One week after the World Health Organization declared Covid-19 infection as a pandemic, some professional societies around the world recommended the suspension of assisted reproductive techniques treatments (2). Fertility and assisted reproductive techniques, which have an important place in reproductive health, are an area that can be affected by the pandemic. Recommendations published for this purpose include the postponement of treatment programs, the management of patients with symptoms of COVID-19, the regulation of interventions for the protection of fertility, and attempts to reduce the possible emotional impact (2).

Today, infertility, which is estimated to affect one out of every four couples, is defined as the absence of pregnancy despite regular sexual intercourse without using family planning method for at least one year (3,4). According to the World Health Organization 2010 data, the prevalence of infertility is between 10-15%, while in Turkey it ranged from 10-20% and this rate is reported to be increasing problems (5-7).

Infertility treatment options have increased due to technological developments in recent years. This increase has led to the emergence of concepts such as infertile women being affected by the treatment process, their level of compliance with treatment, and their self-efficacy perception. When we examine the literature, studies emphasize the importance of gaining life-style behaviors that support fertility, especially in order to eliminate infertility risk factors, and it is stated that this situation can positively affect the perception of infertility self-efficacy (8,9). Lifestyle behaviors that are researched to support infertility-related fertility and suggested for its regulation; Nutritional problems such as obesity, underweight, inadequate physical activity, smoking, alcohol and caffeine consumption, exposure to environmental harmful substances, stress and sexually transmitted infections (10-13).

Supporting and maintaining fertility depends on the lifestyle of the individual. Individuals need to control their behaviors that may affect their health and to regulate them by choosing the appropriate behavior (10-13). Infertile individuals usually try to achieve the effectiveness of treatment and behavioral changes that may contribute to fertility (14). Individuals involved in the treatment phase tend to be confident about the practice and tasks that need to be done. However, most of the time, when pregnancy results in loss and failure or when the treatment process is prolonged, they may lose their self-belief and perception of courage about their duties during treatment (14). At this stage, individuals who receive

infertility treatment should be supported in terms of protecting and improving health. In addition, in recent years, together with the availability of new evidence regarding infertility risk factors, the importance given to supporting and protecting fertility and thus the concept of developing healthy lifestyle behaviors has increased the importance of this issue (10,11).

The aim of this review, which has been prepared nowadays when the fight against Covid-19 infection is increasing, is to draw attention to the effect of lifestyle behaviors on fertility and assisted reproductive techniques in the Covid-19 pandemic, and to make recommendations for the roles and responsibilities of health professionals in protecting and improving the reproductive health of couples.

THE EFFECT OF LIVING-STYLE BEHAVIORS ON FERTILITY AND AGE TREATMENT

The high cost associated with the use of advanced technology in the treatment of infertility, the negative emotional consequences of the diagnosis and treatment, and the emergence of new evidence about the risk factors, the importance given to the protection and support of fertility, and thus the development of healthy lifestyle behaviors are increasing (10). Healthy lifestyle behaviors aim both to prevent disease or illness and to improve the general well-being of the individual (15). It is an important factor in improving healthy lifestyle behaviors related to infertility, preventing infertility, increasing the general health status and maximizing the fertility chance (15). Lifestyle factors associated with infertility; obesity, weakness, exercise, smoking, alcohol use, caffeine consumption, exposure to environmental harmful substances, stress, advanced maternal age and sexually transmitted infections (10,16)

Cigaret

Smoking is one of the lifestyle factors that most affect fertility and ART treatment. It disrupts the follicular microenvironment, changes hormone levels in the luteal phase, decreases circulating estrogen levels, increases basal FSH levels, decreases ovarian reserve, and is associated with 1-4 years early menopause (17). In addition, smoking has negative effects on follicle development, ovulation, oocyte transport, fertilization and early embryo development. Smoking increases the risk of infertility every year and creates similar risks in passive smoking (10,17).

Obesity

In the increased fat cells in obesity, androgens are converted more to estrogen and this unnecessary increase of estrogen blocks FSH secretion. Insulin, which increases with obesity and insulin resistance, decreases androgen-carrying proteins in the blood. Thus, more androgens

are released in the blood. In addition, the excess insulin acts as a substance called insulin-like growth factor, which provides androgen production in the ovary. These negativities on ovarian functions cause problems such as menstrual irregularity, early menarche, oligo / amenorrhea, chronic anovulation, increase in androgens, polycystic ovary syndrome, increase in pregnancy morbidity, increase in abortion, and decrease the chances of fertility by reducing the success of assisted reproductive techniques. Women who weigh 80 kg and over (BMI 25) before pregnancy are thought to have twice the expected time for pregnancy compared to women who do not. Subfertility is 4 times higher in morbid obese patients (10,18).

While the conversion of testosterone to estrogen increased in the adipose tissues of men, testosterone decreased and estrogen increased. Androgen-carrying proteins in the blood are reduced and ultimately the level of testosterone in the blood decreases. Sperm count is 20% less in these people and sperm quality is impaired. In addition, the high rate of fat in the testicles can increase the temperature in that area and reduce the production and quality of sperm. In addition, the risk of erectile dysfunction is higher in obese men (19).

Obesity also negatively affects the treatment of assisted reproductive techniques. It decreases the success rate in ovulation induction. A higher dose of gonadotropin is needed. Insufficient follicle development may cause more frequent cycle abortions. A small number of oocytes are obtained. The number of cycles in which treatment is tried for pregnancy increases. 50% of obese people can conceive in the first 3-6 cycles and 75% in the first 9 cycles (20).

The negative effects of obesity improve significantly with weight loss. It has positive effects especially on menstrual cycle, spontaneous ovulation and insulin sensitivity. Surgical methods such as increasing physical activity, balanced diet, pharmacological agents (ovulation induction, clomifene citrate, metformin, FSH), anti-obesity medication (orlistat, sibutramine) and gastric bands are used in the treatment to aid weight loss (21).

Obese women need counseling and behavioral changes during treatment due to serious negativity on fertility ability and ART treatment. Therefore, every couple who applies for treatment should be evaluated in terms of obesity, and their eating and exercise habits should be questioned. Advice on weight management should be given and should be directed to a dietician when necessary. Women trying to lose weight should be closely monitored by healthcare professionals and supported to maintain their motivation (22).

Weakness

Being underweight has negative effects on fertility as well as obesity. Women with a BMI of less than 19 are 4 times more likely to wait about 29 months for pregnancy. This period

is 6.8 months for women with normal BMI. When BMI is less than 20 in men, sperm quality is negatively affected (23).

Exercise

Regular exercise, together with a healthy diet, improves general health and maintains weight, which positively affects fertility (57, 58). Exercise increases insulin sensitivity, regulates ovarian functions and thus increases the chance of pregnancy. However, luteal phase problems and menstrual irregularities occur more frequently in women who exercise regularly at moderate and heavy levels (10,16).

Caffeine

Although the effect of caffeine on fertility is controversial, it is one of the most researched topics. By changing hormone levels (E2) in the early follicular phase, it can disrupt ovulation and corpus luteum function. Moderate caffeine intake in a healthy adult does not pose a risk. The risk group is women of reproductive age and caffeine over 300 mg per day is not recommended for these women. 7 or more cups of tea or coffee a day increases the risk of subfertility 1.5-2.7 times. During ART treatment, caffeine intake and oocyte retrieval, fertilization, transfer and pregnancy rates could not be clearly associated (10,14).

Alcohol

Alcohol is a known teratogen and the relationship between the amount consumed and the risk of infertility is not clear. Alcohol can decrease FSH production by raising estrogen levels. Therefore, folliculogenesis and ovulation pattern is disturbed, ovum maturation, ovulation, blastocyst development and implantation may be affected. It increases the risk of chromosome anomaly by affecting meiosis. The dose that reduces fertility is 7-8 glasses of alcohol per week, and even one glass of alcohol per week decreases the chance of fertilization compared to the normal population. The fertility rate decreases with the increase in alcohol consumption per week; 1-5 glasses of alcohol decreases the fertility rate from 100% to 61%, and 10 glasses of alcohol per week decreases the fertility rate to 34% (24).

Stress

Stress can affect fertility by affecting the autonomic nervous system, endocrine and immune system. Stress reduces the number of oocytes collected and the pregnancy rate (17, 61). In the treatment stages such as oocyte retrieval and embryo transfer, the chance of pregnancy decreases in people with high adrenaline hormone levels. In these people, methods of coping with stress and relaxation exercises increase the chance of pregnancy (25).

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Advanced Age

Due to factors such as education and career opportunities, developments in the field of contraception, economic opportunities and changes in the perception of marriage, the first birth age in women has gradually increased in recent years. Advanced age is among the important risk factors for infertility. While fertility declines slowly until age 35, this decline accelerates with age. The reasons that decrease fertility with advanced age are the role of decreased oocytes, cycle irregularities, chromosomal abnormalities, increased risk of abortion, reduced coitus frequency, chronic health problems and male infertility (>45 years) (26).

Sexually Transmitted Infections

Starting sexual activity at an early age is associated with an increased incidence of sexually transmitted infections and tubal infertility. Asymptomatic infections and subfertility are also associated. Vaginal douching can also cause infection, pelvic inflammatory disease (PID), ectopic pregnancy, and infertility. PID negatively affects the tubules and ovaries and causes infertility. Tricomanas settle in the vagina in women and in the urethra and prostate gland in men, and cause infertility by disrupting the vaginal environment. Gonorrhea causes discharge and burning while urinating in men, and tubal obstruction in women. This situation prevents sperm passage and causes infertility. Regular condom use reduces the risk of recurrent PID, chronic pelvic pain and infertility (10).

General Lifestyle and Environmental Factors

Nutrition, sedentary life, pesticides used to increase productivity and reduce costs, air pollution, mobile phones, bad eating habits, vitamin C, folic acid, low zinc levels, anemia, diabetes, obesity, thyroid, liver and kidney diseases and the drugs used, radiotherapy, chemotherapy, pepper spray, pesticides cause infertility by affecting sperm and egg production and quality.

Pesticides; They are drugs that consist of different chemicals used to kill insects, fungi and rodents. By disrupting the functions of Sertolli and Leydig cells, it directly damages the spermatozoa, reduces the sperm count by 40% and negatively affects male reproductive health (27).

There has been a huge increase in the use of mobile phones over the last 15 years, and this has increased male and female infertility. Vitamin D is important for male and female reproductive systems. While low levels of vitamin D cause ovulation disorders in women, it negatively affects sperm quality, count, and mobility in men. During the diagnosis and treatment

of infertility, in addition to routine procedures, vitamin D levels should be controlled and treated in case of deficiency (28).

Radiation causes temporary or permanent sterility. Chemicals in cosmetics increase the risk of miscarriage, and working with adhesives reduces fertility. Implantation disorder is seen in the spouses of men working in jobs with organic solvents (10). Like these, many chemicals mostly found in the living environment are associated with fertility disorders, pregnancy losses and fetal anomalies. Exposure to environmental and occupational hazardous substances should be carefully questioned in ART applications, and should be directed to ambient or temporary job changes when necessary.

Psychosexual Causes

Lack of sexual desire, fears, embarrassment, incompatibility between couples, vaginismus, erectile dysfunction, etc. It is among the causes of infertility in rare sexual intercourse due to reasons such as (29).

AUXILIARY REPRODUCTIVE TECHNIQUES

Assisted reproductive techniques (ART) are procedures performed after oocyte retrieval from the ovaries (29,31).

Medication

It is to apply hormone therapy to create and increase hormonal stimuli in order to ensure a successful pregnancy in couples who cannot have children due to a hormonal disorder that affects ovulation and sperm production. Today, it is used before other techniques are applied. Purpose of drug therapy; To provide the highest number and best quality oocyte production from the ovaries (30,31).

In Vitro Fertilization-Embryo Transfer (IVF-ET)

It is the collection of oocytes in the laboratory environment after ovulation induction with various stimuli and the embryo that develops after fertilization is placed in the uterus by transcervical route (30,31).

Intrauterine Sperm Insemination (IUI)

Intrauterine insemination is the most effective and widely used method in ART. It is the insertion of sperms that go through special stages in the laboratory into the uterus at the time of ovulation with the help of a catheter (30,31).

Intracytoplasmic Sperm Injection (ICSI)

It is the process of injecting a single sperm into the cytoplasm of an egg under a microscope (30,31).

Surgical treatment

It is used to correct obstructions in women and varicocele in men (30,31).

PROBLEMS EXPERIENCED BY INFERTILE COUPLES DURING DIAGNOSIS AND TREATMENT

Infertility is a medical problem as well; It is a life crisis with class, religious and cultural effects that creates emotional, social and psychological problems. Disruption in social relationships, isolation, and sensitivity to issues related to fertility are some of the problems faced by infertile couples (7). Couples frequently encounter infertility crisis.

The couple, who cannot have a baby, experiences the shock of this situation for a while after being diagnosed with infertile, they do not believe in the fact of not being able to have a child and deny this situation by attributing it to invalid reasons (25). Emotions such as loss of self-esteem, disappointment, fear of losing one's femininity and / or masculinity, and feeling of worthlessness cause an increase in anxiety (81). The infertile couple seeks an answer to the question of why they cannot have children, and this question prompts the couple to think about their past sexual life, any untreated infection, and abortion in bad conditions. After the behaviors that may cause not having a baby are examined, a criminal is sought, found and punished (25).

Another problem is that infertile couples feel guilty, worthless and inadequate because they think that they cannot fulfill their parenting roles. This feeling of worthlessness and inadequacy will drive the person away from their spouse, family and environment and cause social isolation. An individual struggling with feelings of loneliness and guilt loses interest in everything in his life and falls into despair (32).

The marriage and sexual relationship of the couple who experience feelings such as anger, guilt, loneliness, unhappiness, alienation from their spouse and their environment may also be negatively affected. This situation may also affect the sexual intercourse that should be in the fertile times of the cycle, it can turn sexuality from its natural cycle into an obligation and cause sexual problems to occur. Because of these problems, the individual may feel sexually incompetent, and the individual may become depressed when this feeling of inadequacy is confronted with the failure of pregnancy. (32).

After confronting the infertility situation, the couple can develop strategies to cope with infertility, receive support from health personnel and start to adapt to the treatment process. However, this process may not always result in adaptation. By affecting the self-efficacy of the individual, it may cause the problems to continue and the infancy status not to be resolved (33).

Postponement of Treatment Programs

Significant non-governmental organizations specializing in assisted reproductive methods have published updated and approved measures and recommended the postponement of assisted reproductive treatments and prevention of new pregnancies that may occur with these treatments (34,35). Within the scope of the measures, the recommendations updated by the American Society of Reproductive Medicine on March 30, 2020 include postponing the initiation of the new treatment process for pregnancy, canceling planned embryo transfers and suspending elective operations (36). In our country, with a circular issued by the Ministry of Health on March 17, 2020, all surgeries and surgical interventions except emergency situations have been postponed. After the instructions of the Ministry of Turkey Reproductive Health and Infertility Association (TSRM) from "The completion of the current cycle and subsequently to receive a new cycle, as well as all the transfer process of the suspension turned into a necessity of the situation" was the description (37). In the face of delaying ART treatments, the American Society of Reproductive Medicine recommends that the use of the telehealth system can be used to start and maintain the evaluation and education of patients. (36).

Health professionals play an important role in supporting fertility, informing and educating patients in the field of infertility and ART. It is thought that their inclusion in this system with their educational roles may be effective in ensuring that patients regulate their behaviors specific to their treatment, minimizing the risk of possible infection and planning their ongoing treatments. It is also stated that in this way, the well-being of patients can be increased by maintaining the connection between patients and care providers (2,36).

Regulation of Initiatives for the Protection of Fertility

In ART, ovarian stimulation, egg collection or surgical removal of ovarian tissue are important in order to protect the fertility of oncology patients who need chemotherapy and radiotherapy. Provided that there are no signs of infection, the British Fertility Society stated that it is appropriate to continue treatment and interventions for non-elective fertility protection such as sperm, oocyte or embryo storage for cancer patients, where resources allow (38). In our country, in order for these patients to receive their treatment without wasting time, it is recommended that they be given optional treatments after being informed about the risks that may arise during the procedure (37). It should not be forgotten that the most important point to be considered during the pandemic process is the careful implementation of the preventive measures recommended by the staff and patients during the treatment of these patients. Because these patients are at risk in terms of COVID-19 infection due to their existing diseases, and this

risk may increase with the treatment process to be initiated (37). At this point, as in all areas of infertility, health professionals have important roles in the management of fertility protection initiatives in the COVID-19 pandemic (2). Assisting couples in making decisions about treatment, enabling them to focus on the positive aspects of life and themselves despite the disease they have and the additional stress caused by the epidemic, providing infertile couples with the care they need as part of their caregiving role, and providing training and counseling on what they should pay attention to during the pandemic It is one of them (2).

Auxılıary Reproductive Techniques in Patients Infected with COVID-19

The relationship of Covid-19 infection with reproductive systems is not yet fully known. Current data show that the female reproductive system can be protected from viral infection (39). To date, there are no reports about the presence of COVID-19 virus, which is the cause of new type of coronavirus infection, in the female reproductive system, vaginal secretions, amniotic fluid or peritoneal fluid (39). On the other hand, it has been suggested that coronavirus infection may affect male reproductive cells (2,39).

It is not known whether human embryos will also be affected by COVID-19 or other coronaviruses in IVF treatment (36,40). In the study of Colaco et al. (2020), it was determined that many cells that develop human embryos show coronavirus receptors and also contain the necessary mechanism for viral internalization and replication (40). Therefore, it is stated that pregnancy should be avoided in a woman with symptoms of COVID-19 (2,36,37,40). Therefore, it is recommended to cancel the treatment in patients with COVID-19 symptoms who are still in the oocyte stimulation stage and who have not received treatment yet (34,38). It has been reported that embryo transfer should not be performed in patients who develop symptoms after oocyte collection (38).

Considering these treatment-related processes, after delaying the treatment of patients infected with COVID-19, isolation and hygiene rules for COVID-19 infection, treatment process and according to the process involved in ART treatment, patients against complications such as ovarian hyperstimulation syndrome (OHSS) or multiple pregnancy It is important to inform and provide the emotional support they need, and to direct them to get professional help if necessary.

Attempts to Reduce Possible Emotional Impact

The purpose of the guidelines published at national and international level is to protect the health of health professionals, couples and newborns who may be affected by the COVID-19 epidemic, and to prevent problems that may arise in health services during the pandemic

period as a result of possible complications (41). On the other hand, it is thought that delaying treatments may have some negative effects on couples. One of these effects is that while living by dreaming of having a baby for years, encountering a delay process that is not known for how long it will take when they approach this dream can lead to the emergence of disappointment in couples, anxiety and despair about the success of the treatment process.

It should not be forgotten that it should be kept in mind that the healthcare professionals in the unit where the treatment received an explanation that the annulment decision, which was reported considering the possible benefit-harm relationship for the couples, was for them to have a healthy pregnancy and delivery process without being affected by infection, may be useful in coping with these existing emotional changes. It is of key importance that healthcare professionals, who are most in contact with patients in infertility clinics, take actions to prevent emotional problems that may arise by evaluating the individual holistically.

An Italian study evaluated the impact of the COVID-19 outbreak on parental desire in reproductive-age couples. More than one-third (37.3%) of the participants who planned to have children before the pandemic decided to quit the pregnancy plan during quarantine due to concerns about future economic difficulties (58%) and / or possible risks (42,44). Another study evaluated the willingness to continue with the desire of pregnancy in infertile women during the epidemic. Almost half of the women (44.6%, n = 45) stated that they would consider postponing pregnancy plans due to COVID-19 (43,44).

In another study, it was reported that 86% (n = 101) of infertile women whose ART cycle was delayed due to the epidemic were concerned about the possibility that their chances of reaching pregnancy could be adversely affected without delay. State anxiety levels were found to be significantly higher in women over the age of 35. Decreased ovarian reserve and high duration of infertility were found to be significantly associated with higher anxiety levels (42,44).

CONCLUSION

Nowadays, when the fight against Covid-19 infection is increasing, supporting lifestyle behaviors is an important factor for maintaining reproductive and sexual health as well as general health. Lifestyle are correctable factors that are under one's own control and increase well-being. These factors can also positively or negatively affect reproductive health. In this pandemic process, it is important to draw attention to the effect of lifestyle behaviors on fertility and the treatment of assisted reproductive techniques, and to make recommendations regarding

the roles and responsibilities of health professionals in protecting and improving the reproductive health of couples.

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The Effect of Covid-19 Pandemic on Higher Education: A Bibliometric Study on Published Theses

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Abstract

Objective: The aim of this study is to investigate the change in the number of theses published during the pandemic period in 16 research universities, which are determined by the Higher Education Council (CoHE) and to evaluate the results.

Method: In our study, the data of the theses published in the Higher Education Council thesis center (CoHE) system were analyzed and evaluated using bibliometric analysis method. The sample of the study consists of 16 research universities determined by Higher Education Council.

Results: The approved thesis numbers of research universities constituted 28.3% of the approved thesis numbers of 247 institutions in 2019 and 30.7% in 2020. While a total of 74,945 theses were published in 2019, 27,056 theses were published in 2020. The thesis volume of research universities was calculated from 21,243 in 2019 to 8317 in 2020. Among these, the highest decrease with 67.2% was observed in master theses. 28.6% of the theses published on Covid-19 in 2020 were written in research universities.

Conclusion: Theses also have an important place in these scientific studies. The results of the research have shown concretely that the effects of the Covid-19 pandemic are also felt in higher education researches, with a total decrease of 63.9% in the number of published theses between 2019 and 2020, and a 60.8% decrease in research universities. This shows that it is necessary to take various measures to reduce, effects of the pandemic on scientific studies and to prevent scientific studies from being interrupted by the pandemic.

Keywords: Covid-19, Higher Education, Bibliometric Analysis

INTRODUCTION

Although most people with COVID-19 get rid of mild to moderate symptoms and do not need special treatment, Human coronavirus (HCoV) infection is a virus that causes severe respiratory illness (11). Shortly after its emergence, the first cluster of new pneumonia cases called 2019 Coronavirus Disease (COVID-19) was reported in Wuhan, China, in late December 2019 (1). After The disease spread throughout the world shortly after then emerged firstly in China, the World Health Organization (WHO) has been declared as a pandemic by March 11, 2020 as the date when the first cases seen in Turkey (2).

The rapid spread of Covid-19 has caused the care capacities of health institutions to exceed in many countries around the world; Lack of medical resources at many points, including various medical supplies, personal protective equipment and hospital beds (3). The continual increase of healthcare personnel's risk of getting sick during their patient care, and the addition of the lack of health manpower to other difficulties, has put governments on the alert.

Realizing that it is not possible to deal with the increasing cases only medically, governments have introduced measures one after another that will directly or indirectly affect the whole society. The measures taken for the treatment and control of the disease were not limited to only the countries, a global struggle began in the world by gaining an international dimension through WHO (4).

The first of the prohibition in the fight against the epidemic process in Turkey has come in the field of education. The day, which is after the day first cases seen in Turkey, on March 12, 2020, the schools and universities have entered into a temporary holiday (5). In almost 190 countries around the world, face-to-face education has completely stopped and alternative education techniques have been introduced (6).

With the interruption of face-to-face education at universities, the necessary trainings were tried to be continued online, and it was decided to continue online courses other than applied courses in the first academic term of the next year. These measures not only affected undergraduate students, but also many postgraduate students.

With the decision taken by the Council of Higher Education (CoHE) in order to ensure that graduate students continue their education in a healthy way, changes were made in the postgraduate education and training regulations, allowing students to take additional time

during the Covid-19 outbreak process (7). Since the publication of the decision, many students have benefited from this right and this situation has been noticeably felt in the published thesis issues.

The effects of the Covid-19 outbreak have been seen in research universities as well as in all universities. Planned implementation of 'Mission Differentiation and Specialization Project ", on September 26 2017, " Research and Prospective Research Universities" as has been described to determine the 16 universities and thus ıt was aimed to raise the position at international level of the universities in Turkey.

12 universities selected within the scope of the research university are; Middle East Technical University, İzmir High Technology University, Ankara University, Hacettepe University, Istanbul University, Gebze Technical University, Erciyes University, Gazi University, Istanbul Cerrahpaşa University and 4 candidate research university; Yıldız Technical University, Ege University, Bursa Uludağ University, Çukurova University and Selçuk University. The activities of selected universities are evaluated and presented to the public every year by a commission (8).

The aim of this research is, to investigate the impact of Covid19 pandemic, on graduate education in Turkey through published thesis.

METHODS

The bibliometric analysis method, which allows quantitative and qualitative evaluation of scientific studies, was used to achieve the research purpose. The bibliometric analysis method allows to make general inferences by working on all or a certain part of the data in the literature, presenting concrete data about the development of the relevant discipline and its knowledge on the subject (9). The bibliometric analysis method includes the analysis and interpretation of systematically organized information (10).

In order to achieve the aim of the study, the universe of the study has formed national theses of different types (master's, doctorate, medical specialty, proficiency in art, dentistry specialization, minor specialty in medicine) published in the CoHE thesis system between 2019 and 2020.

Office Excel and SPSS 21 package programs were used in the analysis of the data. In the study, only the theses in the CoHE thesis system were taken into consideration, however, it was

assumed that all theses written in the specified time interval were included in the CoHE thesis system.

Theses in the CoHE thesis system belong to 247 institutions in total. The sample of the study consists of 16 research universities determined by CoHE.
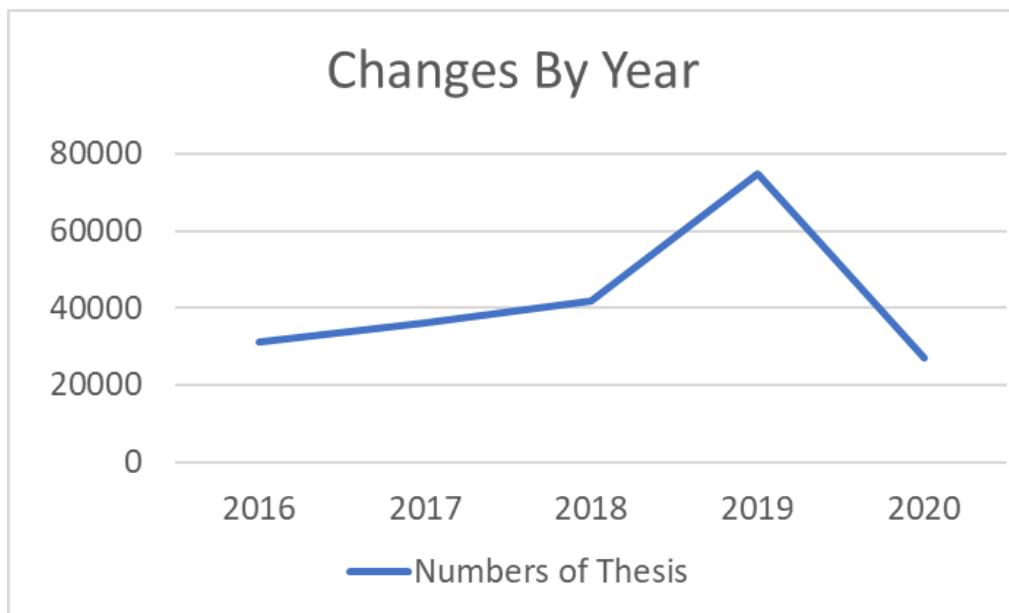
RESULTS

In CoHE thesis system, 6 different types of thesis are published from 247 institutions. The change in the number of theses according to the types published in the Yöktez system in the last five years is given in Table 1. According to Table 1, a total of 211,149 were published in the last five years. Among these theses 158,636 were postgraduate, 33,150 were doctorates, 17,187 were proficiency in medicine, 591 were proficiency in art, 1548 were speciality in dentistry, 37 were minor speciality thesis. Almost 50% of the published theses (102,001 theses) were published in 2019 and 2020 (Table 1).

Table 1: Thesis Numbers Published in the Last Five Years (General)

Year	Master	Doctorate	Specialization in Medicine	Proficiency in Art	Specialization in Dentistry	Minor Specialization in Medicine	Total
2016	21707	6285	2974	107	208	7	**31.288**
2017	25026	6668	3853	115	361	14	**36.037**
2018	30297	7415	3622	122	361	6	**41.823**
2019	62547	8153	3699	164	379	3	**74.945**
2020	19059	4629	3039	83	239	7	**27.056**
Total	158636	33150	17187	591	1548	37	**211.149**

While there was a steady increase in the number of published theses until 2019, a serious decrease was observed in 2020 (Chart 1).

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Chart 1: The Change in Thesis Numbers Which Are Published in CoHE Thesis System Between 2016-2020.

Comparing the 2019-2020 periods when the Covid-19 pandemic emerged and expanded its area of influence in all countries (Table 2); 69.5% in master theses, 43.2% in doctoral theses, 17.8% in medical speciality theses, 49.4% in art proficiency theses, and 36.9% in dentistry speciality theses. The only increase was seen in medical speciality theses with 133.3%. A decrease of 63.9% in the overall total was determined in the number of theses published between 2019 and 2020.

Table 2: The Change in Thesis Numbers Between 2019 - 2020 (For All Thesis).

Year	Master	Doctorate	Specialization in Medicine	Proficiency in Art	Specialization in Dentistry	Minor Specialization in Medicine	Total
2019	62547	8153	3699	164	379	3	**74.945**
2020	19059	4629	3039	83	239	7	**27.056**
Change	-43488	-3524	-660	-81	-140	+4	-47889
Rate	**-69,53%**	**-43,22%**	**-17,84%**	**-49,39%**	**-36,94%**	**+133,33%**	**-63,89%**

Table 3 compares the thesis numbers of all institutions published in 2019 and 2020 with the number of theses published by research universities.

Table 3: The Numbers of Thesis Which is Belonged to Research Universities in All Approved Thesis Numbers in 2019-2020

Year	2019		2020	
Type of Thesis	**All**	**Research University**	**All**	**Research University**
Master	62547	**16703**	19059	**5472**
Doctorate	8153	**3512**	4629	**2084**
Specialization in Medicine	3699	**831**	3039	**658**
Proficiency in Art	164	**73**	83	**33**
Specialization in Dentistry	379	**122**	239	**68**
Minor Specialization in Medicine	3	**2**	7	**2**
Total	74945	**21243**	27056	**8317**

According to Table 3, 21,243 of 74,945 theses published in 2019 in total were studied by research universities. In 2020, 8317 out of a total of 27,056 theses published were studied at research universities. These research universities (16 universities) met 28.35% of the published theses in 2019 and 30.8% in 2020 (Figure 1).

In Figure 1, although the number of thesis research universities increased in 2020 compared to 2019 (21,243 theses were published in research universities in 2019, 8317 theses were published in 2020), there was a decrease in the number of thesis for all universities in 2020.

Figure 1: The Numbers of Research Universities Thesis in All Thesis Numbers Published in 2019-2020 (%).
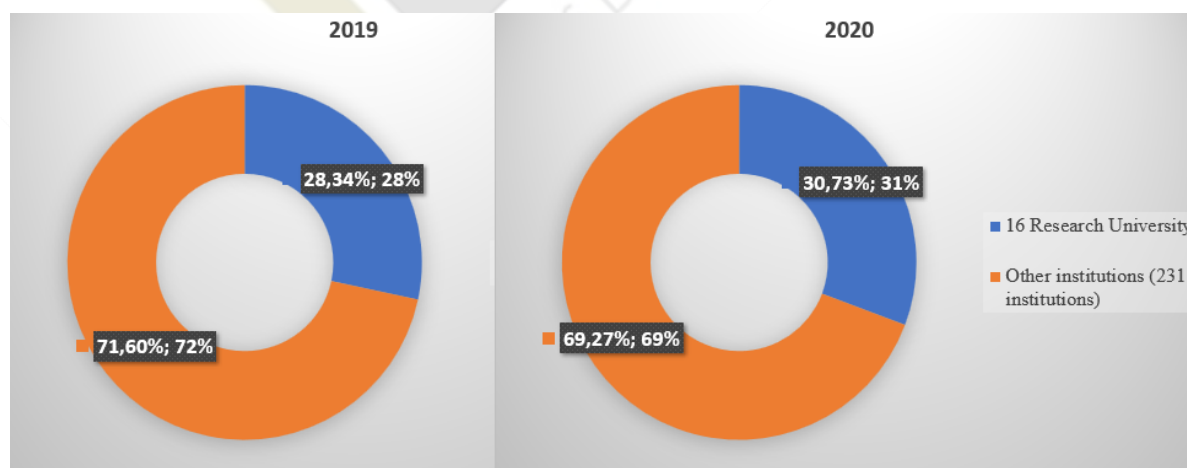
Table 4 shows the change in the number of thesis approved in research universities in 2019 and 2020 according to the types of thesis. According to Table 4, the highest decrease was in the master's thesis type with 67.2%, while the lowest decrease was in the number of theses in the specialty in medicine (20.8%), and there was no decrease in the minor specialty thesis in medicine. When Table 4 is analyzed based on thesis types; Selcuk University was the research university with the highest decrease in the type of master's thesis (80%), while the lowest decrease was in Ankara University. When the change in the period of 2019-2020 is examined in doctoral dissertations, the highest decrease in percentage was experienced in Bursa Uludağ University (80%), while the least percentage decrease was experienced in Gebze Technical University (21.6%). Speciality theses in medicine have become the type of thesis with the least percentage decrease in 2020. While there was an increase of 25% and 11% in Çukurova and Ankara Universities, respectively, compared to 2019, Bursa Uludağ and Istanbul Universities were the universities with the highest decrease (64.1% - 51.1%). The number of proficiency thesis in arts, which was 73 in 2019, decreased by 54% by 2020. While a total decrease of 44.3% was observed in the type of dentistry thesis, the highest decrease was experienced in Ankara and Istanbul Universities (77.3% - 76.9%); the least decrease was seen in Çukurova University (11.1%). In Selcuk University, a new thesis was published in the number of theses approved in the previous year (15 theses). When the changes in the minor theses in medicine are examined, in Hacettepe University where 2 theses were written in 2019, while no thesis was written in this field in 2020; In 2019, 2 theses were written at Gazi University, where no thesis was written.

Table 4: Distribution of Approved Thesis Numbers of Research Universities between 2019-2020.

NO	Universities	Master		Doctorate		Specialization in Medicine		Proficiency in Art		Specialization in Dentistry		Minor Specialization in Medicine		Total	
		2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020
1	Middle East Technical University	1299	420	220	168	-	-	-	-	-	-	-	-	1519	588
2	Istanbul Technical University	1350	527	220	128	-	-	-	-	-	-	-	-	1570	655
3	Bogazici University	677	145	88	52	-	-	-	-	-	-	-	-	765	197
4	Izmir High Techno. University	208	76	36	16	-	-	-	-	-	-	-	-	244	92
5	Ankara University	954	648	448	279	100	111	-	-	22	5	-	-	1524	1043
6	Hacettepe University	1153	435	411	232	112	88	47	20	15	12	2	-	1740	787
7	Istanbul University	1659	389	409	204	92	45	7	3	8	4	-	-	2175	645
8	Yıldız Technical University*	1112	352	172	120	-	-	3	-	-	-	-	-	1287	472
9	Ege University*	1229	336	304	133	91	59	-	-	13	3	-	-	1637	531
10	Gebze Technical University	315	139	51	40	-	-	-	-	-	-	-	-	366	179
11	Bursa Uludag University*	982	460	10	2	64	23	1	1	-	-	-	-	1057	486
12	Erciyes University	993	294	182	111	74	70	-	-	18	13	-	-	1267	488
13	Cukurova University*	643	368	155	119	67	84	1	1	9	8	-	-	875	580
14	Gazi University	2143	472	487	287	87	85	14	7	22	8		2	2753	861
15	Istanbul Cerrahpasa University	564	137	121	89	113	67	-	-	-	-	-	-	798	293
16	Selcuk University*	1422	274	198	104	31	26	-	1	15	15	-	-	1666	420
	Total	16703	5472	3512	2084	831	658	73	33	122	68	2	2	21243	8317
	Percentage of Change	-67,2%		-40,7%		-20,8%		-54,8%		-44,3%		0		-60,8%	

* Candidate Research Universities

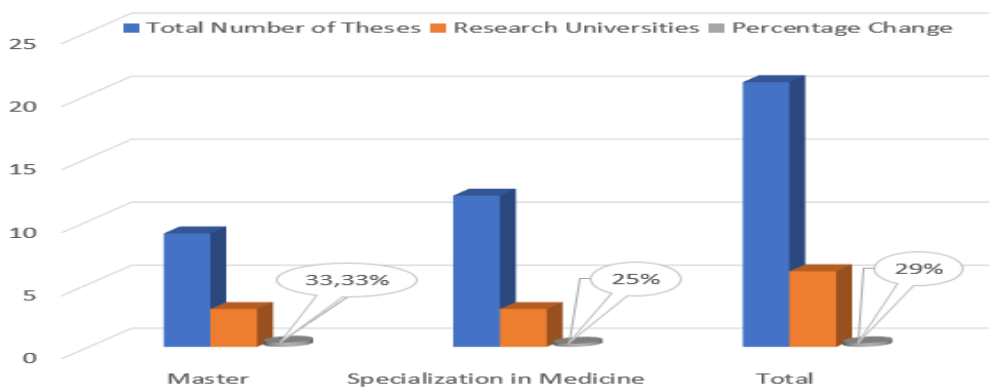COVID-19 Pandemisinde Araştırma-Yayın ve Eğitim Süreçlerine Bakış Kongresi, 15-16 Ocak 2021

The change in the number of theses published in research universities between 2019-2020 is shown in Chart 2. According to the information in Chart 2, the highest decrease in the number of theses was observed in Selçuk University (74.8%), Boğaziçi University (74.2%) and Istanbul University (70.2%). The research university with the least percentage decrease in the number of theses was Ankara University with 31.65%.

Chart 2: The Change of Thesis Numbers Published in Research Universities in 2019-2020.
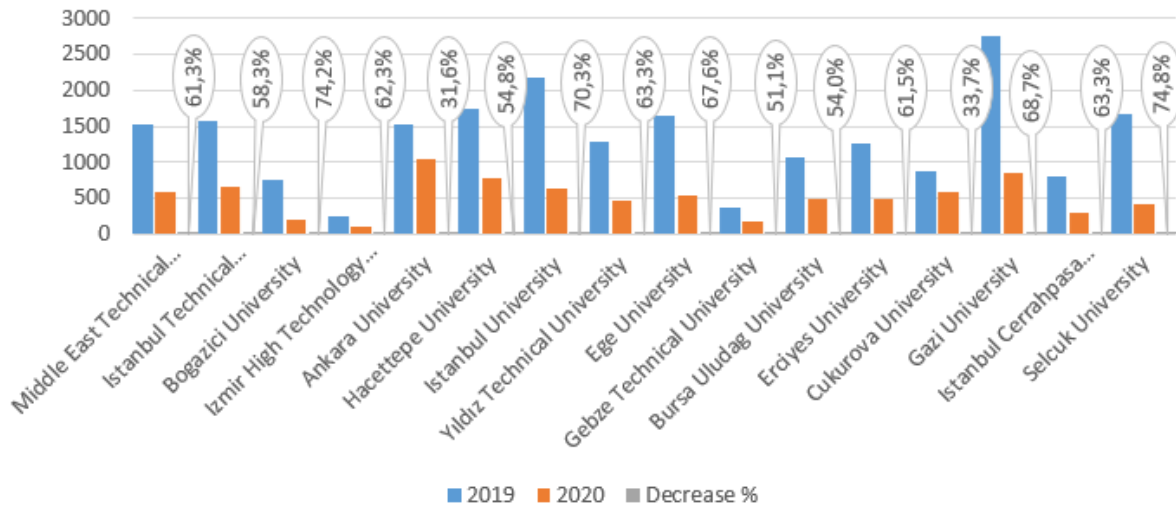
The graphic created by examining the theses on Covid-19 among the theses published in 2020 is given below (Chart 3). A total of 21 theses have been written on Covid-19. While 9 of these theses were written in the master's thesis type, 12 of them were written in the speciality thesis type in medicine. Besides, a total of 6 theses on Covid-19, 3 in master's type and 3 in a medical speciality were writte in research universities. In other types of thesis, it was observed that a thesis on Covid 19 was not written.

Chart 3: Thesis Numbers And Thesis Types Published On Covid-19 İn 2020.

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CONCLUSION

The Covid-19 Pandemic, which started as of the end of 2019, is not only an epidemic but also a very severe problem that changes the lifestyles of societies. Undoubtedly, the area most affected by this effect is the education sector. This study, which was conducted to investigate how this effect affects the postgraduate theses, which are the output of higher education, quantitatively, has reached significant results quantitatively.

These results concluded that there was a quantitative decrease of more than 60 percent in the number of theses in both research universities and universities outside this scope, compared to the previous years, during the Covid-19 pandemic period. While the program with the highest numerical decrease was the Master's thesis type, the lowest decrease was seen in the number of Minor in Medicine and Specialization in Medicine thesis. It seems that in extraordinary situations, the primary priority of people is to eliminate the situation brought about by negativity.

In this context, the criterion of "preparation for education and training during the crisis period" must be added to the evaluation criteria of "Research and Prospective Research Universities", which have been added to the higher education system within the scope of the "Specialization and Mission Differentiation Project" by the "New CoHE". At the same time, with this research, the flexibility of the higher education system to work in a crisis period has also been revealed. It is an important result reached as a result of the study in which dozens of theses were written in a short period of one year.

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Identifying Individuals' Fear Levels in Relation to Covid-19 And Their Tolerance Levels In Relation to Uncertainty

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Abstract

Objective: The purpose of this study is to analyse the fear levels of healthcare employees and other members in society in relation to COVID-19 pandemic, that is not known when it will end, and their levels of tolerance for uncertainty.

Method: The study is descriptive and carried out with 401 participants who volunteered. The data were gathered through 5 questions regarding informative characteristics, "The Fear of COVID-19 Scale" (FCV-19S) and "Intolerance to Uncertainty Scale-12" (IUS-12). The data were evaluated using SPSS Windows 20.00 package program.

Results: 64.3% of the participants were women, 88.3% of them had university and higher-level education, 51.9% were healthcare employees, and 17.5% had chronic disease. Average age in the study is 36.99 ± 10.09, while average score of FVC-19S is 19.05 ± 6.18, and average score of IUS-12 is 30.88 ± 7.93. A statistically significant difference was determined between FCV-19S score average and gender ($p < 0.05$). No significant difference was determined between IUS-12 overall and sub-dimension averages ($p > 0.05$). A significant difference was determined between being a healthcare employee and prospective anxiety (PA) sub-dimension score average ($p < 0.05$). A negative, very weak, and statistically significant relationship was determined between age and IUS-12 total and PA and debilitating anxiety (DA) sub-dimension score averages ($p < 0.05$).

Conclusion and Suggestions: Individuals' intolerance and anxiety levels decrease as they get older. Their COVID-19 fear levels and tolerance to uncertainty levels were intermediate. Women had high fear levels in relation to COVID-19. On the other hand, healthcare employees' fear and intolerance levels were low. According to these findings, keeping in mind that the fear and anxiety of the members of the society influence them in acquiring correct health behavior, we suggest a wide-range study on

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determining fear levels of various segments and particular groups regarding COVID-19 and the planning of trainings exclusive to each individual and age group in order to increase their tolerance levels during the pandemic.

Introduction

Flu pandemics have affected people biologically and psychologically, as well as socially and economically, all over the world for centuries. Our world, which experienced Spanish flu (H1N1) (caused the loss of 40-50 million people) in 1918, Asian flu (H2N2) (caused the loss of 2 million people) in 1957, and Hong Kong flu (H3N2) (caused the loss of one million people) in 1968, now faces a threat known as COVID-19 (Çınar and Özkaya, 2020). Policies on coping with the pandemic differ among and within countries, yet preventive measures such as social distancing, use of masks, and home isolation are being implemented all over the world. Moreover, when flu viruses mutate, the new type virus rapidly spreads before people could develop any type of resistance or immunity to it. When the epidemic spreads among countries and continents, and mortality and morbidity rates increase, individuals experience fear, anxiety and as a result, a global panic ensues. World Health Organization (WHO) has declared a global pandemic on March 12, 2020, as a result of the epidemic caused by SARS-CoV-2 virus (WHO, 2020). They also stated that coronavirus can easily spread among individuals through droplets and respiration and cause high-level illnesses in the respiratory system and other systems (Güner et al., 2020). The declared pandemic affected all societies negatively. Nonetheless, infection control and protection measures implemented in every country may reduce the spread of cases (T.R. Health Ministry, 2019). Likewise, when access to immunization services are enabled through the procurement of effective and reliable vaccine, it is expected that high level social immunity to pandemic will be developed (Yalçın, 2020). The management of the

pandemic period may become easier if what the society is anxious about and at which level training and support programs are needed are determined by communicating with them (Pakpour AH and Griffiths MD, 2020). For centuries, in periods of pandemics, uncertainty around the active virus and how long it will be effective has caused fear and intolerance. Individuals' anxieties because of restrictions on their everyday actions and their demands for information and preventive health services have increased in parallel with their fears and worries (Duman, 2020). Increasing uneasiness and anxiety levels are not only related to potential health problems but also related to other negative aspects of a pandemic such as worries over income and limited social interactions. Current negativities need to be addressed, preventive health services should be provided for individuals to access safely, and an effective vaccine against the virus that has caused the pandemic need to be commenced as soon as possible. Before starting preventive health services and immunization practices, there is a need for research on issues that the society is worried about and exclusive to each segment of the society. Accordingly, the present study aims to determine the fear and tolerance levels of individuals in relation to COVID-19 pandemic.

MATERIALS AND METHOD

Participants

The study was carried out with 401 participants who volunteered, and without the use of sampling methods. The participants were accessed though social media channels, among individuals who are over 18 years old.

Data Collection Tools

Questionnaire: Consists of questions on the age, gender, educational background, occupation, and chronic diseases of the participants.

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The Fear of COVID-19 Scale (FCV-19S): The scale was developed by Ahorsu et al. (2020). (Ahorsu, Lin et al. 2020). Turkish validity and reliability study was conducted by Bakioğlu et al. (2020). The scale is one-dimensional and consists of 7 items. It is a 5-point Likert-type scale. While a score of 5 corresponds to "Strongly Agree", a score of 1 corresponds to "Strongly Disagree". Cronbach's alpha coefficient was determined as 88 in the Turkish reliability and validity studyconducted by Bakioğlu et al.(Bakioğlu, Korkmaz et al. 2020) In this study, Cronbach's alpha coefficient was determined as 88.

Intolerance to Uncertainty Scale (IUS-12): The original scale was developed by Carleton et al. (2007) (Carleton, Norton et al. 2007). Sarıçam et al. (2014) has adapted it into Turkish (Sarıçam, Erguvan et al. 2014). The scale consists of 12 items and 2 sub-dimensions. Prospective anxiety sub-dimension consists of items 1-7, while debilitating anxiety sub-dimension consists of items 8-12. The scale is a 5-point Likert scale and the answers are as follows: **(1)** Completely untrue of me **(2)** Somewhat true of me, **(3)** A little true of me, **(4)** Very true of me, and **(5)** Completely true of me. There are no reverse-coded items in the scale. The scale is scored both according to its sub-dimensions and as a whole. High scores indicate intolerance to high-level uncertainty. Sarıçam et al. determined the Cronbach's alpha coefficient of the Turkish version of the scale as 88 for the entire scale, 84 for the prospective anxiety sub-dimension, and77 for the debilitating anxiety sub-dimension (Sarıçam, Erguvan et al. 2014). In this study, Cronbach's alpha coefficient was determined as 91 for the entire scale,83 for the prospective anxiety sub-dimension, and 89 for the debilitating anxiety sub-dimension.

Statistical Analysis

Sample size was determined using G* power program. Statistical analysis of the data was conducted using SPSS program. Histogram and Kolmogorov-Smirnov/Shapiro Wilks tests were performed in order to determine whether the variables are normally distributed.

Percentage, average, t-test in independent groups, and correlation analyses were conducted for the normally distributed data. Cronbach's alpha coefficients of the scales were calculated. Permission to use FVC-19S was requested from Bakioğlu et. al., and permission to use IUS-12 was requested from Sarıçam et al.

RESULTS

Out of 401 individuals who participated in our study, 64.3% were women, 88.3% had college and higher-level education, 51.9% were healthcare workers, and 17.5% had chronic decease. The average age of the participants is 36.99±10.09 (Table 1). Score average of FVC-19S scale is determined to be 19.05±6.18, total score average of IUS-12 is determined to be 30.88±7.93, PA sub-dimension score average is determined to be 18.45±4.78, and DA sub-dimension score average was determined to be 12.43±3.95.

Table 1. Distribution of Socio-Demographic Variables of the Participants

Gender	Number	Percent
Female	258	64.3
Male	143	35.7
Education		
Secondary education	47	11.7
University and above	354	88.3
Profession		
Health employee	208	51.9
Not Health employee	193	48.1
Chronic Illness		
Yes	70	17.5
No	331	82.5
Average Age	36.99±10.09	
FCV-19S Average Score	19.05±6.18	
Average score of the Intolerance of Uncertainty Scale (Btö-12)	30.88±7.93	

Average score of Prospective Anxiety Score (PA)	18.45±4.78
Average score of Inhibitory Anxiety core (DA)	12.43±3.95

The statistical analyses show that women have higher FCV-19S score average as opposed to men, and that the difference is statistically significant. Differences between IUS-12 total and sub-dimensions score averages according to gender are statistically not significant. Differences between FCV-19S, IUS-12 total and sub-dimensions score averages according to education level and having a chronic decease are statistically not significant. No statistically significant difference was established between FCV-19S, and IUS-12 total and DA sub-dimension score averages of participants who were healthcare workers and other participants. On the other hand, difference between PA sub-dimension score averages of healthcare worker participants and other participants was determined to be statistically significant (Table 2).

Table 2. Distribution of FVC-19S, IUS-12 Scale Total and Sub-Dimension Mean Scores by Socio-Demographic Variables

Gender	FCV-19S X±SD	IUS-12 Total X±SD	PA sub-dimension X±SD	DA sub-dimension X±SD
Female	**20.12±5.96**	31.16±8.37	18.62±5.01	12.53±4.20
Male	17.12±6.12	30.38±7.06	18.13±4.33	12.25±3.47
Test Value	*t:4.77, p:0.00*	*t:.945, p:.345*	*t: .992,p:.322*	*t: .695,p:.463*
Education				
Secondary	20.02±5.86	30.55±8.92	18.61±5.45	11.93±4.28
University and Above	18.92±6.21	30.93±7.80	18.42±4.69	12.50±3.91
Test Value	*t:1.141,p:.254*	*t:.307, p:.759*	*t: .252,p:.801*	*t: .922,p:.357*
Profession				
Health Employee	19.21±6.18	30.18±7.19	17.98±4.34	12.19±3.62

Not Health Employee	18.88±6.18	31.64±8.61	**18.95±5.18**	12.69±4.28
Test Value	*t:.543,p:.588*	*t:1.841,p:.066*	***t:2.018,p:.044***	*t:1.250,p:.212*
Chronic Illness				
Yes	20.91±5.54	31.32±7.85	18.85±5.42	12.47±3.40
No	18.66±6.24	30.79±7.95	18.36±4.64	12.42±4.06
Test Value	*t:2.793,p:.005*	*t:.511,p:.610*	*t:.780,p:.436*	*t:.081,p:.935*

X: Mean, SD: Standard Deviation.   t: İndependent t test, p < 0.05 represented statistical significance.

A positive, weak, and statistically significant relationship was established between FVC-19S score average and IUS-12 total score in the correlation analysis (r: .318**, p:.00). A positive, weak, and statistically significant relationship was established between FCV-19S and PA and DA sub-dimensions score averages (r: .290, p .00, r: .288, p:00). Also, a negative, very weak, and statistically significant relationship was established between age variable and IUS-12 total and PA and DA sub-dimensions score averages (Table 3).

Table 3. Distribution of Correlation Findings Between FVC-19S Scale, Btö-12 Scale and Sub-Dimensions and Age

		IUS-12 Total	PA	DA	Age
FVC-19 S	r	***.318****	***.290****	***.288****	.050
	p	***.000***	***.000***	***.000***	.318
IUS-12 Total	r	1	.924**	.887**	*-.145***
	p		*.000*	*.000*	*.004*
PA	r	*.924***	1	*.644***	*-.105**
	p	*.000*		*.000*	*.036*
DA	r	*.887***	*.664***	1	*-.164***
	p	*.000*	*.000*		*.001*

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DISCUSSION

In our study, we aimed to analyze the relationship between fear of COVID-19 and tolerance uncertainty. The results of our study show that the participants' scores on FVC-19S and IUS-12 total and sub-dimensions were at an intermediate level. In parallel with our study, Duman's study also indicated an intermediate level of fear and tolerance to uncertainty among university students (Duman, 2020). While no significant relationship with age variable was detected in studies conducted by Duman and Perz et al. (2020), our study shows that women have a higher level of COVID-19 fear as opposed to men. Other findings in literature support our findings on this matter (Zolotov et al., 2020; Israilowitz et al., 2020). In our study, no significant difference was detected between being a healthcare worker and COVID-19 fear levels, however, Zolotov et al. find that students of medicine have lower levels of fear as opposed to other students.

Another finding of our study is that participants who were not healthcare workers had higher levels of prospective anxiety. This current finding is novel and a contribution to the literature. It is expected that information regarding healthcare services are not accurately known by individuals who are not healthcare workers, and that they will have anxieties over the course and treatment of the disease, and in parallel, they will have high levels of prospective anxiety. According to our study, intolerance to uncertainty increses as COVID-19 fear levels increase. Our findings are similar to those reported by Duman (2020), Bakioğlu, Korkmaz and Ercan (2020), and Satici et al (2020).

Furthermore, while a significant and negative correlation was detected between age variable and intolerance levels in our study, Perz et al. have observed that age has no effect on COVID-19 fear and anxiety levels (Perz, 2020). We believe that accumulated knowledge and experience influence the fear and tolerance to uncertainty levels to fall as age increases. Also, no significant difference was found between COVID-19 fear and other related factors.

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CONCLUSION

Average age of participants in the study was 36. As age increased, uncertainty and anxiety levels decreased. Individuals' COVID-19 fear and tolerance to uncertainty levels were at intermediate level. Women had higher fear levels in relation to COVID-19 as opposed to men. Findings of our study show similarities and differences to findings of other studies such as healthcare workers having lower fear and intolerance levels compared to individuals who are not healthcare workers.

It is crucial to determine the feelings, thoughts, and attitudes of individuals regarding the global COVID-19 pandemic. It is one of the imperatives of providing healthcare services to analyze all individuals', young and old, fears in relation to the pandemic, and in parallel, anxiety and tolerance levels. For fear and anxieties of individuals influence their process of adopting correct health behaviors. Use of appropriate masks, following social distancing and hygiene rules, and acquiring health behaviors in relation to these are imperative for one's protection against the pandemic. In light of the results of our study, we suggest that further studies need to be conducted in order to determine fear and anxieties of various segments of the society, such as special groups or individuals who have chronic decease or disability, so that they can adopt and sustain these behaviors. Likewise, we suggest age-appropriate trainings to be organized, in which coping techniques with the pandemic process will be taught, in order to increase tolerance levels.

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COVID-19 PANDEMIC FROM NURSING STUDENTS 'PERSPECTIVE: A QUALITATIVE STUDY

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ABSTRACT

Aim: The aim of this study is to examine the nursing students' perspective on COVID-19 pandemic.

Methods: This qualitative study was conducted with 22 nursing students. The data were collected through in-depth interviews with the "Semi-Structured Interview Form". The interviews were conducted as phone calls due to the isolation conditions. The interviews were analyzed using the thematic analysis method.

Findings: The main themes of the research; living with stress and fear, negativity in education, professional awareness. Subthemes of the theme of living with stress and fear; fear of getting sick/contagious, feeling stuck and economic concerns. Sub-themes of the theme of negativity in education; The negativities in distance education conditions were the fear of restriction / not being able to apply for courses and not reaching professional competence. The sub-themes of the occupational awareness theme; heroes who fought, an increase in social awareness, not seeing the value they deserve, and professional adoption. He stated that the students will feel inadequate when they start their professional life because they cannot take the practice lessons. The most striking issue for students in the public understanding of the working conditions of nurses and their importance in the health army.

Conclusion: It was observed that the professional awareness of the students increased with the pandemic. However, it is thought that making up the practical lessons of nursing students will enable them to start their professional life with more confidence.

Keywords: Coronavirus, Nursing Students, Nursing Education

INTRODUCTION

COVID-19 is a virus that spreads all over the world in a short time after emerging in Wuhan, China and causes severe pneumonia (1,2). Covid-19, which emerged in late 2019, was declared as a pandemic by the World Health Organization, as of March 11, 2020, with a total of 118 thousand people in 114 countries and causing 4,291 people to die (3). COVID-19 is the first case in Turkey that was seen on 10 March 2020 and then gradually increased the number of cases (4).

Due to the COVID-19 pandemic, problems began to occur in many areas. One of these areas was education. When the literature is examined, one of the first interventions made in order to manage the current situation in previous pandemics is the closure of schools (5). In the COVID-19 pandemic, schools were closed in many countries, as in previous pandemics (6–8).

Higher Education Council (YÖK) to slow the spread of the virus in Turkey, and education and training in order to reduce the victimization of universities in education and training as of March 16, 2020, has announced that given three weeks (9). Due to the uncertainty of the epidemic process, it was announced by YÖK on 26 March 2020 that there will be no face-to-face classes in the spring semester of the 2019-2020 academic year. So he came to the distance education agenda in Turkey (10).

In our country, distance education has emerged as an application that needs to be implemented quickly in order to manage the process effectively and to prevent students from suffering such as not being able to graduate and losing a semester. This practice, which is tried to be established and established quickly, is expected to have a deficit and negative impact (7,11,12). However, the effect of this situation on nursing students whose application areas are clinical will be different. For this reason, there is a need for studies that examine how the pandemic affects the lives of nursing students, their problems in the pandemic, and the effect of the pandemic on their professional perspective. The aim of this study is to examine the perspective of nursing

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students on the COVID-19 pandemic. The questions of the research determined in line with this general purpose were as follows:

- What are the nursing students' opinions on the COVID-19 pandemic?

- How has the COVID-19 pandemic affected the lives of nursing students?

- How has the COVID-19 pandemic affected the education and training process of nursing students?

- How has the COVID-19 pandemic affected nursing students' perspective on the nursing profession?

Methods

Study Design

This qualitative study was carried out in phenomenology design. The main purpose of the phenomenology design is to make individual experiences of a phenomenon an explanation of universal truth (13). The phenomenon addressed in this study was "the COVID-19 pandemic from the perspective of nursing students".

Participants

The research was carried out with the students of Zonguldak Bülent Ecevit University Faculty of Health Sciences, Department of Nursing. Criteria sampling method was used. When the participants started to focus on similar issues during the interviews, it stopped accepting participants. The research was conducted with 22 participants who met the participation criteria. The characteristics of the participants are presented in Table 1.

The criteria for participation in the research:

- Being a nursing student

- Volunteering to participate in research

Data Collection Process

Due to the isolation conditions, the data were collected by phone calls between November and December 2020. Telephone numbers of the students were obtained with written permission from the institution. The students were informed about the researcher's identity and the research (purpose of the research, confidentiality of the answers, where and how the data will be stored). Volunteerism was taken as a basis for participation. Interviews were recorded with the permission of the participants. The interviews lasted between 15-20 minutes.

The data were collected through the "Semi-Structured Interview Form". The Semi-Structured Interview Form includes open-ended questions about the COVID-19 pandemic and the events they experienced in this process and their professional perspectives. The questions in the form are as follows: (1) What do you think about the COVID-19 pandemic? (2) How has/is the COVID-19 pandemic affected/affecting your life? (3) How does the COVID-19 pandemic affect your education and training process? (4) How does the COVID-19 pandemic affect your perspective on the nursing profession?

Data Analysis

Colaizzi's phenomenological method was used in the analysis of the data (14). In this model, themes are extracted from direct interviews. The basic procedure is to collect similar data within the framework of certain concepts and themes and to organize and interpret them in a way that the reader can understand (13). Two researchers performed thematic processes for the analysis of the data. The themes obtained after the first theming process were reviewed by all researchers, and the final themes were prepared after additions and changes were made. Feedback was obtained from the students who were interviewed about the accuracy of the themes (15).

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Ethical Considerations

The decision of the ethics committee of the study was obtained from the Zonguldak Bülent Ecevit University Human Research Ethics Committee (Date: 24.11.2020, Decision number: 940), and written consents were obtained from the institution where the study was conducted. Data were collected on the basis of voluntary participation. Participants were informed about the purpose of the research and the confidentiality of all data. In accordance with the requirements of research ethics, students' names were coded without using them. The research was presented in accordance with the Standards for Reporting Qualitative Research (SRQR) checklist (16).

RESULTS

Tema 1. Stres ve korku ile yaşama

Öğrencilerin yarısı pandemi sürecinde kendilerine ve ailelerine COVID-19 bulaşmasından korktuklarını ifade etti. Özellikle kalabalık ortamlara girmek zorunda kaldıklarında stres yaşadıklarını belirttiler. Öğrencilerin bazılarının ifadeleri şu şekildeydi:

Theme 1. Living with stress and fear

Half of the students stated that they feared COVID-19 transmission to them and their families during the pandemic process. They stated that they experienced stress especially when they had to enter crowded environments. Some of the students' statements were as follows:

> *"I stress when I have to enter a crowded environment. I look for symptoms for a week, I'm afraid. "* (S5);

> *"I am very afraid of getting sick and infecting my family."* (S13);

> *"Even with a minor cold, I wonder if I have COVID-19."* (S18).

More than half of the students reported that they were caught in despair and uncertainty due to the constraints and uncertainties brought about by the pandemic. Some of the students' statements were as follows:

"There have been many uncertainties about my life. Whatever plans I made all went to waste. My worries and fears increased. " (S9);

"Since I was born in 2000, I was stuck on a curfew for a while. Being restricted at home made me feel bad. " (S15);

"We spend unproductively sitting at home when we can be most productive." (S16);

Some of the statements of the students were collected in economic concerns, one of the reasons for stress and fear caused by the pandemic. It was determined that the decrease and loss of income sources caused students to have financial difficulties. Some of the students' statements were as follows:

"Because my family does not have much income and I cannot find a job, we are experiencing financial difficulties." (S4);

"I was both studying and studying. I was laid off due to the pandemic. I had a more stressful life. We are experiencing financial difficulties. " (S10).

Theme 2. Disadvantages in Education

Eighteen of the students reported that they had problems attending classes and following up due to the negativity in distance education conditions. Some of the statements of the students were as follows:

"Crashes when I enter the system. I cannot get the quality education I want. " (S19);

"It is very difficult to focus and listen to the lesson in the digital environment. Problems arising from the Internet and the system are very common." (S20).

All of the students thought that the education they received was inefficient due to the limitation / not being able to give practical lessons. Some of the statements of the students were as follows:

"This process contributes less to my professional development. Nursing department classes should have been face to face. So we could learn more. " (S14);

"We cannot practice in the field for nearly a year. I think I forgot some applications in practice. " (S5).

Most of the students were 4th grade students (interns). Half of the students reported that they would feel inadequate in their professional life with the education they received in the pandemic, since they took most of the applied courses in their senior year. Some of the statements of the students were as follows:

"We were going to be interns last year and we would learn many things this year. Now one semester is gone and I think I will have difficulties when I start working at the hospital if the second semester schools are not opened. " (S4);

"The process is negative for students who need to practice. I think it will have bad results going forward. I hope we will not have trouble in our business life. " (S17);

"We were far away from the applications. How will I protect myself if I work in the same conditions in the future. I can hurt my family too. This scares me."(S19).

Theme 3. Professional awareness

Eleven students compared the nurses who served in the pandemic process to the soldiers fighting at the front. Students stated the duties of nurses as an example of heroism. Some of the statements of the students were as follows:

"My sister works in the nurse and pandemic ward. There were times when he didn't come home. They care for people we can't get close to. " (Ö3);

"This is like war. The fighting soldier gets stronger. Nurses are also fighting this process. When the pandemic is over, I think the nursing profession will get stronger and out of this process. " (S6);

"Nurses are an indispensable part of the health army." (Ö20).

Eighteen students reported that the image of nurses in society had changed and their duties and working conditions were emphasized. Some of the statements of the students were as follows:

"The pandemic made people see that the nursing profession is not just about injecting." (S1);

"Those who saw the nursing profession easily understood the importance and working conditions of the profession." (S16);

"Everyone understood how difficult nursing is. We saw how hard conditions they were working under. " (S22).

Eight students stated that although they think that nurses are glorified by the society, they actually do not see the value they deserve. They emphasized that improvements should be made especially in the personal rights of nurses. Some of the statements of the students were as follows:

"Nurses' leave and resignation rights have been taken away. Working hours have increased. This situation made the working conditions of nurses difficult. " (Ö7);

"There will be many diseases, including this pandemic, and we will be the fighters on the front line. I think the state should support more and bring our profession to the forefront. " (Ö12).

Seventeen students emphasized that their nurses understood their duties better with the pandemic and their love and respect increased. Some of the statements of the students were as follows:

*"I realized that our duty in the profession is more than we expected." (*Ö2);

"I understood better that nursing is a sacred profession. If I were born again, I would choose nursing. " (S11);

"I started nursing unwillingly. But with the pandemic, I got my love and respect for the profession. Fortunately, I chose this profession. " (Ö21).

DISCUSION

The aim of this study was to qualitatively examine the nursing students' perspective on the COVID-19 pandemic. The main themes of the research are; living with stress and fear, negativity in education, professional awareness. He stated that the students would feel inadequate when they started their professional life because they could not take the practice lessons. The most important issue that students draw attention is the understanding of the working conditions of nurses and their importance in the health army by the society.

The most emphasized issue by the students was the inadequate distance education infrastructure conditions of the university. For this reason, the students emphasized that many students have problems with internet access, they cannot follow their lessons and they cannot get efficiency from the lessons. Distance education was not new to many universities. However, the current situation demanded urgent planning and forced all schools. The fact that all students in the world access the internet at the same time has also challenged the previous infrastructure conditions and the distance education system has become troublesome (7). It is thought that it is important to develop other methods or find alternative methods instead of distance education (8).

Nursing students stated that the infection of family relatives negatively affected their psychology of the pandemic process. The statement of one of the students was (S13) *"I am very afraid of getting sick and infecting my family."* This is the most important concern brought about by the pandemic. The uncertainty of the process and self-protection anxiety make it difficult for students to focus on their lessons and students are affected psychologically (8,17,18).

The problem of most of the students was how the practice lessons would be. The statement of one of the students was (S14) *"We were going to be an internship last year and we would learn many things this year. Now one semester is gone and I think I will have difficulties when I start working at the hospital if the second semester schools are not opened."* Especially 4th grade students (interns), who took only practice lessons throughout the year, stated that they did not think it was enough to teach practice-based lessons at a distance. According to the "Press Release" made by YÖK on 26 March 2020, the theoretical parts of some applied courses together with the theoretical courses of universities could be conducted through distance education and make-up training could be done in summer education (10). However, due to the uncertainty of the process, it is not clear to do education in the summer term. This way of solution could affect their graduation. According to the final decision taken by YÖK on April 10, 2020 for senior students in nursing programs, "On the condition of being limited to the spring semester of the 2019-2020 academic year, internship / practice training; can be done by taking preventive measures in health units, as well as through distance education, simulation training, projects, case analysis, etc. It was reported that they could complement it with activities." (19). This decision was a solution to overcome the pandemic process with the least damage and not to victimize students. After vaccines are developed for the Covid-19 outbreak, the relevant curricula can be changed and / or updated (8).

Nursing students in the study reported that the image of nurses in society had changed and their duties and working conditions were emphasized. The statement of one of the students was (S1) "The pandemic enabled people to see that the nursing profession is not just about injecting." In addition to this situation, it was observed that the professional awareness of the students improved. The statement of one of the students was (S21) *I started nursing unwillingly. But with the pandemic, I got my love and respect for the profession. Fortunately, I chose this profession."*. With the COVID-19 pandemic, health and hospital resources are more urgently needed. The fact that many patients were infected in a very short time and especially the emergence of intensive care needs revealed the importance of the concept of "care", which is the main purpose of nursing (20,21). Nurses appear as the profession that fights on this issue at the forefront. The year 2020 was declared as the "Year of Nurses and Midwives" by WHO. Due to the Covid-19 pandemic, the nursing profession was on the world agenda just as it suits its year. For centuries, nurses had been trying to explain the importance, reason for existence and indispensability of their profession. Nurses demonstrated that they are a "Leading Voice in World Health" in 2020 (22).

CONCLUSION

The professional awareness of the students increased with the pandemic. In the COVID-19 pandemic, students of the nursing department are one of the groups with the most problems due to the fact that their internship and practical courses are carried out in clinics. During the pandemic process, it is recommended that the distance infrastructure systems of the universities are constantly updated for the theory courses and the applied courses should be repeated in an accelerated manner in the following terms. Nursing faculty members of the practical courses should develop new strategies covering the next semesters in line with the possibilities of their own schools. It is thought that making up the practical lessons of nursing students will enable them to start their professional life with more confidence.

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Table 1. Characteristics of the participants

Students	Age	Gender	Grade	COVID-19 transmission	COVID-19 transmission in family / Nearby
S1	21	Female	4	Yes	No
S2	21	Female	4	No	No
S3	18	Female	1	No	Yes
S4	21	Male	4	No	Yes
S5	21	Male	4	No	Yes
S6	21	Female	4	No	No
S7	22	Female	4	No	No
S8	22	Male	4	No	No
S9	23	Male	3	No	No
S10	23	Male	3	No	No
S11	21	Male	4	No	Yes
S12	23	Male	3	No	Yes
S13	22	Male	4	No	Yes
S14	21	Male	4	No	Yes
S15	20	Female	4	No	Yes
S16	22	Female	4	No	No
S17	22	Male	4	No	Yes
S18	22	Male	4	No	No
S19	21	Female	4	No	No
S20	21	Female	3	No	Yes
S21	21	Female	4	No	No
S22	21	Female	4	No	No

Table 2. The themes and subthemes

Themes	Living with stress and fear	Negativities in education	Professional awareness
Subthemes	Fear of getting sick / contagious	Negativities in distance education conditions	Fighting heroes
	Feeling stuck	Limitation / not being able to do applied courses	Increase in social awareness
	Economic concerns	Fear of not reaching professional competence	Not seeing the value it deserves
			Professional adoption

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Assessment of Technology-Based Patient-Physician Interviewing Skills During Covid-19 Pandemic: Interrater Consistency

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ABSTRACT

Purpose: The aim of this study is to test the inter-rater consistency of the exam in which patient-doctor interview skills are evaluated.

Methods: This methodological study was carried out in Izmir Katip Çelebi University Faculty of Medicine during the pandemic period. Patient scenarios were given to second year students to gain patient-physician interview skills. Students were asked to interview their relatives with a simulation suitable for the scenario and record the interview on video. Students watched their own videos, filled out the self-assessment form and uploaded their videos to the student information system. 19 trainers on duty watched these videos and examined the student's self-assessment forms and calculated the student's exam score. The researchers repeated the trainers 'procedures and recalculated the students' exam scores. The consistency between the exam scores given by the trainers and researchers was calculated.

Results: 190 videos and self-evaluation reports were analyzed in the study. The student exam score average calculated by the trainers and researchers is 83.94 ± 11.61, 78.22 ± 8.45, respectively. Student examination scores differ significantly according to the trainers (F: 15.785, p: 0.000). Student examination scores differ significantly between trainers and researchers (t: 7.450 p: 0.000).

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Conclusion: It has been determined that there is no consistency between trainers and researchers in calculating the students' exam scores. It is recommended to determine the source of the difference between researchers and trainers and to conduct qualitative studies to solve the problem.

Key Words: Patient-physician interview skills, inter-rater consistency, technology-based training, Clinical skills practices, Covid-19.

INTRODUCTION

The Covid-19 pandemic created a change in medical education all over the world, leading to the use of technology in a rapid and innovative manner in order to continue teaching and learning (1). Universities in all countries had to terminate face-to-face education, shut down their facilities, and move their courses to the online platforms (2–7). Because of the pandemic declared on March 11th in our country, face-to-face education has been suspended in all universities by the Council of Higher Education (CoHE) as of March 16th, 2020. It was decided that the education would be continued as online distance education (8). With the transition to distance education in our country and in the world, instructors at universities had to revise their examination and grading systems, and develop new strategies for motivating the students to make them more active (9). Covid-19 pandemic entailed the faculties to switch to the Emergency Remote Teaching (ERT) mode (9, 10).

The quality of the patient-physician interviewing skill depends on the skills of the physician such as medical history taking as well as basic and clinical communication skills. Patient-physician interviewing skill is one of the basic competencies of physicians (7). Within the physician-patient relationship, patient-centered communication leads to better clinical results, increase in patient satisfaction and improvement in perceived quality of healthcare (11). Simulated patients are the most common teaching method used in improving the communication skills of physicians (12–15). The simulations used in the training of healthcare professionals can be quite extensive and complex, ranging from a simple peer-to-peer role-playing technique in the classroom to standard patient simulations trained to simulate the real patient (16). With simulated patients, it is aimed for students to experience patient-physician meetings before meeting a real patient, and to improve their communication skills (16, 17).

It is observed that, the use of simulation technologies for teaching and evaluation in medical education has increased in the last decade. Adaptive simulations and personalized learning have become the innovative features of medical schools. In adaptive simulations, different methods

of personal feedback can be implemented depending on the development, self-assessment and score of the student. Due to the interactive nature and sense of mission, adaptive simulations enable learners to take further ownership of their learning experiences, and develop their knowledge and skills through active participation. Accordingly, they set a model for experiential learning through appropriate tasks and repetitive practice in a safe simulated environment. They can be adapted to the required skills and required learning content (18).

During the pandemic, the patient-physician interviewing skill, which is expected to be developed before graduation, has turned into remote facilitated simulation-based training (RF-SBT) in faculties with simulation laboratory infrastructure (19). Some faculties asked their students to make online interviews with the simulated patient using online platforms such as Microsoft Teams etc. (7). In studies on patient-physician interviewing skills, the dialogue between the two parties was observed to be mostly evaluated by direct observation methods. Interviews are evaluated in real time or by watching audio-video recordings. A structured evaluation form is used for ensuring that these evaluations are objective, and it is scored according to an assessment scale. All these methods are detailed and time consuming. Therefore, it is necessary to find methods of evaluation that require less resources. One of these methods could be asking the students to evaluate their own competencies regarding the patient-physician interviewing skills (20).

Due to the ongoing uncertainty during the pandemic, instructors training health professionals have had to comply with the rapidly changing conditions at all stages of education (21). The changes in the curriculum of the faculty of medicine during the crisis environment should be systematically investigated in terms of their reflections on the student outcomes. This kind of information would help the medical schools prepare for the next pandemic and crisis.

In the present study, it was aimed to determine the consistency between the raters in scoring the video recordings and self-assessment forms used to test the patient-physician interviewing skills of the second-year students at faculty of medicine during the Covid-19 pandemic.

METHODS

In this methodological study, second-year students of Izmir Katip Çelebi University, Faculty of Medicine, practiced their patient-physician interviewing skills face-to-face with their peers through structured scenarios using video recording in simulated outpatient clinic rooms, and attended self-assessment sessions by watching the video recordings within the scope of the

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Clinical Skills Course Practices (CSCP). Distance education started to be implemented due to the Covid-19 pandemic during the 2019-2020 academic year. For this reason, the assessment of the patient-physician interviewing skills could not be performed face-to-face as planned. The students were asked to make a video recording with a relative in line with the given patient scenarios, and upload them to the university information management system (UIMS). Students performed self-assessments by watching their own video recordings, and uploaded these self-assessments in writing to the UIMS together with the video recordings of the interviews. The 19 trainers, who were responsible for the CSCP, evaluated the students using the "Evaluation Form". The evaluation form consisted of two parts. The first part included the subtitles of medical history taking, physical examination, communication skills and general evaluation, which were scored over 80 points. In the second part, the content of the self-assessment form was calculated over 20 points. In the self-assessment form, students were evaluated in terms of assessing the patient-physician interview objectively, recognizing their weaknesses and strengths, and setting goals for themselves.

The researchers re-scored all scored videos and self-assessment forms using the evaluation form, and consistency was calculated according to the scores given by the trainers previously. Researchers were instructors, who completed their PhD in medical education and were employed in different institutions. One of the researchers was a family medicine specialist. Before starting the scoring, the researchers made a consensus on student scoring; therefore, the valid, reliable and consistent mean exam score was achieved. As a pilot study, the researchers scored 10 videos by watching them together. The mean of the exam scores graded by the three researchers was calculated, and it was determined as the exam score of the researcher.

In the evaluation of the data, measures of central tendency were used for descriptive data. One-Way Analysis of Variance (One-way ANOVA) was used to calculate the consistency between the instructors; and the t-test was performed to calculate the consistency between the instructors and the researchers. All statistical analyses were performed using SPSS v21 (IBM Corp., Armonk, NY, USA); and $p < 0.05$ was considered significant.

RESULTS

In the study, the patient-physician interviewing skills were evaluated by 19 trainers, 11 of whom were female (57.89%), within the scope of Clinical Skills Course Practices. Among the trainers, 10 were entitled as Dr. Faculty Member, 7 were associate professors, and 2 were professors. Of

the trainers, 6 were from the department of surgery (31.57%), 10 were from the department of internal medicine (52.63%), and 3 were from the department of basic science (15.78%).

Students uploaded 191 videos and self-assessment reports to the UIMS. Since one of the uploaded videos could not be viewed due to technical reasons, it was excluded from evaluation. Within the scope of the study, 190 videos and self-assessment reports were analyzed.

The mean scores given by the trainers and researchers for the patient-physician interviewing skill scores of the students were found to be 83.94 ± 11.61 and 78.22 ± 8.45, respectively.

The total evaluation scores of the trainers among themselves were found as minimum 61.3 and maximum 97. A significant difference was found between the scores (D: 15.785, p: 0.000). The total scores given by the trainers for the patient-physician interviewing skills are presented in Table 1 along with their comparison.

TABLE 1: Comparison of Trainers' Patient Physician Interview Skill Evaluation Total Scores

Trainers No	Mean	SD	F	p
1	61,3	8,88		
2	79,4	9,83		
3	86,5	9,73		
4	93,5	7,09		
5	77,4	13,99		
6	79,2	7,19		
7	89,1	5,09	15,785	0.000
8	67,44	10,83		
9	93,5	4,74		
10	90	6,67		
11	97	4,06		
12	81	11,26		
13	92,8	5,31		
14	83,6	4,38		
15	91,1	4,23		
16	79	5,85		
17	87	2,58		
18	91	6,15		
19	74,27	3,29		
p<0.005				

The total scores given by the trainers and the researchers for the subtitles of the evaluation form on the patient-physician interviewing skills are presented in Table 2 along with their comparison. In the comparison of the evaluation scores given by the trainers and researchers, a

difference was found between the total scores (t: 7.450 p: 0.000). In the comparison of the evaluation scores given by the trainers and the researchers for the subtitles of the evaluation form, a significant difference was found between the subtitles, except for the physical examination skills (t:6.519, p:0.000, t:-.976 p:0.331, t:3.655 p:0.000, t:4.435 p:0.000, t:5.891, respectively; p:0.000) (Table 2).

TABLE 2: Comparison of Trainers and Researchers' Evaluation Total Scores and Subtitle Scores

Evaluation Form	Mean	SD	t	p
Trainer Total Score - Total score*	5,716	10,575	7,450	0.000
Trainer medical history taking - medical history taking *	2,411	4,962	6,519	0.000
Trainer physical examination – physical examination*	-0,256	3,514	-0,976	0,331
Trainer Communication Skills - Communication Skills*	0,844	3,1	3,655	0.000
Trainer General Evaluation- General Evaluation*	0,667	2,017	4,435	0.000
Trainer Reflection- Reflection*	1,639	3,732	5,891	0.000
p<0.005 * Evaluations made by the researchers				

When total and subtitle scores given by the trainers for the patient-physician interviewing skills were compared according to the disciplines of the trainers, a significant difference was found between the departments of surgery, internal medicine and basic sciences (D: 23.246, p: 0.000; D: 14.869, p: 0.000; D: 18.221, p: 0.000; D: 3.199, p: 0.043; D: 7.566, p: 0.001; D: 5.328, p: 0.006, respectively). According to the Tukey's advanced HSD analysis, it was found that the difference originated from the department of basic sciences in the total evaluation and the subtitle of medical history taking (p: 0.000, p: 0.000), from the department of internal medicine in the subtitles of physical examination and general examination (p: 0.000, p: 0.044, p: 0.001), and from the departments of internal medicine and basic sciences in the subtitle of communication skills and self-assessment (p: 0.033, p: 0.005).

When the total evaluation scores given by the trainers for the patient-physician interviewing skills were compared according to their titles, no significant difference was found (D: 1.168, p: 0.313). When the subtitles of the evaluation form were compared according to the academic titles of the trainers, a significant difference was found in the subtitles except for the subtitle of physical examination (D:1.157, p:0.317; D: 7.130, p:0.001; D: 12.889, p:0.000; D: 5.087, p:0.007; D: 4.093, p:0.018). As a result of the Tukey's advanced HSD analysis, it was found that the difference originated from the trainers, whose academic titles were associate professor and professor in the subtitle of medical history taking (p: 0.001), from the trainers, whose

academic title was Dr. Faculty Member, in the subtitle of communication skills (p: 0.0018-0.000), from the trainers, whose academic titles were professors in the subtitle of general evaluation (p: 0.005, p: 0.042), and from the trainers, whose academic titles were associate Professors and professors in the self-assessment (p: 0.040).

DISCUSSION

In faculties of medicine, CSCPs were moved to the virtual environment similar to the various other courses because of the COVID-19 pandemic. The CSCPs were generally structured in the form of remote interviews with the simulated patients (2, 5). The literature has no content on remote patient-physician interviewing skills, which involve interviews with the relatives or peers of the students using a structured scenario.

The studies in the literature have shown that both real patients and simulated patients are suitable for facilitating the education of medical students on patient-physician interviewing skills (12-15, 22). There is no evidence that one patient type is superior to another in teaching patient-physician interviewing skills to undergraduate medical students (22). Based on this evidence, it was argued that the relatives and peers of the students could be used in learning the skill. The students were presented with structured scenarios, and they were asked to perform a patient-physician interview in accordance with the given scenario. The patient-physician interviewing skills of the students were scored using the "Evaluation Form" prepared and standardized by the, Clinical Skills Commission of Izmir Katip Celebi University, Faculty of Medicine. According to the results of the study, it was determined that the consistency between the trainers and researchers in patient-physician interviewing skill was low. It can be argued that the major reason for the low level of consistency is the e-mailing method used for informing the trainers about the evaluation methods and the stages of implementation. The face-to-face interviews, which used to be performed before the evaluation in the previous years, was not made due to the COVID-19 pandemic. It may be efficient to train the trainers on the subject matter in order to achieve consistent results in the evaluation scores of the trainers. Structuring of this evaluation form as an assessment scale would also increase the achievement of objective assessment results. It has been observed that the consistency between evaluators is higher in skills evaluated using individually graded assessment scales (23).

When the subtitles of the evaluation form were compared in terms of the evaluation scores given by the trainers and the researchers, a significant difference was found, except for the subtitle of physical examination skills. The reason why there was no difference in physical

examination skills was that the students were not expected to perform physical examination skills in the remote patient-physician interviewing skill practice, and the students were expected to inquire the overall vital signs via oral conversation. Accordingly, this subtitle could be evaluated more efficiently for both trainers and researchers.

In the study, no significant difference was found in the comparison of the total evaluation scores of the trainers for the patient-physician interviewing skills according to their academic titles, within the scope of CSCP. When the subtitles of the evaluation form were compared according to the academic titles of the trainers, a significant difference was found in the subtitles except for the subtitle of physical examination. It was determined that the difference in the subtitles of medical history taking, self-assessment and general evaluation originated from the trainers, whose academic titles were professors. In addition, the difference in the subtitle of communication skills was determined to originate from the trainers, whose academic titles were Dr. Faculty Member. This difference is believed to be due to the uneven distribution of the experiences and academic titles of the trainers. In addition, the leniency biasses of the evaluators may be another reason for the difference (24).

CONCLUSION

In order to ensure objective assessment, trainers should make a consensus, and use the evaluation form by determining minimum and maximum standards for each subtitle. Improvement Programs should be organized for the trainers in order to ensure standardization. This would increase the consistency among the trainers regarding the assessment of students.

It is recommended to assess the students with assessment scales in order to ensure consistency between the evaluators and to perform objective assessment. There is a need for an assessment and evaluation method, which is well-defined and allows objective scoring in different situations. In this context, there is a need for well-defined and graded assessment scales.

LIMITATIONS

The main limitation of this study is that its universe was made with only one university students and trainers.

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Vaccine Rejection in Covid-19 Pandemic

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Abstract

The serious consequences of the Covid-19 infection, which was considered a pandemic by the World Health Organization in early 2020, led to extraordinary measures to be taken worldwide. The purpose of these measures is to reduce the spread of Covid-19 and mitigate the impact of the epidemic on health systems. While planning these measures, care should be taken to minimize the increased risk of morbidity and mortality due to vaccine-preventable diseases as a result of the interruption of immunization services. Any disruption to immunization services could lead to outbreaks of preventable diseases.

Vaccines are an important part of healthcare systems around the world. Studies have proven that vaccination is extremely effective in preventing infectious diseases. The World Health Organization estimates that vaccines prevented 10 million deaths worldwide between 2010and2015. Especially in recent years, increasing vaccine rejection is among the ten biggest global health threats. It may cause vaccine-preventable disease-related deaths and an increased burden in healthcare systems already strained by the response to the Covid-19 outbreak. As a result of the increase in cases of parents refusing or delaying vaccinations, children have become more susceptible to having vaccine-preventable disease.

The aim of this review, which has been prepared nowadays when the fight against Covid-19 infection is increasing, is to draw attention to the rejection of vaccines and to present the recommended strategies and to make recommendations regarding the roles and responsibilities of health professionals in protecting and improving the health of the population in the light of these strategies.

Key words: Covid 19, Vaccine, Vaccine rejection, Pandemic

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INTRODUCTION

Vaccination is one of the most widely used applications in the world for the protection of our health and prevention of diseases (1). The report, jointly prepared by the World Health Organization (WHO), UNICEF and the World Bank, highlighted the remarkable achievements in vaccination over the past decade and outlined future challenges. This report notes that vaccines have saved billions of lives over the past century and are the cheapest way to control the spread of infectious diseases (2).

Vaccine refusal is defined as not accepting or delaying vaccination despite the fact that vaccination services are practiced at the community level (3). As the cases of vaccine rejection in the world have increased rapidly in recent years and reached dangerous levels; The World Health Organization included "anti-vaccination" at the top of the 10 global health problems it plans to resolve in 2019 (4). In our country, "anti-vaccination" movement has started for the last eight years. The cases of vaccine refusal, which were previously very few, have increased rapidly in 2015 with the win of a case on "obtaining parental consent for vaccination administration" and frequent media coverage of anti-vaccine rhetoric. The number of parents who do not want to have their children vaccinated; While it was 183 in 2011, 980 in 2013, 5 thousand 400 in 2015, 12 thousand in 2016, the number of cases related to vaccine rejection reached the level of twenty-three thousand as of 2018 (3, 5, 6).

Vaccination rate is 98 percent in Turkey in 2016, it declined to 96 percent in 2017. While measles was seen in 85 children in 2017 across the country, the number of measles cases reached 44 in the first three months of 2018. Thus, while the incidence of measles was 0.01 per hundred thousand populations in 2016, it has increased ten times today to 0.10 per hundred thousand (5).

Vaccine refusal can cause vaccine-preventable disease-related deaths and an increased burden in health systems already strained by the response to the Covid-19 outbreak (4,7,8). The World Health Organization and UNICEF have warned of an alarming decrease in the number of children with life-saving vaccines worldwide. This is due to the disruptions in the provision and reception of vaccination services due to the COVID-19 outbreak. According to new data from WHO and UNICEF, these disruptions threaten to reverse the hard-won progress to reach more children and adolescents with a wider range of vaccines, which is hampered by a ten-year cut coverage. Preventable deaths from children who miss routine vaccines may be much greater than COVID-19 itself (2,9).

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In addition, as a result of the increasing cases of parents who refuse or delay vaccines, children have become more susceptible to having vaccine-preventable disease (4,7,8).

The aim of this review, which has been prepared nowadays when the fight against Covid-19 infection is increasing, is to draw attention to the rejection of vaccines in the Covid-19 pandemic and to present the suggested strategies and to make recommendations regarding the roles and responsibilities of health professionals in protecting and improving the health of the society in the light of these strategies.

VACCINE AND IMPORTANCE OF VACCINE

A vaccine is a biological substance that provides immunity against a particular disease. Vaccines generally consist of toxins or surface proteins, similar to the microorganism that causes disease, containing a weakened or destroyed form of the microorganism. This substance stimulates the immune system of the body in case foreign microorganisms and the immune system meet again later, enabling the microorganism to be recognized, remembered and destroyed more easily (10, 11).

Vaccines can be grouped roughly as live-attenuated, inactivated and toxoid vaccines, depending on the characteristics of the antigen. In live-attenuated vaccines, the disease-causing properties of bacteria or viruses are removed, but the ability to create immunity and multiply in the body is preserved. Inactivated vaccines, on the other hand, are prepared by inactivating the reproductive ability of microorganisms by various chemical or physical means using all or part of the virus or bacteria (12). The toxin of the bacteria, the main pathogen of the disease, is used in toxoid vaccines. Exotoxin is obtained from the culture filtrate of bacteria (tetanus and diphtheria) (12,13). Apart from these types of vaccines, there are still vaccines that are being studied and started to be used recently. These are recombinant vector vaccines, synthetic peptide vaccines and DNA vaccines (12).

Purpose of vaccination; to protect against infectious disease with high risk of side effects, disability and death when caught, to provide immunity against that disease (social immunity) in people who are not vaccinated with high vaccination rates, to prevent epidemics, to eliminate and eradicate the disease. Thanks to vaccination, quality of life increases, productivity increases and health-related expenses decrease (14).

In order to get the most benefit from a vaccine, that vaccine should be made in accordance with the established standards and appropriate techniques should be used. The age of onset of the disease, the response of the child's immune system to the vaccine, the presence of antibodies transmitted from the mother, the side effects of the age-specific vaccine, and the

applicability of vaccination programs also play an important role in vaccine efficacy. If vaccination is administered before encountering the disease, it provides effective protection (14).

Turkey is the first mass vaccination program launched in 1981 that expanded immunization program against 5 diseases. This program was expanded to include a total of 18 doses of vaccine against 7 diseases in 2005 and 13 diseases in 2013. According to the vaccination schedule in our country, it is aimed to vaccinate all children against diphtheria, pertussis, tetanus, measles, tuberculosis, poliomyelitis, hepatitis B, rubella, mumps, pneumococcus and heamophilus influenza Type b infections, hepatitis A and chickenpox diseases free of charge (15, 16). WHO announced that our country was cleared of polio in 2002 and maternal and neonatal tetanus in 2009 thanks to the effective vaccination program. There is a significant decrease in the incidence of other diseases. Although the vaccination rate for only Measles increased, there was a slight increase in 2013, but this rate was reduced again with additional vaccination (15).

VACCİNE PREVENTABLE DİSEASES OF THE SİTUATİON IN TURKEY

The proportion of children around the world receiving vaccines recommended under global vaccination has remained the same for the past few years. In the report published by WHO, around 85% of babies (116 million babies) worldwide received 3 doses of diphtheria-tetanus-whooping cough (DTP3) vaccine during 2019, protecting them against infectious diseases that can cause serious illness and disability or be fatal. By 2019, 125 Member States had at least 90% coverage of the DTP3 vaccine (17).

The most up-to-date data that gives the status of vaccine-preventable diseases in our country is the 2020 global summary published by WHO on 15 July 2020 (17). This is in line with data from 1980 to 2019. Turkey can be prevented by vaccine by year the number of reported cases of the disease are given in Table 1. The number of measles cases, which decreased in 2016, started to rise again in 2017, and 2904 measles cases were reported in 2019 (Table 1).

According WHO-UNICEF of vaccine-preventable diseases in Turkey the vaccinations are shown in Table 2. In general, though vaccination rates in Turkey have risen steadily wave studies (17) (Table 2).

According to the Health Statistics Yearbook (2019), DTP3 and HepB3 vaccination rates were 98% in 2018; The Mmr vaccination rate, which was 96%, was 97%. Regarding the region, the region with the highest vaccination rates is the West Marmara region (18) (Table 3).

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WHAT DOES STOP VACCINATION LEAD?

In a country where vaccination is performed at the required level, it has been observed that the morbidity and mortality of the disease with effective vaccination has dropped dramatically (19). Because of the success of vaccines, diseases have not started to be seen, which has led to the thought that vaccines are unnecessary. The fact that people who are anti-vaccine try to spread the idea that infectious diseases are reduced not by vaccination but by modern hygiene practices does not change the facts (20).

Centers for Disease Control and Prevention on this subject, "What would happen if we stopped vaccinations?" published a report entitled (21). According to this report, diseases such as whooping cough, polio, measles, Haemophilus influenzae and rubella were seen in hundreds of thousands of infants, children and adults in the United States before the middle of the last century, and thousands died each year. With the development and widespread use of vaccines, the rates of these diseases have declined until today. Before the vaccine was found, almost everyone in the United States had measles and hundreds of people died each year. The rubella epidemic (German measles) that occurred in 1964-65 infected 12 million Americans, 2,000 babies died and 11,000 abortions were caused. However, since 2012, only 15 cases of rubella have been reported to the CDC. Also, before the vaccine was available, more than 15,000 Americans died of diphtheria in 1921, but only two cases of diphtheria were reported by the CDC between 2004 and 2014 (21).

It is also known that a disease thought to be under control can suddenly appear and spread. In 1974, 80% of children in Japan were administered pertussis vaccine, but the same year the number of whooping cough cases was 393, but no pertussis-related deaths were observed. When vaccination rates fall and only 10% of children are immunized; In 1979, more than 13,000 people were caught whooping cough and 41 people died. With the return to routine vaccination, the number of diseases has decreased again (19,22,23).

In 1921, 206,000 cases and 15,520 deaths were reported due to diphtheria, which was one of the most important causes of illness and death of children in the USA in the 1920s. With the production of the vaccine in 1923, the number of cases decreased to zero. Tetanus, which is often fatal, continues to be a major problem for newborns worldwide. 30,000 pregnant women and 300,000 newborns whose vaccination is not completed die of tetanus. If tetanus vaccination is stopped, everyone will be susceptible to this bacteria, which is common in the environment. It is a virus that has consequences from acute paralysis to death that causes permanent physical disability, and 20,000 cases of polio were reported each year in the US

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before the vaccine was found. Thanks to polio vaccination studies, polio disease has been eliminated in many parts of the world (19).

Worldwide, more than two billion people encounter hepatitis B virus (HBV) at some time in their lives and 350 million of them become lifelong carriers, and 1 million die each year from liver disease or liver cancer. Before infancy Hepatitis B vaccination, approximately 12,000 babies born from surrogate mothers every year in the USA and 33,000 children under 10 years of age and under without being born from surrogate mothers were infected with HBV. With routine hepatitis B vaccination studies, the estimated number of new infections, which reached 300,000 in the 1980s in the USA, fell below 50,000 in 2008 (19).

Before the Haemophilus influenza type B (Hib) vaccine was produced, an annual average of three million cases and 400,000 deaths were seen worldwide. In the USA, an average of 20,000 cases were reported annually in children under the age of five, more than half of them were meningitis cases. With the application of the first vaccine in infants in 1987, there was a 90% decrease in the disease frequency, and the incidence of Hib in the USA decreased by 99% (19).

VACCINE REJECTION AND HESITANCY

Although the proven benefits of vaccination are well known in recent years, the number of hesitancy and rejection of parents in childhood vaccines is increasing (24). Vaccine rejection is a movement that started to emerge in the middle of the 19th century and has continued to strengthen until today (25,26). According to the definition of the World Health Organization, "Vaccine hesitancy", a new term that has been used in this context; Although vaccine availability is possible, it means a delay in accepting the administration of some vaccines or not allowing some vaccines to be administered. "Vaccine rejection " is the case of not getting vaccinated with the will to refuse all vaccines (5).

World Health Organization; Upon the widespread use of the anti-vaccine movement, he founded the "Vaccine Hesitancy Working Group" in 2012 and continues his research in this area. With the rapid increase in vaccine rejection cases in our country in recent years, a web page named "asi.saglik.gov.tr" was created by the Ministry of Health, with the aim of providing accurate and healthy information about vaccines and creating social awareness (5,15).

REASONS FOR VACCINE REJECTION

There are many factors that influence parents to refuse vaccines. Reasons such as the presence of harmful substances in vaccines, concerns about the side effects of vaccines, the thought that vaccines may cause future diseases (autism, subacute sclerosing panencephalitis),

parents' disbelief in the benefits of vaccines, insufficient information about vaccines are among the factors that increase vaccine rejection (27, 28). In addition, negative news about vaccines in communication and media tools again increase vaccine rejection (29).

Factors affecting vaccine rejection;

1. Contextual Effects
   a. Communication and Media Tools
   b. Community Influential People and Anti-Vaccine / Supporter Lobbies
   c. Historical Effects
   d. Socio-Demographic Features
   e. Policies / Laws
   f. Geographical Barriers
   g. Pharmaceutical Industry
2. Individual and Group Effects
   a. Previous Vaccine Applications Experience
   b. Beliefs and Approaches Regarding Health and Preventive Practices
   c. Knowledge / Awareness
   d. Health System and Trust in Providers, Personal Experiences
   e. Risk / Benefit f. Social Norms
3. Vaccination and Vaccination Effects
   a. Risks / Benefits (Based on Scientific Evidence)
   b. Introduction of New Vaccines or New Formulations
   c. Method of Application
   d. Organization of Vaccine Programs / Mode of Transportation
   e. Access to Vaccine Resources
   f. Vaccination Schedule
   g. Cost
   h. The Role of Healthcare Professionals (12, 24, 29)

VACCINE REJECTION IN THE WORLD AND IN TURKEY

As the vaccination rates increase in the world, the number of case reports and death rates in preventable diseases decrease. Vaccination rates vary from country to country. While vaccination rates are around 70-80% in Afghanistan, Pakistan, Nigeria and India, it is generally over 90% in Europe and America. In countries with low vaccination rates, economic difficulties, wars, and difficulties in accessing vaccines are at the forefront (30). However,

according to the data of WHO, there was a 2-4% decrease in vaccination rates between 2012 and 2016 in Europe and several states of America, such as Colorado, where we think there are no economic, social and legal obstacles to vaccinate (15).

The rates of measles vaccination in Italy fell to 85% in 2015 and to 88% in Europe. According to 2017 data, the vaccination rate of diphtheria, tetanus, pertussis has dropped to 92% in Europe and 91% in America. While the rate of measles vaccination in the USA is 92% for the first dose, it is 54% for two doses of vaccine. In 2012, these values were stated to be over 95% for first dose vaccines. It is thought that the reason for this is vaccine rejection caused by anti-vaccine rhetoric. Unfortunately, the increasing vaccine instability and rejection caused measles and rubella outbreaks in the world (15).

Polio, known to be eradicated, was seen in two cases in 2015, one in Poland and one in Cyprus. In its report, ECDC drew attention to vaccine opposition and showed it as a danger (31).

Although it is known that about 95% of the overall vaccination rate in Turkey as of 2016, the rejection of the vaccine is becoming a growing health threat. Turkey, while in 2011 the number of families who refuse vaccines 183, 2013 913, 2015 and 5091 has increased to over 10,000 in 2016. If vaccine rejections continue with this acceleration in our country, it is estimated that the vaccination rate will decrease to 80% after about 5 years, so there will be a significant increase in the incidence of diseases that we see very little, and perhaps the cases we have eradicated will be seen again. That fluctuations in the number of cases reported in Turkey, the fact that the number of vaccine rejection still constitutes a small part of the society indicates that it is early for comment (15).

IMMUNIZATION AND VACCINE REJECTION IN COVID 19 PROCESS

The COVID-19 pandemic has emerged as a serious public health emergency, prompting a process to be addressed (33). In this process; Considering the risk that immunization services may be disrupted and an increase in vaccine-preventable diseases, measures have been taken in the world and in our country (34). The World Health Organization (WHO) recommends that all routine vaccines be administered as planned, even during a pandemic (35).

It is vital that vaccination services continue during the COVID-19 pandemic period. Vaccination services are an indispensable part of healthcare services and should be maintained without disruption in health institutions in accordance with COVID-19 pandemic period measures. Parents should keep track of their children's immunization status (33).

It has been reported by the World Health Organization that there are no known medical contraindications to vaccination of people with COVID-19. Republic of Turkey Ministry of Health proposes to Covidien-19 close contacts of cases and vaccination of children and adults who practices in the transition to communicate with family doctors (33).

Covid-19 is a new disease for which information is still being collected. However, based on experience with other infectious diseases, it is stated that vaccination against one disease does not weaken a person's immune response to another disease. There is no evidence that vaccination will increase the risk of infection with covid-19, or affect the course of the disease in an unintentionally vaccinated child during the asymptomatic phase or incubation period. In addition, continuing the routine vaccination of children during the covid-19 outbreak will protect them from vaccine-preventable diseases (35).

Interruption of immunization services, even for a short time, will put society and especially children at risk of vaccine-preventable diseases. By increasing the number of susceptible individuals in the community, it will compromise community immunity protection and increase the likelihood of local outbreaks. With such outbreaks, comorbid diseases and deaths can cause an increased burden on healthcare, strained by the response to the COVID-19 outbreak (35).

Mild symptoms such as fever and / or cough are not a contraindication to the vaccine. In accordance with normal procedures, the healthcare provider should make recommendations based on a risk-benefit assessment. It is important that people who test positive for COVID-19 remain isolated in line with national recommendations to ensure they do not infect others and contribute to the further spread of the virus. The normal vaccination schedule should be resumed as soon as possible after recovery. Systematic testing for COVID-19 prior to routine vaccination is currently not required or recommended. (35).

WHAT CAN BE DONE TO PREVENT VACCINE REJECTION?

Most vaccine-preventable diseases spread from person to person. If anyone in the community contracts an infectious disease, it can spread it to those who are not immune. However, because it is vaccinated, a person who is immune to a disease cannot catch this disease and cannot pass it on to others. The more people are vaccinated, the less opportunity there is for a disease to spread (21).

In a society where most people are not vaccinated, outbreaks can occur as a result of one or two cases of the disease. If vaccination rates at the national level fall to low levels, diseases could become as common as before vaccines (21). Your child's chances of contracting

measles, chickenpox or whooping cough can be quite low today. But vaccines are not just to protect ourselves or just for today. They also protect the people around us. If we stop vaccinations, we may soon find ourselves fighting the epidemic we thought we had destroyed decades ago.

The vaccine services, which have an important place in the protection of babies and children from diseases, have the responsibility of many people and institutions in the process from the construction phase to the implementation phase in achieving the desired goals (10,32).

Health professionals play educational, research, planning and implementing roles in vaccination services. In the process from planning these services to evaluating the results, healthcare professionals should know very well the content of the vaccine, storage conditions, side effects, benefits, diseases that may occur if the vaccine is not administered, the time of vaccination, the vaccine dose and application. However, the importance of vaccination should be explained individually and socially. (10,32).

In vaccination, maintaining the effectiveness of vaccines is another important issue. For effective vaccination; It is important that the vaccines comply with the cold chain rules, comply with the general principles during the vaccine administration, be aware of the vaccine contraindications and take measures against the side effects that may occur after the vaccination (10). Reaction after vaccination worries the family and may cause vaccine rejection. In this context, it is important to inform parents about the vaccine and its side effects by health professionals and to discuss the precautions in detail. In addition, families should be informed and warned about the risks that may occur if the vaccine cannot be administered (10).

Parents can refuse to vaccinate their baby / child for any reason. In this case, it is important that health professionals communicate effectively with parents. It is known that the frequency of vaccination increases after necessary and appropriate information. Healthcare professionals should support parents with initiatives such as determining the reasons for parents' rejection, taking time for families to share their concerns, providing more detailed information about the benefits of vaccines and possible post-vaccination side effects (27). Educating the public about immunization by healthcare professionals will significantly contribute to the prevention of infant / child deaths, prevention of many diseases, effective maintenance of vaccination and reduction of vaccine rejection.

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CONCLUSION

Vaccine rejection, which is spreading rapidly in our country and in the world, and not showing enough seriousness about infectious diseases may cause serious epidemics in the near future. It may cause recurrence of eradicated diseases such as polio, neonatal tetanus and diphtheria with high morbidity and mortality. Nowadays, when the fight against Covid-19 infection is increasing, it is important to draw attention to the rejection of vaccines in the Covid-19 pandemic and to present the recommended strategies and to make recommendations regarding the roles and responsibilities of health professionals in protecting and improving the health of the society in the light of these strategies.

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TABLES

Table 1. Number of reported cases (Turkey)

	2019	2018	2017	2016	2015	2000	1990	1980
Diphtheria	0	0	0	0	0	4	20	86
Japanese encephalitis	_	_	_	_	_	_	_	_
Measles	2'904	716	84	9	342	16'244	11'372	8'618
Mumps	476	464	419	544	322	_	_	_
Pertussis	60	207	85	22	322	510	454	1'520
Polio	0	0	0	0	0	0	24	182
Rubella ***	44	22	1	7	16	_	_	_
Rubella (CRS)	0	2	0	0	0	_	_	_
Tetanus (neonatal)	0	0	0	0	0	26	67	_
Tetanus (total)	18	_	25	16	8	38	123	48
Yellow fever	_	_	_	_	_	_	_	_

Available From: WHO vaccine-preventable diseases: monitoring system. 2020 global summary
https://apps.who.int/immunization_monitoring/globalsummary/countries?countrycriteria%5Bcountry%
5D%5B%5D=TUR

Table 2. WHO-UNICEF Immunization Percent in Turkey

	2019	2018	2017	2016	2015	2000	1990	1980
BCG	96	96	93	96	96	96	93	_
DTP1	99	99	98	99	98	92	94	67
DTP3	99	98	96	98	97	85	84	42
HepB3	99	98	96	98	97	71	_	_
HepB_BD	99	99	99	99	99	_	_	_
Hib3	99	98	96	98	97	_	_	_
IPV1	96	96	93	96	97	_	_	_
MCV1	97	96	96	98	97	87	78	27
MCV2	88	87	86	85	86	_	_	_
PCV3	97	97	96	98	97	_	_	_
Pol3	99	98	96	98	97	85	84	63
RCV1	97	96	96	98	97	_	_	_
RotaC	_	_	_	_	_	_	_	_

Available From: WHO vaccine-preventable diseases: monitoring system. 2020 global summary
https://apps.who.int/immunization_monitoring/globalsummary/countries?countrycriteria%5Bcountry%
5D%5B%5D=TUR

Table 3. Turkey Vaccination Rates in Health Statistics Yearbook (2019)

	DTP3	BCG	HepB3	Mmr
Istanbul	98	96	98	97
West Marmara	100	99	100	100
Aegean	100	98	100	99
Eastern Marmara	99	97	99	97
West Anatolia	99	96	99	96
Mediterranean	100	98	100	100
Middle Anatolia	96	94	96	97
West Black sea	97	95	97	95
East Black sea	97	95	97	96
Northeast Anatolia	93	92	93	89
Middle East Anatolia	91	90	91	89
Southeastern Anatolia	100	97	99	99
Turkey	**99**	**96**	**99**	**97**

Available from: Health Statistics Yearbook 2019. https://sbsgm.saglik.gov.tr/TR,73329/saglik-istatistikleri-yilligi-2019-haber-bulteni-yayimlanmistir.html

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Changing Graduate Exam Processes with the COVID-19 Pandemic

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Abstract

Purpose: COVID- 19 has led to school closure and educational disruptions. Face-to-face based educational system turn into online and hybrid-based education for the continuity of the education. In this study, the change on the number of face-to-face/ online/ hybrid graduate exams was evaluated at Dokuz Eylul University, Institute of Health Sciences before and during the pandemic period.

Methods: Thesis defense, doctoral qualification exams, committee meetings for the doctoral thesis are the main requirements of graduate education. Here, these requirements of total of 810 students of Institute of Health Sciences, were evaluated in terms of the way of their made as face-to-face, online or hybrid. All data was obtained from Dokuz Eylul University Institute of Health Sciences with the commission decisions.

Results: Before pandemic, all exams were made face-to-face. Online education has been initiated after the declaration of the pandemic, and during the pandemic period, doctoral thesis defense exams were made 44.4%, 48.52% and 7.4%; doctoral qualification exams were made 43.75%, 53.125% and 3.125% face-to-face, online and hybride, respectively. Thesis defense for master exams were made 39.3%, 60.7%; and committee meetings for the doctoral thesis were made 62.9%, 37.91% face-to-face and online respectively.

Conclusion: The rapid spread of the disease has different effects on educational processes. To overcome the danger of stopping learning, schools have adapted to the online education system. The online education process, which was not implemented at Dokuz Eylul University before the pandemic, started to become the main part of the education system during the pandemic period.

Keywords: COVID-19, pandemic, education system, online education

Introduction

The first Coronavirus disease 2019 (COVID-19) case was appeared in Wuhan, People's Republic of China. Afterward, the disease was seen all around the World [1]. The virus was called 2019-nCoV by World Health Organization (WHO) according to whole-genome. After whole-genome sequencing analysis for the identification of COVID-19 related virus, the clear similarities were determined between the new virus genome a severe acute respiratory syndrome (SARS) coronavirus (SARS-CoV) genome [2]. Thus, the new virus was determined the SARS-CoV-2 by the International Committee on Taxonomy of Viruses formally [3].

The COVID-19 outbreak has caused many adverse events to occur around the world. Many countries have taken different measures such as social distance and quarantine to control the spread of the virus. In a short time, the normal life that people used to live changed dramatically [4]. With these measures, many negative consequences emerged. Some of these consequences are the emergence of psychological problems, the closure of many workplaces, the increase in unemployment, and the economic crisis that will affect all countries of the World [5]. In addition to the negative consequences we have mentioned above, COVID-19 also caused disruption of the health services and continuing education system [6]. Traditional face-to-face training has been suspended to reduce the spread of COVID-19. This situation has been made to protect the health of students. However, education has been continued by using online communication platforms such as Zoom and Microsoft Teams to protect the education right's of students and to prevent them from breaking their relations with the school [7].

During this process, some education styles were appeared according to the availability of conditions. These styles face-to-face, online and hybrid [8]. Chin et al. stated in their study that hybrid and online education protects community safety and maximizes learning speed [9]. On the other hand, Sindiani et al. in the survey they conducted with Jordan Science and Technology University students, stated that students preferred the traditional face-to-face teaching method to the online teaching method [10].

On the other hand, not only the learning process was interrupted during the pandemic period, but also the exam processes, which are a part of the education system. Online platforms are also used in exam processes [11].

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The aim of this study is to evaluate the change trends in how the exams were conducted such as face-to-face, online and hybrid before and during the pandemic period at Dokuz Eylul University, Institute of Health Sciences.

Methods

In this evalution, the exams which were related to 810 graduate students were evaluated. 436 of these students continues their Master of Science (MSc), 374 of them continues their Doctor of Philosophy (PhD) education in the Dokuz Eylul Institute of Health Sciences programs. Thesis defense, doctoral qualification exams, committee meetings for the doctoral thesis are the main requirements of graduate education. Here, these requirements of total all students of Institute of Health Sciences were evaluated in terms of the way of their made as face-to-face, online or hybrid. Raw data have been provided from Dokuz Eylul University, Institute of Health Sciences with the commission decisions.

Results

Before the COVID-19 pandemic, all exams were held face-to-face at Dokuz Eylul University, Institute of Health Sciences. However, after the announcement of a pandemic by WHO, educational institutions found solutions for the continuity of education, and online education age was started. During the transition process, both face-to-face and online classes were held, and this was called as hybrid education. Required exams such as thesis defense, doctoral qualification exams, committee meetings for the doctoral thesis were also held in the same way. Here, the style of exams was evaluated in terms of the way of their made as face-to-face, online or hybrid. During the pandemic, 55.76% face-to-face, 43.12% online, and 1.12% hybrid exams have been made (Figure 1A). Among the graduate students, doctoral thesis defense exams were made 44.4%, 48.52% and 7.4%; doctoral qualification exams were made 43.75%, 53.125% and 3.125% face-to-face, online and hybride, respectively. master thesis defense exams were made 39.3%, 60.7%; and also, committe meettings for the doctoral thesis were made 62.9%, 37.91% face-to-face and online, respectively (Figure 1B).

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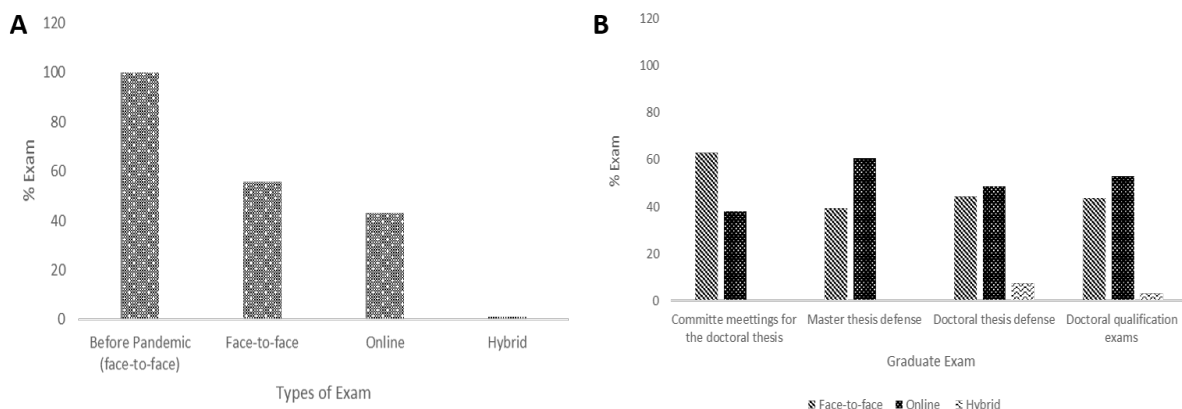
Figure 1. A) Exam types applied in Dokuz Eylul University, Institute of Health Sciences before and during the pandemic period. B) Types of exams held for graduate students during the pandemic period.

Conclusion

Higher education services should be expanded and made better quality due to the pandemic. Because education is one of the most important elements for the development of a country. It is a process that increases the production capacity of the political, social, economic, and scientific institutions of countries. To control the spread of COVID-19 pandemic, the examination processes applied in our institute, as well as all over the world, have been mostly online. Therefore, master and doctoral thesis defense exams, doctoral qualification exams, committee meetings for the doctoral thesis are held online in our institute. Besides, at the stages of assigning the jury members and submitting the exam results to the institute, the application for the exam is made by e-mail. This is a measure taken to prevent the spread of the epidemic. In addition to the exams in the student affairs procedure of our institute, all workflows in the procedure are carried out online as much as possible. Thus, via this application, it is aimed to reduce the transmission of COVID-19 infection risk to students, faculty members, and administrative staff.

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Turning crisis into opportunity with distance learning during Covid-19 Pandemic: The Collaboration of Muş Alparslan University and Akdeniz University in Introduction to Gerontology Class

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ABSTRACT

Purpose: Along with the Covid-19 Pandemic, distance education has brought many problems. However, it has also removed the geographical distances between the instutions and provided a new opportunities for cooperation.Gerontology undergraduate education, started with the admission of the first students in 2009 at Akdeniz University, continues today in four higher education institutions, Muş Alparslan University is the last institution that started Gerontology undergraduate education in the 2020-2021 academic year.

In the department, which accepted its first students, distance education during the Covid-19 pandemic process was seen as an opportunity, and it was decided to present the "Introduction to Gerontology" course with the joint participation of Prof. Dr. İsmail Tufan, the Founding Chair of the Department of Gerontology at Akdeniz University and Dr. Mehmet Efe, Founding Chair of the Muş Alparslan University Department of Gerontology.

The process of the courses conducted in cooperation and other activities that contribute to the education of the students were explained and it was aimed to share the views of the students of the Department of Gerontology, Faculty of Health Sciences, Muş Alparslan University.

Methods: An online questionnaire was applied to the students of Department of Gerontology, and their opinions about the Introduction to Gerontology course and other activities within the inter-institutional cooperation were asked.

Findings and Conclusion: Collaboration between the two educational institutions was ensured, and students received education in parallel with Akdeniz University students, and this education contributed to the increase in communication between the students of the two institutions.

Keywords: Distance learning, Gerontology, Collaboration

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Introduction

Along with the Covid-19 Pandemic, distance education has brought many problems in Turkey. Some of these problems are technical problems that occur during distance education, access problems caused by social inequality, and students' inability to find courses efficient (1,2,3,4). On the other hand, distance education has removed the geographical borders between institutions and provided a new opportunity for cooperation.

Gerontology in undergraduate education in Turkey is relatively new which started with the admission of the first students in Akdeniz University in 2009, continues today in four higher education institutions, 3 of which are state universities and 1 of which are private universities.

Muş Alparslan University Department of Gerontology, which started its Gerontology undergraduate education in the 2020-2021 academic year, has seen that distance education as an opportunity to start education activities during the Covid-19 pandemic process and taken a decision to conduct to Introduction to Gerontology Class with the joint participation of the founders of the both Departments in Muş Alparslan University and Akdeniz University, Dr. Mehmet Efe and Prof. İsmail Tufan. In addition, the students of Muş Alparslan University Department of Gerontology invited to the other online activities held in online platforms with the attendance of experienced gerontologists and scholars, and doctorate students planned by Akdeniz University Department of Gerontology. By this way, the students also had opportunity to learn new people and gain new knowledge regarding the field of Gerontology.

Gerontology Education in Turkey

The first Gerontology Department in was established by İsmail Tufan within Akdeniz University (5), accepted first students in 2009, and gave its first graduates in 2013 (6, 7). Today, the department continues teaching and researching activities with undergraduate, graduate and doctoral studies at Akdeniz University in addition, undergraduate education of Gerontology continues in Istanbul University Cerrahpaşa, Istanbul Gelişim University and Muş Alparslan University respectively.

Muş Alparslan University Department of Gerontology was established in 2018 and started its educational activities by accepting 52 students for the first time in the 2020-2021 academic year. However, with the distance education decision taken during the Covid-19 pandemic, the

first students of the department started their Gerontology education with distance education. In this study, the processes of the courses conducted in cooperation and other activities that contributed to the education of the students were explained and it was aimed to share the views of the students of the Muş Alparslan University Department of Gerontology.

Method

An online questionnaire was applied to the students of Muş Alparslan University Department of Gerontology, and their opinions about the Introduction to Gerontology Course and other activities within the inter-institutional cooperation were asked. The findings of the questionnaire, which includes open-ended questions, were coded with the Maxqda 2020 program. 40 students participated in the online survey on a voluntary basis.

Results

1.Difficulties Caused by the Distance Education Process

First of all, the students were asked what the difficulties of distance education during the pandemic process were. It was seen that the answers given were mainly related to internet problem and concentration.

Tablo 1: As a Gerontology student started education during the Pandemic, what are the difficulties of distance education for you?		
	N	%
Internet access and focusing the class	31	77,50
No difficulty	8	20,00
Couldn't attend to class because of work	1	2,50
TOTAL	40	100,00

While 8 of the students stated that there were no difficulties in distance education, only 1 student stated that they could not attend the classes because he was working.

2.Advantages of the Distance Education Process

Secondly, the students were asked what the advantages of the distance education during pandemic process were for them.

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Table 2: As a student who started Gerontology education during the pandemic process, what are the advantages of distance education for you in Gerontology education?		
	N	**%**
Prof. Dr. Learning from İsmail Tufan	25	62,50
Save time	4	10,00
I don't think it helps	4	10,00
Keeping course records	4	10,00
Being with our family	1	2,50
It is not costly	1	2,50
Being away from the virus	1	2,50
TOPLAM	**40**	**100,00**

As seen in Table 2, 25 out of 40 students indicated that being able to take lessons from Prof. Dr. İsmail Tufan is advantageous part of the distance education. In addition, it saves time, the opportunity to follow up the course videos later, being with the family, not being costly and being away from the virus are other advantages. Only 1 student stated that it is not beneficial.

3.Students' Thoughts Before Starting Gerontology Education

The students were asked what their views were before starting gerontology education. While 17 of the responses stated that they did not have knowledge about gerontology before the education, 10 of them stated that they had negative thoughts towards the elderly.

Table 3: What were your thoughts before starting Gerontology Education?		
	N	**%**
I had no knowledge	17	42,50
I had negative thoughts towards the older adults	10	25,00
Prejudice because it's a newly established department	7	17,50
I thought I would have an advantage	5	12,50
I had worries about the difficulty of the courses	1	2,50
TOTAL	**40**	**100,00**

It has been observed that some students had prejudices about the department since it is a newly established department. In addition, 5 students stated that they think studying gerontology is advantageous, and 1 of them stated that they are worried about the difficulty of the education they will receive and their ability to succeed.

4.The Effects of the Introduction to Gerontology Class

It was asked whether the Introduction to Gerontology course, which was carried out in cooperation during the pandemic process, caused any change in the students' views on Gerontology education.

Tablo 4: Gerontoloji'ye Giriş dersi gerontoloji eğitimine yönelik düşünceleriniz üzerinde etkili oldu mu? Olduysa nasıl?		
	N	**%**
I understood better what gerontology means	13	32,50
I learned how to approach the elderly	9	22,50
My perspective on old age has changed	9	22,50
I realized what a right decision I made	6	15,00
Did not	3	7,50
TOTAL	40	100,00

13 of the students who responded stated that they understood better what gerontology meant. Another effect is the change in perspective towards aging and old age. 9 students stated that they learned how to approach the elderly and 9 students stated that their perspective towards old age has changed. There are 6 students who stated that they realized it was the right decision to study gerontology during the lessons. Only 3 students stated that it had no effect.

"S1: I did not have any information before taking gerontology course in this department. That's why I had a lot of hesitation about the department. I always thought about what kind of part would it benefit me. I had a prejudice against the department. But when I entered the class, all my prejudices disappeared. "

5.Evaluations of Introduction to Gerontology Course

Finally, they were asked how they evaluated the Introduction to Gerontology course in cooperation.

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Table 5: How do you evaluate collaboration in Introduction to Gerontology class? Share your views.		
	N	**%**
Passing very productive	9	22,50
It goes well / I am very satisfied	7	17,50
I believe it's doubly useful	7	17,50
I think it's a perfect opportunity	6	15,00
It was very useful to listen to gerontology from its founder.	5	12,50
It was very useful to me in information and interpretation	2	5,00
Best thing to do in distance education	1	2,50
I am so thankful	1	2,50
I thought they couldn't do it, I realized I was wrong	1	2,50
I have no idea because I couldnt't attend	1	2,50
TOTAL	**40**	**100,00**

It was observed that the students mostly (39 people) gave positive opinions about the course. Only one student stated that he had no idea because he could not attend the lessons.

Some students expressed their opinion as follows:

"S3: This way of teaching is very good and useful. Because those who study in this field at other universities do not have the luxury of knowing our teacher İsmail Tufan. I feel very lucky to learn, meet and benefit from their knowledge, even with online way and during the pandemic"

"S10: I is best thing to do in distance education. What could be better than those who contributed to the department and its opening to spare time for us?

Conclusion

In this process, cooperation between the two educational institutions was ensured, and students received education in parallel with Akdeniz University students, and this education contributed to the increase in communication between the students of the two institutions. Co-education model in distance learning is not new and variety of studies show its efficiacy (8,

9). Therefore, the collaborative teaching method not only during the Pandemic, but in the next period can be used as a way to strengthen collaboration and connection.

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Comparison of Distance Education (Synchronous and Asynchronous) to Face-to-Face Education in Dentistry during COVID-19

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Abstract

Aim: This study aimed to compare synchronous and asynchronous distance education to face to face education during Covid-19 and examine the effects of this pandemic on dentistry students.

Method: A total of 354 dentistry students, 141 (39.8%) male and 213 (60.2%) female, participated in the survey. Comparison of distance education with face-to-face education was asked to the students in terms of factors such as productivity, concentration, attendance, interactive relationship with the educator during a class, access to the educator after a class, repeatability of information that is not understood, social relationship, lecturing performance of educators, effectiveness of practical courses, theoretical examination practices, practical examination practices, effective usage of time, equality of opportunities and examination justice.

Results: Face to face education was found significantly superior to distance education (p<0.05) in all other factors, except for the effective usage of time (p=0.952). Synchronous education was found significantly superior to asynchronous education in terms of interactive relationship with the educator during a class, access to the educator after a class, repeatability of information that is not understood, social relationships and lecturing performance of educators (p<0.05). Asynchronous education was found superior to synchronous education only in terms of theoretical examination practices (p=0.041).

Conclusion: Distance education methods that find more usage areas at schools of other disciplines with developing technology should be developed for schools of dentistry in whose curricula applied courses are dominant and included in education and instruction.

Keywords: Covid-19, Distance education, Face-to-face education

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Introduction

Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, which first appeared in Wuhan, has spread all over the world and has been declared as a pandemic by the World Health Organization. This pandemic that has entered our lives has changed all our social, economic and educational practices. All university hospitals imposed restrictions such as not being able to perform non-emergency treatments to avoid the impact of this pandemic (1).

In China, the first location of the pandemic, it was suggested to stop education for a while during the pandemic in Wuhan University, Stomatology School and Hospital, and to continue the education as distance education after the Chinese Spring Festival (2, 3).In the United States, with the increase of COVID-19 cases, most dentistry schools have suspended clinical activities outside of emergencies, and theoretical courses have been given by distance education atsome schools in the preclinical simulation laboratory (4). Similarly, this process continues in Turkey mostly in the form of distance learning.

With the emergence of the first COVID-19 case on 11 March 2020, Turkey has taken extensive measures, in addition to the measures all over the world. One of these measures was the transition to distance education athigher education institutions. Accordingly,in the process of this pandemic, nearly all universities in Turkey are continuing their education in the form of distance learning. To our knowledge, no study was performed regarding the dentristy education system in Turkey during the COVID-19 pandemic. This study aimed to compare synchronousand asynchronous distance education to face to face education and examine the effects of this pandemic on dentistry students.

Method and Methods

Ethical approval was obtained from the ethics committee at Sutcu Imam University in Turkey (approval no: 2020-157). The sample size was calculated using the Raosoft Web Survey Software (http://www.raosoft.com/samplesize.html). In a 90% confidence interval, with 5% alpha error and a population of 9790 (number of dentistry students in Turkey according to the statistical data of YOK), it was calculated that 264 participants were required (5). The study was conducted between April 2020 and May 2020 with questionnaires delivered to Turkish dentistry students over the internet.

The first part of the questionnaire asked questions on the demographic characteristics of the participants such as their age, gender, year of study and type of the university of their enrollment. The second part of the

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questionnaire how the education at their universities was going on after the emergence of COVID-19. They were asked to assign a score of 1-5 for face to face education and distance education in terms of productivity, concentration, attendance, interactive relationship with the educator during a class, access to the educator after a class, repeatability of information that is not understood, social relationship, lecturing performance of educators, effectiveness of practical courses, theoretical examination practices, practical examination practices, effective usage of time, equality of opportunities and examination justice. Additionally, how much this process affected their psychologies, whether or not the infrastructure at their university was adequate and how much theoretical and practical courses were affected by this process were asked of the participants for a rating on a scale of 1-5. In the third part, they were asked which type of education method they would prefer from among theoretical or practical face to face, synchronous and asynchronous methods after the pandemic.

The Jamovi (Version 1.0.4) [ComputerSoftware] (accessed by https://www.jamovi.org) program was used for the statistical analysis. The normality of data distribution was checked using Shapiro-Wilk test. Kruskal-Wallis Statistical Analysis was conducted due to the ordinal variables and data not being normally distributed. Chi-squared test was conducted to compare the categorical variables to each other. The statistical significance was set at $\alpha = 0.05$.

Results

The questions in the questionnaire were sent to the students of all dentistry schools in Turkey. In total, 354 dentistry students including 141 (39.8%) male and 213 (60.2%) female students participated in the questionnaire. While 335 of the participants (94.6%) were students at state universities, 19 (5.4%) were students at private universities. Respectively 106 (29.9%), 106 (29.9%), 48 (13.6%), 38 (10.7%) and 56 (15.8%) individuals were enrolled for the first, second, third, fourth and fifth years of their study. While the vast majority of the participants (98.6%) stated that they were receiving distance education, a very small proportion (0.6%) said face to face education was going on. Table 1 shows the detailed demographic characteristics of the participants.

While the students studying at private universities stated that the infrastructure of their universities in terms of distance education was significantly better than those studying at public universities (p<0.001), there was no significant difference in terms of gender or class year (p>0.05). The women stated that their psychologies were affected more in this process more frequently than the men (p=0.003). There was no significant difference in psychology affectedness based on university types (p=0.816). On the other hand, there was a significant difference

in psychology affectedness based on class years (p=0.039), where the second-year students were affected more, while the third-year students were affected less. While the women stated more frequently that theoretical education was affected from the pandemic process than men (p=0.02), there was no significant difference between the university types (p=0.778). However, there was a significant difference among the class years (p=0.013), and while the first-year students stated that theoretical education was affected more, the fifth-year students stated that if was affected less. While the women stated more frequently that practical education was affected from the pandemic process than men(p<0.001), there was no significant difference between the university type and among the class years (p>0.05) (Table 2).

Face to face education was found significantly superior to distance education in terms of productivity, concentration, attendance, interactive relationship with the educator during a class, access to the educator after a class, repeatability of information that is not understood, social relationships, lecturing performance of educators, effectiveness of practical courses, theoretical examination practices, practical examination practices, equality of opportunities and examination justice (p<0.001). There was no significant difference only in terms of effective usage of time (p=0.952) (Figure 1).

Synchronous education was found to be significantly superior to asynchronous education in terms of interactive relationship with the educator during a class, access to the educator after a class, repeatability of information that is not understood, social relationships and lecturing performance of educators (p<0.05). Asynchronous education was found superior to synchronous education only in terms of theoretical examination practices (p=0.041). There was no significant difference in terms of the remaining factors (p>0.05) (Figure 2).

While 59% of the participants stated that they preferred theoretical education to continue as face to face after the pandemic process ends, respectively 21.4% and 19.7% stated they preferred asynchronous and synchronous continuation of education. While the women significantly more frequently preferred face to face education than the men (p=0.017), there was no significant difference based on university type (p=0.369). The first-year students significantly more frequently preferred face to face education, whereas the fifth-year students significantly less frequently preferred face to face education than the other class years (p=0.046) (Table 3).

While 82.1% of the participants stated they preferred practical education to continue face as face to face after the pandemic process ends,respectively 11.4% and 6.6% stated that they preferred asynchronous and synchronous continuation of education. While the women significantly more frequently preferred face to face

education than the men (p=0.016), there was no significant difference based on university type (p=0.481). The first-year students significantly more frequently preferred face to face education, whereas the fourth-year students significantly less frequently preferred face to face education than the other class years (p=0.009) (Table 4).

Discussion

With developments in technology in recent years, innovations have also occurred in education, and concepts such as electronic learning or distance education entered our lives (6). Studies have shown that distance education is as effective as conventional education in obtaining knowledge and skills (7-9). Distance education is mainly carried out in the form of synchronous and asynchronous education(10). Synchronous education is in the form of the gathering of the student and the educator at the same time from different locations. The asynchronous way of education is a method that allows students to login to an e-learning platform at any time, download documents and send messages to educators and their peers (11).

According to our study, among the dentistry students who participated, 99.4% stated that transition to distance education was made at their universities, including synchronous education by 62.1% and asynchronous education by 37.9%. In the study by Mahmoodi et al. (24) towards establishing a catalogue for online continuation of medicine and dentistry curricula, while only 50% of students supported online education, 90% thought internet-based e-learning should be continuously developed. In the study byPilcher (25), 96% of the dentistry students who participated in the study stated that online materials were useful for them, 54% preferred online materials in addition to conventional classes, and 28% recommended replacement of conventional learning with e-learning. There results were in parallel with the findings of this study. Furthermore, Mirkarimi et al. (26) reported that both video-recorded and live implementations were equally effective, and they could be used in combination or as alternatives of each other in teaching how to apply fissure filler paste. In recent studies on online education in dentistry, dentistry students have preferred a combination of conventional learning and e-learning. Additionally, usage of YouTube in applied classes was found useful(27). In our study, it was stated that face to face education is more advantageous than distance education in many aspects, and among distance education methods, synchronous education is more useful.

The participants of our study stated that synchronous education was superior to asynchronous education in terms of interactive relationship with the educator during a class, access to the educator after a class, repeatability of information that is not understood, social relationships and lecturing performance of educators. In the literature,

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in parallel with our study, it was stated that students are more psychologically stimulated and motivated in synchronous education, and this way of communication resembles face to face education more. However, it was stated that students may feel lonely in asynchronous education(10). In the study by Moridani (12) on pharmacy students, in similarity to our study, the participants were less satisfied with asynchronously provided classes due to limited interaction with the educator. Kunin et al. (13) reported that dentists receiving postgraduate education preferred the face to face and asynchronous forms over the synchronous formin terms of the effectiveness and clarity of presentations. Nevertheless, it was stated that the face to face form is much more beneficial in terms of student-instructor and student-student interaction.

In our study, the women stated that they were more affected by the pandemic process than the men. Liu et al. (14) also reported that acute psychological disorders in China after the pandemic were more frequent in women than men. Soni et al. explained the basis of defenselessness against psychological disorders in women by the changes in sensitivity against emotional stimulants at certain stages in the menstrual cycle with the reason of changes in the ovary hormone levels (15). These findings supported the results in our study.

The participants of our study stated that face to face education has advantages in several respects, and most preferred face to face education to continue in both theoretical and practical courses after the pandemic. It was also found that the first-year students preferred face to face education significantly more than the fourth-year and fifth-year students.Beqiri et al. (16) found that postgraduate students were more satisfied with online classes than undergraduate students, and there was a relationship between education levels and student satisfaction. As opposed to this, Robles (17) determined no significant relationship between educational levels and student satisfaction levels. Considering this perspective, there is a need for more studies investigating the relationship between academic levels and student satisfaction in distance education.

In our study, the women preferred face to face education over online education more than the men in terms of both theoretical and practical courses. Considering articles discussing gender differences in e-learning, it has usually been stated that male students are more willing than female students to use and learn about computers(18, 19). In similarity to our study, Ong et al. also found that the e-learning perceptions of male students were more positive than those of female students(20).

Student satisfaction in distance education is affected by several factors such as self-efficacy in internet usage, peer and educator interactions, self-learning capacity and education level. As opposed to the case of

conventional learning environments, distance education requires students to feel confidence in performing actions related to the internet and be willing and eager to manage their learning processes themselves. Students with a low level of confidence in internet usage might be less involved in learning activities, may have fewer opportunities in terms of interacting with the educator or their peers, and thus, they are not satisfied with online learning(21). We believe, in this study, too, the views of the students on distance education might have been affected by these factors.

A meta-analysis conducted by Machtmes et al. (22) showed through nineteen studies that there is little difference between the two methods. This study provided evidence that distance learning provides academic development as much as conventional learning environments. In the questionnaire study by Hillenburg et al. on first-year medical school students, in similarity to our study, many students did not agree with the idea that e-learning may replace conventional instruction methods(23).

Conclusion

The pandemic process has shown us that schools of dentistry should be prepared for emergencies such as pandemics. Distance education methods that find more usage areas at schools of other disciplines with developing technology should be developed for schools of dentistry in whose curricula applied courses are dominant and included in education and instruction. Therefore, more investment should be made on distance education systems by universities.

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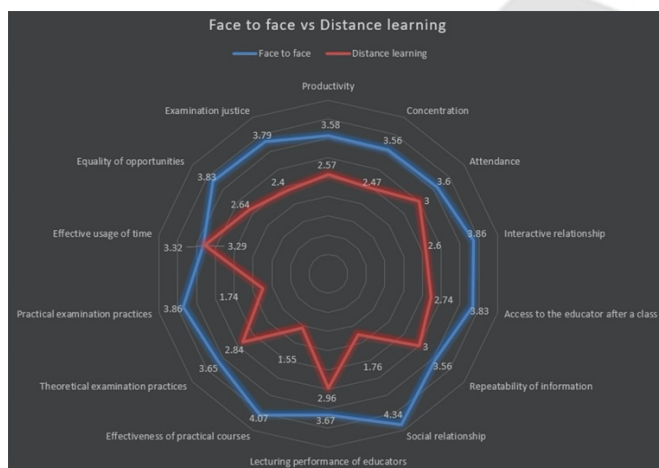
Fig 1. Comparison of face-to-face education and distance education in terms of various factors.
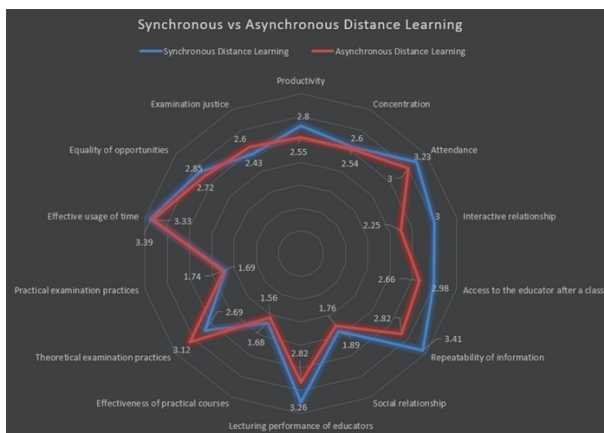
Fig 2. Comparison of synchronous and asynchronous education in terms of various factors.

Table 1. Demographic features of participants (n=354)

Demographic Features	Levels	Counts	% of Total
Gender	Male	141	39.8 %
	Female	213	60.2 %
University Type	State	335	94.6 %
	Private	19	5.4 %
Grade	First grade	106	29.9 %
	Second grade	106	29.9 %
	Third grade	48	13.6 %
	Fourth grade	38	10.7 %
	Fifth grade	56	15.8 %
Education type	Face to face education	2	0.6 %
	Synchronous Distance Learning	87	24.6 %
	Asynchronous Distance Learning	132	37.3 %
	Both synchronized and asynchronous	130	36.7 %
	Discontinued	3	0.8 %
Total		354	100%

Table 2. Statistical evaluation of questions regarding the distance education and pandemic process in terms of demographic attitudes

Quest ions	Gender			University Type			Grade					
	Male	Female	p-value	State	Private	p-value	First	Second	Third	Fourth	Fifth	p-value
Q1	2.71± 1.25	2.91± 1.32	0.132	2.76± 1.27	4.11± 1.10	<0.001*	2.58± 1.26	2.88± 1.35	3.06± 1.28	3.08± 1.16	2.86± 1.31	0.117
Q2	3.53± 1.33	3.96± 1.12	0.003*	3.79± 1.23	3.79± 1.08	0.816	3.72± 1.18	4.03± 1.15	3.42± 1.23	3.86± 1.13	3.73± 1.42	0.039*
Q3	2.92± 1.49	3.30± 1.33	0.02*	3.14± 1.40	3.21± 1.55	0.778	3.43± 1.39	3.21± 1.36	3.10± 1.34	3.00± 1.37	2.63± 1.47	0.013*
Q4	4.18± 1.31	4.62± 0.93	<0.001*	4.43± 1.13	4.74± 0.93	0.124	4.42± 1.13	4.45± 1.13	4.60± 0.98	4.38± 1.23	4.38± 1.12	0.599

Q1: How sufficient is the infrastructure of your university for distance education?, Q2: How much has this process affected your psychology?, Q3: How much do you think the pandemic process hinders the theoretical training?, Q4: How much do you think the pandemic process hinders the practical training?

Table 3. Statistical evaluation of the question of "How would you like your theoretical lessons to continue after the pandemic is over?" in terms of demographic attitudes

Type of Education		Gender				University Type				Grade						
		Male	Female	Total	p-value	State	Private	Total	p-value	First	Second	Third	Fourth	Fifth	Total	p-value
Face to face	% within row	33.8 %	66.2 %	100.0 %		93.2 %	6.8 %	100.0 %		35.3 %	28.0 %	15.5 %	10.6 %	10.6 %	100.0 %	
	% within column	50.4 %	64.6 %	59.0 %		58.1 %	73.7 %	59.0 %		68.9 %	55.8 %	66.7 %	59.5 %	39.3 %	59.0 %	
	% of total	19.9 %	39.0 %	59.0 %		55.0 %	4.0 %	59.0 %		20.8 %	16.5 %	9.1 %	6.3 %	6.3 %	59.0 %	
Asynchronous distance education	% within row	52.0 %	48.0 %	100.0 %		97.3 %	2.7 %	100.0 %		20.0 %	33.3 %	10.7 %	10.7 %	25.3 %	100.0 %	
	% within column	28.1 %	17.0 %	21.4 %	0.017	22.0 %	10.5 %	21.4 %	0.369	14.2 %	24.0 %	16.7 %	21.6 %	33.9 %	21.4 %	0.046
	% of total	11.1 %	10.3 %	21.4 %		20.8 %	0.6 %	21.4 %		4.3 %	7.1 %	2.3 %	2.3 %	5.4 %	21.4 %	
Synchronized distance education	% within row	43.5 %	56.5 %	100.0 %		95.7 %	4.3 %	100.0 %		26.1 %	30.4 %	11.6 %	10.1 %	21.7 %	100.0 %	
	% within column	21.6 %	18.4 %	19.7 %		19.9 %	15.8 %	19.7 %		17.0 %	20.2 %	16.7 %	18.9 %	26.8 %	19.7 %	
	% of total	8.5 %	11.1 %	19.7 %		18.8 %	0.9 %	19.7 %		5.1 %	6.0 %	2.3 %	2.0 %	4.3 %	19.7 %	

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Reflections of the COVID-19 Pandemic on Nursing Education: Challenges and Opportunities

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ABSTRACT

The COVID-19 pandemic has changed all the balances and created unprecedented difficulties in nursing education, as in many areas in the world and in our country. In our country, distance education, although previously in some departments, has emerged as an application that has been implemented quickly in order to manage the pandemic process effectively and to overcome the crisis without students being victims. Nursing students, whose face-to-face education environments and practical clinical training were restricted with the interruption of education at schools, experienced great surprise and anxiety. This mandatory change has been challenging for nursing students as well as teaching staff. During the compulsory distance education period, nursing lecturers had to digitalize face-to-face lessons, conceptualize them, offer alternative clinical experiences, and redefine how student performance should be evaluated.

However, this process, in which we are all natural participants, besides its difficulties, offered us opportunities to experience new learning methods to change the current situation. Although there have been some difficulties in the adaptation process to compulsory distance nursing education, nursing educators should see this difficult period as an opportunity to review nursing education and update the educational methods whose validity is discussed. In this context, the difficulties and experiences in the distance education process should be shared, solutions should be offered to the problems experienced, and a new teaching strategy model should be planned for nursing education.

Keywords: COVID-19, nursing, distance education.

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The new coronavirus disease (COVID-19) was first seen in a group of patients who developed respiratory symptoms (fever, cough, shortness of breath) in Wuhan, China's Hubei Province in December 2019 and was identified on January 13, 2020 (1). COVID-19 spread rapidly all over the world and was declared a pandemic by the World Health Organization on March 11, 2020 (2). In our country, with the Ministry of Health's announcement that the first case was seen on March 11, 2020, a series of measures were taken, in order to reduce the physical contact of students and prevent the spread of the virus, training centers were closed, face-to-face education was suspended and distance education was initiated (3,4).

Distance education is defined as the sum of learning activities performed by ensuring interaction and communication between learners, trainers and learning resources in different places and times through information and communication technologies. As an innovative education system, distance education is based on the learner's own responsibility to learn and aims not to impose preconditions and restrictions on access to learning environments (5). In our country, distance education has previously appeared in some departments, but in fact, it has emerged as an application that is quickly implemented in order to manage the pandemic process effectively and to overcome the crisis without students being victimized (6).

The immediate interruption of face-to-face education has changed all balances in nursing education, as in all disciplines. Nursing students, whose face-to-face education environments and practical clinical training were limited, experienced great surprise and anxiety; they faced many problems in the distance education process (7).

Some of these problems are:

- ✓ Problems arising from infrastructure,
- ✓ Problems with owning electronic devices,
- ✓ Problems related to usage time and quality (problems to be encountered due to sharing of these among family members even if they have electronic devices),
- ✓ Problems with having an internet connection,
- ✓ Problems students experience while attending classes due to their individual problems (having to work, family problems, etc.),
- ✓ It can be listed as the problems experienced due to the inability to perform clinical applications (8,9,10).

This forced change caused by the COVID-19 pandemic has been challenging for nursing students as well as for teaching staff. During the compulsory distance education period, nursing lecturers had to digitize face-to-face lessons, conceptualize them, offer alternative clinical experiences, and redefine how student performance should be evaluated. In addition, existing ethical concerns about how to use digital data in the distance education system and concerns about ensuring personal privacy and confidentiality were also experienced (11,12). However, this process, in which we are all natural participants, besides its difficulties, offered us opportunities to experience new learning methods to change the current situation.

When we review the history of humanity, we see that the world has survived many natural or human-induced disasters from time to time, and that human beings have survived by learning from these disasters and constantly developing their precautions. In other words, humanity beings have always been able to emerge more informed and stronger from the disasters they experienced (10). From this point of view, although this pandemic period has created many problems for nursing education, we are fully convinced that nursing educators will come out of this crisis stronger. As a matter of fact, while discussing the place of distance education in nursing until before COVID-19; After COVID-19, "How is an effective distance education performed in nursing education?" An answer to the question has started to be sought (8). With the compulsory distance education period, the use of digital systems in nursing education and the chance to experience new educational technologies can be considered as the opportunities of this crisis period. In order to determine these methods, the examination of reports prepared with different perspectives can start a solution process (10).

Distance education, and with another even more recently name, digital learning has many benefits such as flexibility, accessibility, repeatability, comfortable and cost-effective, updatability, originality compared to traditional learning methods, conformity to the features of the new generation and learner-centeredness (12,13). The introduction of a new nursing education program supported by distance education in nursing education after the COVID-19 pandemic may be more beneficial for nursing education.

As a result, the COVID-19 pandemic has brought many problems in terms of nursing education, and nursing educators and students have faced many problems in distance education practices. However, although some difficulties have been experienced in the adaptation process

to this compulsory distance nursing education, nursing educators should see this challenging period as an opportunity to review nursing education, to update education methods whose validity is discussed, and to create alternative nursing education structures. Therefore, nursing educators must move forward with students and clinical partners and support, evaluate and disseminate this transformation. In this context, the difficulties / experiences in the distance education process should be shared, solutions should be offered to the problems experienced, and a new teaching strategy model should be planned for nursing education.

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Oral Presentation No: 60431

Bibliometric analysis of studies on covid-19 that published in international literature and adressing Turkey: From General to special Nursing-Midwifery Research

Hatice ACAR BEKTAŞ[1], Özgür ALPARSLAN[2]

Abtract

Aim: The aim of this study is bibliometric analysis the study conducted about Covid-19 that published international literature addressing Turkey and these studies was in field general subject area (not use filter) and in field Nursing subject area.

Method: The screening performed between 1-3 January 2021 was repeated and updated on January 12. The studies obtained in Scopus with the keyword "covid*" in the title, summary and keyword fields, and "Turkey" in the country field were included in the analysis. With their bibliometric properties, network graphics were obtained by VOSviewer program.

Findings: It was determined that there were 89,805 studies in Scopus with the keyword "Covid *" in the title, summary, and keyword fields. 1771 studies that were accessed using the "Turkey" filter in the country field were included in the analysis. In this case, it was determined that there were 157 journals in which the studies were published. The most widely published journal was Dermatologic Therapy (50). Among the top ten most published journals, the journal with the highest impact factor and SNIP values was the International Journal of Clinical Practice, the journal with the highest SJR value was Journal of Medical Virology, and the journal with the highest non-citation rate was Gazi Medical Journal. The institution that provided the most funding for the studies was Novartis (10) and the institution with the highest number of publications was Istanbul University (90). When the "Nursing" limitation was made, the journal with the highest number of 65 studies was Perspective in Psychiatric Care (22), the journal with the highest impact factor BMJ Supportive and Pallative Care, the journal with the highest SNIP and SJR values Public Health Nutrition, the most publications in this field. The institution that made it was determined as 19 Mayıs University.

Outcome: The bibliometric analysis of a particular segment of the studies conducted on the subject in Turkey was determined to be carried out under the nursing topics. Midwifery studies are also indexed under the topic of nursing. Journal of metrics is noteworthy that reduced the number of publications issued from higher Turkey. It is anticipated that this study will guide the authors on issues such as magazine selection, funding organizations, collaborators, keyword selection for their / future studies on Covid-19.

Keywords: Bibliometric analysis, Covid, Midwife, Nurse

Introduction: With bibliometric research, by examining certain features of documents, theses and publications, various data regarding their scientific contributions can be obtained. **Bibliometric analysis:** It includes metrics such as historical process of publications, type of publication, subject areas, author and institution information, journals they were published and their impact factor, number of citations. The concepts related to journal metrics to be given in the analysis results are explained below.

Impact Factor (IF): This factor is a concept related to the citation status of articles in journals. IF can be used as a performance indicator for scientific journals but is not a good indicator of quality and prestige (1–5).

Source-normalized Impact per Paper (SNIP): It can be misleading to evaluate the quality or reputation of a journal by the number of citations alone. SNIP was developed to measure contextual citation impact by normalizing citation values. SNIP is used by the SCOPUS database (1–4,6).

SCImago Journal Rank (SJR): The SJR value is a metric born from the idea that "not all citations are of equal value". This metric reveals the citation status of the relevant journal from prestigious journals (1–4,6).

Aim: The aim of this study is bibliometric analysis the study conducted about Covid-19 that published international literature addressing Turkey and these studies was in field general subject area (not use filter) and in field Nursing subject area.

Research questions are:

Publications conducted about Covid-19 that published international literature addressing Turkey (general and nursing)

- Which are the journals in which the studies take place?
- What are the features of these journals (impact factor, SNIP, SJR, annual number of publications, number of citations, rate of not being cited)?
- Who are the most published authors in publications?
- Which universities publish the most publications?
- Which organizations provide the most funding for publications?
- In which subject areas are the publications mostly done?
- Which keywords are used the most in publications?

Method:

The screening, conducted between January 1-3, 2021, was repeated, and updated on January 12. First, "covid *" was scanned in Scopus in the title, summary, keyword fields. Later, the studies obtained limited with the keyword "Turkey" in the country field and analyzed and then the studies limited by "nursing" keyword and these studies analyzed.

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Results:

89.805 studies were reached when Scopus' title, summary and keyword fields were scanned as "covid *". 1771 documents with the keyword "Turkey" in the country field, and 65 documents with the filter "nursing" in the subject area, and these documents were included in the analysis.

(TITLE-ABS-KEY (covid*) 89.805 documents

AND

AFFILCOUNTRY (turkey)) 1771 documents

AND

(LIMIT-TO (SUBJAREA , "NURS")) 65 documents

Turkey address 1771 study was published in 157 journals. The top ten journals that published the most on the subject were: Dermatologic Therapy, Turkish Journal of Medical Sciences, Gazi Medical Journal, Journal of Medical Virology, Perspectives in Psychiatric Care, International Journal of Clinical Practice, Medical Hypotheses, Journal of Clinical and Intensive Care, Turkish Thoracic Journal, American Journal of Emergency Medicine. The list of journals and the number of publications related to the subject are given in Figure 1 and Table 1.

From related journals

- Dermatologic Therapy with the highest number of documents per year in 2020 (Figure 2)
- Journal of Medical Virology with the highest number of citations in 2020 (Figure 3)
- International Journal of Clinical Practice with the highest IF (Figure 4) and SNIP (Figure 5) in 2019
- Journal of Medical Virology with the highest SJR value in 2019 (Figure 6)
- Journal of Clinical and Intensive Care, which has the highest percent not cited in 2020 (Figure 7)

Cure E (n = 17), Cumhur Cure M (n = 16), Lotti (n = 14) were the most published authors.

Istanbul University (n = 90) and Hacettepe University (n = 83) were the institutions with the highest number of publications.

Novartis (n = 9) and the Scientific and Technological Research Council of Turkey (TUBITAK) (n = 8) were the organizations providing the most funds for research.

54.8% of the studies were carried out in the field of medicine and 2.7% in the field of nursing. Midwifery studies are also indexed under the nursing subject area.

The most used keywords were: covid-19 (n=1009), sars-cov-2 (n=260), coronavirus (n =212), pandemic (n=189) (Figure 8). This network graphic was created by Voswiever.

authors from other countries about cooperation with Turkey is located in Figure 9. This network graphic was created by Voswiever.

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65 studies were reached in the scan performed by adding the "Nursing" filter from 34 journals. The five most widely published journals in the field of nursing were: Perspectives in Psychiatric Care, Journal of Nutrition Health and Aging, Progress in Nutrition, Public Health Nutrition, BMJ Supportive and Palliative Care. The journal list, the number of publications related to the subject and the features of the journals are included in Table 1.

From related journals

- Public Health Nutrition, number of documents, citations in 2020 and which has the highest value SNIP and SJR in 2019 (Table 1).
- In 2019, the impact factor values of Journal of Nutrition Health and Aging, Public Health Nutrition, BMJ Supportive and Palliative Care. Were very similar (Table 1).
- Progress in Nutrition with the highestpercent not cited in 2020 (Table 1)

In the field of Nursing, 19 Mayıs University, İstanbul Universitiy Medicine Faculty, Ankara University and Hacettepe Universiy were the institutions with the highest number of publications (4 studies each).

The most used keywords were: covid-19 (n=30), anxiety (n=10), depression (n=10), pandemic (n=9) (Figure 10). This network graphic was created by Voswiever.

Limitations

The bibliometric analysis method has many advantages that will contribute to the literature, as well as some limitations as in every method. For example, Bornmann (2014) stated that bibliometric methods are insufficient especially in revealing social effects (7). In addition, bibliometric studies often focus on a large number of documents, so they do not provide detailed information about the relevant studies and their results. However, the contributions of the bibliometric method, such as analyzing thousands of studies together, revealing author, word and citation relationships, and using visual mapping at a high level (8) should not be ignored.

Conclusion and recommendations

This study provides an overview of publications on Covid-19. Both haritalaştır comprehensive visual focus of both techniques used in the present study is to differentiate from bibliometric studies previously conducted in Turkey.

Made in bibliometric analysis of studies conducted on the subject in Turkey «a relatively small portion of Nursing» has been found to be in the area. Midwifery studies are also indexed under the topic "Nursing".

• metrics of journal is noteworthy that reduced the number of publications issued rises from Turkey.

• It is anticipated that this study will be a guide for the authors on issues such as journal selection, funding organizations, collaborators, keyword selection for their / future studies on Covid-19.

Conclusion and recommendations

This study provides an overview of publications on Covid-19. Each focus is both comprehensive visual mapping techniques used in the present study is to differentiate from previous studies relating to Covidien-19 in Turkey.

Bibliometric analysis made in Turkey «Nursing» has been found to be less work in the field. Midwifery studies are also indexed under the title of «Nursing» in the international literature.

Metrics of journal of publications published increases, number of documents decreased from Turkey. This is a striking finding.

It is anticipated that this study will guide the authors on issues such as magazine selection, funding organizations, collaborators, keyword selection for their / future studies on Covid-19.

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JBACHS
Journal of Basic and Clinical Health Sciences

Table 1: Studies on covid-19 that published in international literature and addressing Turkey

Dergi adı		General [a]						Nursing [b]				
		1	2	3	4	5		1	2	3	4	5
		Dermatologic Therapy	Turkish J.of Medical Sciences	Gazi Medical Journal	Journal of Medical Virology	Perspectives In Psychiatric Care		Perspectives in Psychiatric Care	J. of Nutrition, Health and Aging	Progress in Nutrition	Public Health Nutrition	BMJ Supportive and Palliative Care
Number of Documan Abut covid		52	36	30	29	22		22	5	4	4	2
2015	DBY	102	227	68	282	39		39	130	28	394	84
	IF	2,9	0,9	0,1	4,1	1,9		1,9	4,8	0,3	4,3	2,4
	SNIP	0,967	0,351	0,051	0,813	0,76		0,76	1,094	0,196	1,145	0,93
	SJR	0,685	0,19	0,109	1,033	0,41		0,41	1,13	0,147	1,058	0,649
	CBY	1992	832	32	9740	558		558	4417	59	11462	388
	PNC	14,71	13,66	77,94	3,55	10,26		10,26	1,54	21,43	3,55	15,48
2016	DBY	123	287	66	295	38		38	148	58	386	83
	IF	2,3	0,8	0,1	4	2,3		2,3	5	0,4	4,2	3
	SNIP	0,903	0,403	0,074	0,77	0,65		0,65	1,003	0,163	0,987	0,872
	SJR	0,53	0,26	0,102	0,99	0,411		0,411	1,21	0,163	1,1	0,788
	CBY	2071	1030	47	9727	582		582	4414	59	11797	527
	PNC	13,82	17,77	77,27	5,08	15,79		15,79	3,38	41,38	4,92	21,69
2017	DBY	148	284	110	315	49		49	189	58	366	77
	IF	2,3	1,1	0,1	3,8	1,9		1,9	4,5	0,6	4,3	3,5
	SNIP	0,746	0,445	0,131	0,787	0,644		0,644	1,185	0,16	1,08	0,928
	SJR	0,625	0,283	0,156	0,978	0,338		0,338	1,249	0,193	1,122	0,878
	CBY	2035	1186	47	9408	579		579	5002	96	13059	705
	PNC	5,41	23,94	81,82	3,17	18,37		18,37	2,12	43,1	3,83	24,68
2018	DBY	170	196	82	262	83		83	194	162	383	115
	IF	2,5	1,2	0,1	3,9	1,9		1,9	4,3	0,4	4,5	4,2
	SNIP	0,822	0,474	0,09	0,752	0,767		0,767	0,986	0,263	1,077	1,194
	SJR	0,674	0,289	0,124	0,966	0,432		0,432	0,983	0,139	1,186	1,187
	CBY	2174	1353	53	8980	727		727	5417	99	13748	1151
	PNC	28,82	39,8	81,71	9,16	18,07		18,07	10,31	53,7	9,92	22,61
2019	DBY	399	254	114	282	106		106	164	222	371	200
	IF	1,8	1,1	0,2	4	1,9		1,9	4,7	0,3	4,8	4,9
	SNIP	0,883	0,431	0,124	0,78	0,811		0,811	0,979	0,188	1,269	1,171
	SJR	0,583	0,266	0,119	0,855	0,437		0,437	0,872	0,15	1,21	0,853
	CBY	2242	1584	80	8504	790		790	6009	195	15697	1302
	PNC	35,09	48,82	92,98	23,05	30,19		30,19	17,68	75,68	23,72	33,5
2020**	DBY	1430	225	169	1078	283		283	251	194	705	264
	IF	…	…	…	…	…		…	…	…	…	…
	SNIP	…	…	…	…	…		…	…	…	…	…
	SJR	…	…	…	…	…		…	…	…	…	…
	CBY	4257	2117	70	23193	1183		1183	6935	327	17511	1860

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	PNC	73,29	78,22	96,45	40,45	79,86		79,86	67,33	88,14	71,35	64,77

a: 5 journals from 157 journals, b: 5 journals from 34 journals, **: There were not data about IF, SNIP, SJR in 2020 DBY: Document by years IF: Impact Factor,	SNIP: Source-normalized Impact per Paper, SJR: SCImago Journal Rank CBY: Citations by year PNC: Percent not cited by years

Figure 1: Number of document related Covid-19 top on ten journals
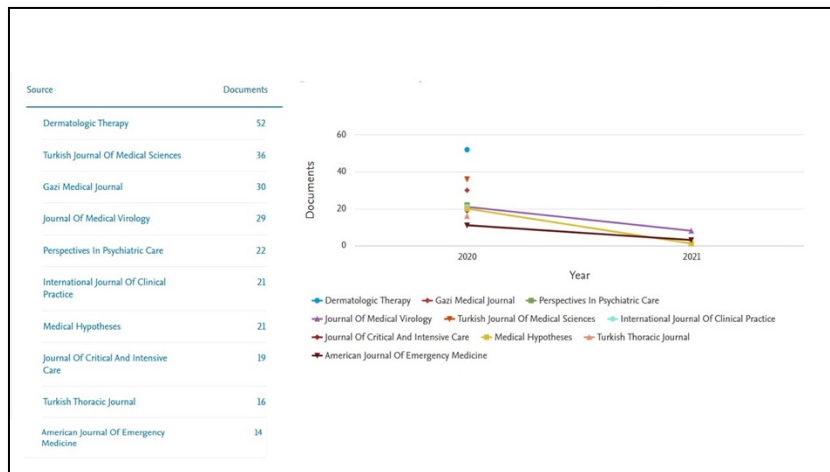
Figure 2: Source documents by year
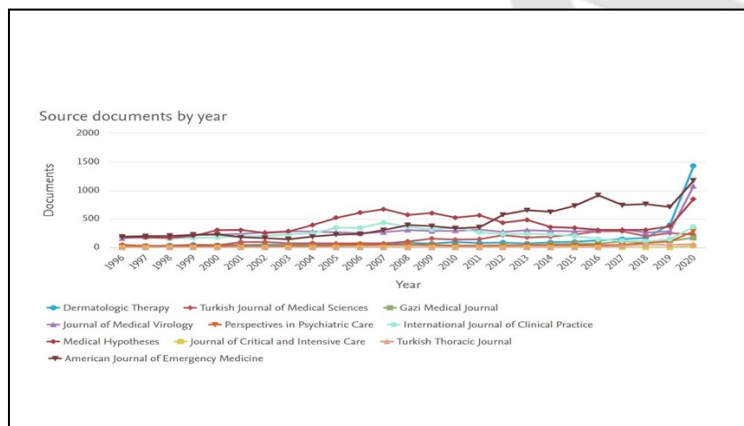
Figure 3: Citations documents by years

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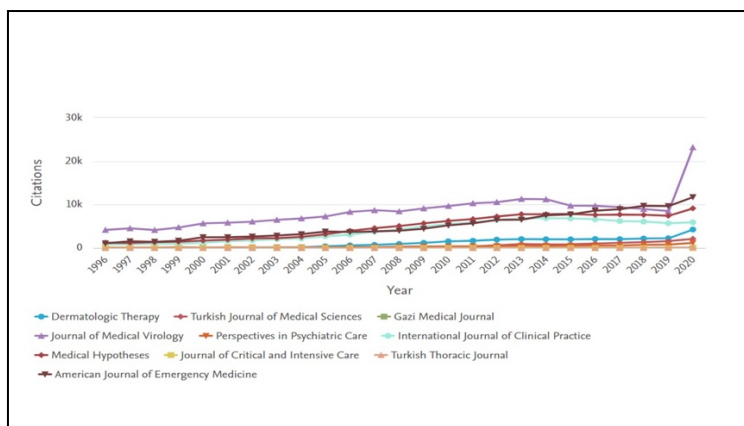
Figure 4: Citescore documents by year
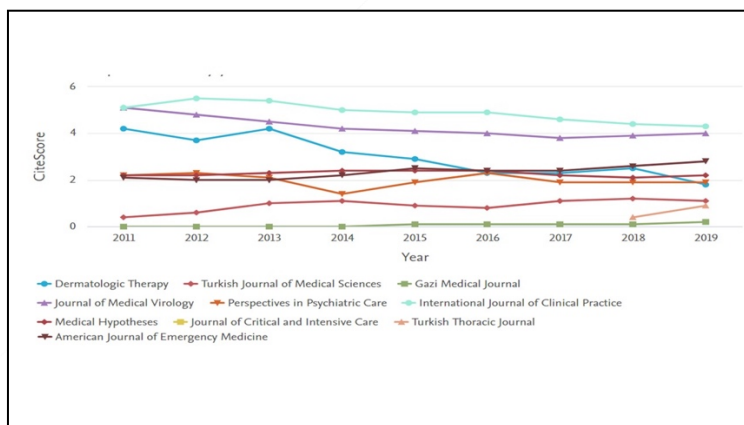
Figure 5: Source-normalized Impact per Paper (SNIP) values
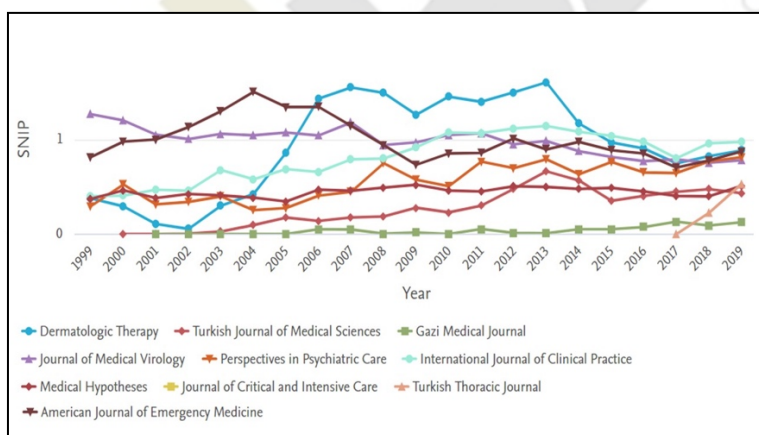
Figure 6: SCImago Journal Rank (SJR) values

Figure 7: Percent not cited

Figure 8: Keywords used in 1771 studies (addressing Turkey)

Figure 9: Co-country in 1771 studies
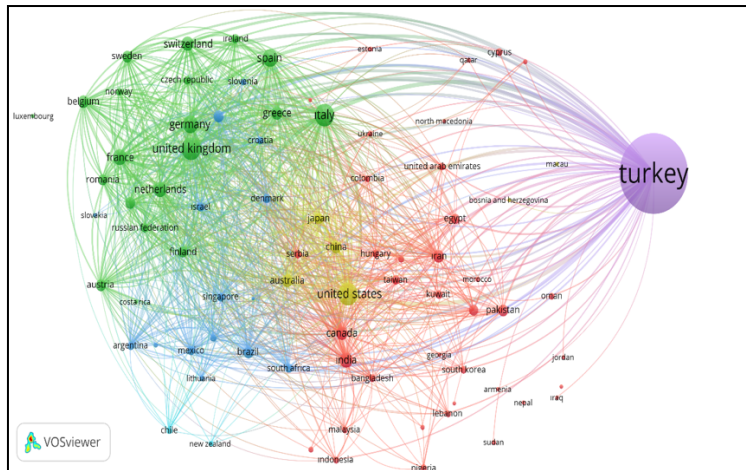
Figure 10: Keywords used in 65 Nursing studies

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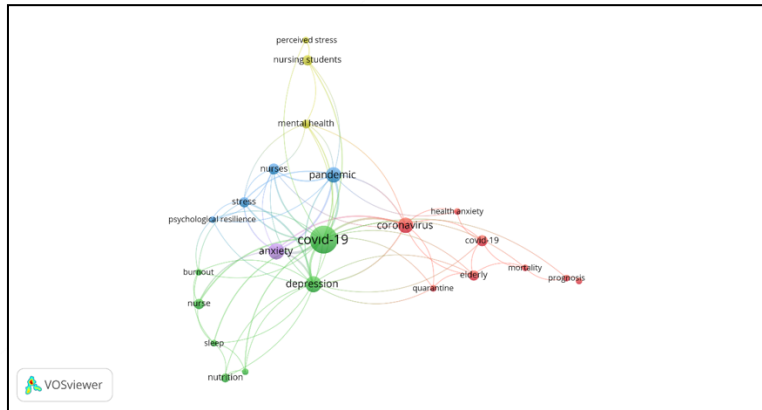
Oral Presentation No: 62575

ANALYSIS OF DENTISTRY STUDENT'S PERCEPTION OF SATISFACTION FOR DISTANCE EDUCATION; PILOT STUDY

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Abstract

Aim; This study aims to examine the satisfaction levels of dental students towards distance education (DE) in terms of various variables.

Materials and Methods; A questionnaire was applied to the students from faculty of dentistry in the 2019-2020 Academic Year. The demographic data of the participants, information about computers and internet access facilities and the devices they use for DE was collected. The scores collected from the questionnaire were analyzed with the ANOVA and t-test according to the independent variables. Frequency analysis of the questions and other variables were performed.

Results; 54,7 % of the students in the study were female and 45,3% were male. Most of the participants aged between 19-21 (87,5%). Mostly smart phones (43.1%) and least desktop computers (9,2 %) was used for DE. In the questionnaire form, the highest mean response level among the answer options was "The course resources included current information." $(4,03 \pm 0.61)$, and the lowest mean response level was "Distance education is more effective than traditional education." (1.95 ± 1.01) detected. A significant difference was found in favor of students who were satisfied with the services provided by the university for satisfaction scores ($p < 0.05$). However, no significant difference was found in other variables ($p > 0.05$).

Conclusion ; DE is the most widely used solutions for education during the covid-19 outbreak. In order to increase student satisfaction, it is recommended to develop and improve the distance education service provided by institutions.

Key Words; distance learning, dental education, student satisfaction, dentistry

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Introduction

The WHO declared the infectious disease of novel coronavirus (SARS-CoV-2) as a pandemic (Covid-19) in 11.3.2020. At the same day appearance of the first case of covid-19 announced by Turkey's Health Ministry. (1, 2) The govermental organization of Turkey have decided to close all educational institutions temporarily during 3 weeks in 16.3.2020. After this time Distance Education (DE) has been chosen as an alternative method for maintaining the education during the pandemic. (3) The DE concept involves using online computer technologies to provide education and training. With the developments in communication, computer technologies, and social media, DE based educational approach is rapidly spreading. Technology-based learning can be either synchronous format, asynchronous format, or both. (4)

Similar to the other countries (5), institution of the dental education in Turkey faced the challenges of DE. Just before the pandemic, dental education in Turkey continued as traditional face to face teaching. (6) The online teaching recommend as an alternative for face-to-face dental education . (7, 8) However the methods of DE used for dental education is new and therefore these programs must be evaluated and future learning strategies improved under the needs of dental students.

For this purpose, feedback from students can provide valuable information in terms of education quality and student satisfaction, which are important factors in the evaluation of DE. (9–11) Besides in a previous study, it was reported that there was an inverse relationship between university students' satisfaction with DE and their psychological stress values. (12). This is also important for dental students because the education of dentistry is considered extremely stressful and demanding . (13) Late graduation idea causes concern among dentistry students due to epidemic conditions. (6, 13) In a recent survey among dental students in Turkey, due to the pandemic conditions, approximately 25% of the students were reported to have the idea of changing the profession. Also in the same study, the idea of changing the profession was reported significantly higher among the students with higher continuity anxiety value than the other groups. (6)

To reduce the current anxiety levels of the dental students, it is important to increase students' satisfaction with DE. Therefore it is necessary to determine which conditions of DE to be improved and which regulations should be made in order to increase student satisfaction.

The study aims to examine the satisfaction levels of dental students towards DE in terms of gender, grade, age groups, perceived computer usability, duration of daily computer use,

the duration of computer experience and, their satisfaction with the DE service of our university.

Materials and Methods

This descriptive survey was conducted in the Faculty of Dentistry at the Çanakkale Onsekiz Mart University, Çanakkale, Turkey. The preclinical dental students (students of 1st and 2nd grade at the faculty) in the 2019-2020 academic year were selected as the sample of the study. The data of the indiviual satisfaction level about the DE and personal informations of the students were collected between 17/7/2020 and 20/7/2020.

Questions were in the two forms, the satisfaction scores obtained from the student satisfaction form . It was based on the satisfaction scale towards Satisfaction of Distance Education Students Perceptions in the Turkish language developed by Eygü & Karaman.(14) This questionnaire included 33 5-point Likert-type items (1-strongly disagree, 5-strongly agree) and can be grouped to determine eight-factor of the survey which included Personal Suitability (Factor 1), Effectiveness (Factor 2), Learning (factor 3), Evaluation of Program (Factor 4), Technology (Factor 5), Materiel (Factor 6), Evaluation (Factor 7) and Support Services (Factor 8). Internal consistency of the whole scale has been found to sufficient reliability. Cronbach's alpha values of the factors were determined in a previous work as factor 1 (0,862), factor 2 (0,839), factor 3 (0,753) , factor 4 (0,775) ,factor 5 (0,835), factor 6 (0,760), factor 7 (0,706) and factor 8 (0,787) respectively. (14) However, as the aim of our study was not to evaluation satisfaction with the dentistry program but to evaluate satisfaction with DE, questions about the program evalution (factor 4) were excluded. Besides, the questions in the original questionnaire which were also removed by their authors due to lower factor values in the original manuscript, removed in our study before the statistical evaluation. (14) The total satisfaction score was obtained by summing the answers of 27 question's corresponding (1-5) scores on the Likert-scale.

Other qualitative variables (gender, grade, age groups, perceived computer usability, duration of the daily computer use , the duration of computer experience, the devices used by students in DE and the satisfaction of the participants from the DE provided by our university) collected with a categorical- choice student information form. The response settings of the questions were done to restrict only one response from a person except for the question about the devices used by students in DE which was asked with multiple-choice option.

The survey was created using Google® Forms and the link of the survey delivered to the entire students via Microsoft Teams which is used an online learning program by Çanakkale Onsekiz Mart University at the end of the academic year. Google® forms also were used to gather responses. The personal information of the study participants saved anonymously

Before data collection, information about the study was given to the participants. Ethical approval was received from the Ethical Committee of Çanakkale Onsekiz Mart University (Date Of Approval : 16.7. 2020/ Study number: 2011-KAEK-27/2020-E.2000094171 /Approval Number : 26-10). Also the administration of the faculty of dentistry granted the study.

Data obtained from the completed surveys were exported to a Microsoft 365 Excel spreadsheet using the command "View responses in Sheets" of Google Forms® and subsequently encoded and

analyzed using the software Statistical Package for the Social Sciences (SPSS IBM, Armonk, NY).) version 25.0 in Windows .

Statistical Analysis

It was determined that the data of the total satisfaction scores were distributed evenly. The total satisfaction score was analyzed with the one-way analysis of variance (ANOVA) and t-test considering independent variables. The relationships between age groups, grade, gender, and satisfaction from services for DE provided by university were analyzed using the Chi-square test. The level of statistical significance was set as $p < 0.05$. Besides, frequency analysis of the answers to the questionnaire questions and other independent qualitative variables were performed.

Preliminary results of this study presented as an electronical poster presentation in the Izmir Democracy University International Dentistry & Health Congress (IDUDENT 2020) , 28-29 November 2020, İzmir, Turkey.

RESULTS

Sample Distribution

105 of the 134 students responded the survey (%77,7). However 41 of them stated before the survey form that they did not read the instructions or did not get enough information about the study , their responses were excluded. Totally 64 of the 134 students from the faculty of dentistry completed the survey. Response rates were 47.36% and 45.16% in amongst first and second years students respectively. 54,7 % of the students in the study were female and 45,3% were male. There is no statistically significant difference in gender distribution by grade. (chi-squared test, $p > 0.05$) 43,75% of participants were in the second year and 56,25% of them were in the first year in the faculty at the time of the study. Most of the participants aged between 19-21 (87,5%), followed by ≥22 (7,8%) and ≤18 (4,7). According to chi-square analysis, there are no significant differences between grade and age groups (19-21 and others). ($p > 0.05$) (Table 1)

The Internet and Computer Access for Participants

When the devices used by the participants in DE are evaluated as multiple responses option, it was seen that the mostly smart phones (43.1%) followed by laptop computers (37,7%), tablet computers (10%) and desktop computers (9,2 %) were used.for DE. (Table 2)

The participants mostly use computers for 1-2 hours (65,6%) and 3-4 hours (26,6%) in daily routines . Most of the participants have been using computers since middle school (35,9%) and high school (31,3%). According to their perceptions, 62.9% of the participants have intermediate, 21.9% basic and 15.6% advanced computer skills. (Table 2)

93.75% of the participants have limited and unlimited internet access that they can access at any time. 43.75% of them have both unlimited access and personal computers that they can access whenever they want. (Table 3.)

Satisfaction From DE

When the satisfaction of the participants from services for DE provided by university was evaluated , no statistically significant difference was found between satisfaction and grade, age group (19-21 and others), and gender variables. (chi-square test. p >0.05) However due to small cell counts (less than 5) more than 20% in the table, chi-square analysis was not applied for the other quantitive variables (perceived computer usability, duration of the daily computer use , the duration of computer experience)

Frequencies and percentages were obtained for the responses. Of all the items, the ones for DE of most respondents highly positively agreed were " The questions in the exam were consistent with the course contents (76,6%), followed by the "Course resources included current information" (75 %), and "The topics in the course materials were consistent with each other "(73.4%). The ones of the most respondents highly negatively agreed were "Distance education is more effective than traditional education" (42.2%) followed by "Makes the student more active in terms of distance education teaching applications" (39,1%) and "Distance education I am in a social and friendly interaction with other students" (39,1%). (Table 4)

When responses were weighted according to corresponding scores of Likert-scale (1-strongly disagree, 5-strongly agree). In the questionnaire form, the highest mean response level among the answer options was "The course resources included current information." $(4,03 \pm 0.61)$ The lowest mean response level was detected "Distance education is more effective than traditional education." (1.95 ± 1.01) Also , the highest mean response level per question among the factors was " F6-Materials $(3,93 \pm 0.46)$, and the lowest mean response level was F1- Personnel Suitability $(2,65 \pm 0,67)$. (Table 5)

The total satisfaction score was obtained by summing the corresponding (1-5) scores on the Likert scale of the answers. The satisfaction of DE was analyzed with gender, grade, age groups, perceived computer usability, duration of the daily computer use , the duration of computer experience, and the satisfaction of the participants from the DE provided by our university.The mean satisfaction score was 88,03±13,85 (57-121). The mean satisfaction score statistically higher in the group of students who were satisfied with the services provided by the university versus not satisfied with the services (92,53 vs. 76,77) (p 0,000014). However, no significant difference was found in terms of other variables (p> 0.05). (Table 6).

Discussion

During the COVID-19 pandemic, dental education institutions in Europe had to switch from face-to-face education to DE. (5) Similar to them, just before the midterm week of the second-semester face-to-face dental education in the Faculty of Dentistry of Çanakkale Onsekiz Mart University was suspended and postponed to summer of 2019. The education was rapidly and compulsorly transformed to DE in all aspects in Turkey.

Before the pandemic first and second grade students of Faculty of Dentistry have taken only compulsory courses of Higher Education Institutions from the Distance Education Research and Application Center of Çanakkale Onsekiz Mart University (COMUZEM). The Çanakkale Onsekiz Mart University provided the online programs of Microsoft Teams, and University Information Management System (UBYS) for DE The main technical support for DE provided by the department of information technology of the university and COMUZEM gave rapid courses on DE to lecturers of the Faculty of Dentistry.

The main challenges of DE were the barriers associated with infra-structure, unstable or insufficient internet connection,the economical burden of internet connection, the requirement of electronic device for education, student's adaptation of the new method, time management, and difficulty motivating themselves to stay focused. (11) High levels of satisfaction (88,6%) and positive experience with DE have been reported among Medical students, results in instruction, training, technical assistance, and a low rate of technical difficulties. (15)

During dental DE, 54.1% of the student agreed that they did experience problems during DE. (11) However, in our study only %33 of the students agreed that they did have any problems accessing the system and only %37,5 agreed that they did have problems that would reduce their desire to learn Also 46.7 % of them stated that they could get technical support when they had a problem accessing the system

The satisfaction towards DE has been previously evaluated for postgraduate dental education in Turkey(16). However, to our knowledge there are no studies evaluating the satisfaction levels in the undergraduate dental education.This study aims to examine the satisfaction levels of dental students towards DE in terms of gender, grade, age groups, perceived computer usability, duration of daily computer use, the duration of computer experience and, their satisfaction with the DE service of our university.

In a previous study involving undergraduated dental students, it has been observed that students' acquisition of information and performance with distance education were equivalent to face-to-face methods. However, the satisfaction rate of the undergraduate dental students towards DE has been reported to less than 50%.(10) Also, only 38,3% of dental students agreed that DE gives similar learning satisfaction. and only 44.2% preferred DE over classical face-to-face education (11) In this study only 7,9 % of the student agreed to the statement of "Distance education is more effective than traditional education" versus 71,9 % not agreed. Also, only the 9,4% of our students

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agreed to the statement of "DE makes the student more active in term of DE applications" vs 70,4 % not agreed.

The students with financial difficulties and special needs may not have equal opportunities to access technology in DE during the COVİD-19 pandemic. (17) Karadağ and Yücel evaluated the satisfaction levels of 17,939 undergraduate students towards the DE during the Covid-19 pandemic in a multi-centered study. Students recruited different schools from 163 University in Turkey. They reported that 37 % of the students did not have any internet connection.(3) In this study, 93.75% of the participants had limited and unlimited internet access that they can access

at any time and only one (1,56%) participant did have not an internet access. However, the fact that only 34.4% of the participants had unlimited internet access whenever they want reduces the opportunity for independent education, which is the main goal of DE. Most of the students in our study agreed and that DE provides space flexibility and time savings (67,2%) and convenience of receiving education from home (73,4%) and DE allows the students to learn at their own pace 40,6 %)

According to the multi-center study previously mentioned 64% of students continued their DE from their computers or tablets and 32% of them continue with their smartphones; (3) Similar to these findings in our study, participants used tablet or computers (56,9%) more than smartphones (43.1%).

The success of DE can be related to reduce distractions during education, difficulties in the use of technology, limited social interactions, and difficulty to interact with instructors. (18) With the quality of the DE and with the ability to interact lectures, high satisfaction (88,6%) rates among medical students has been reported (15)

Also, efficiency has been reported as the most important factor concerning preference towards DE (11) The current efficiency of DE reported low (35-40 % even if supported with resources of audiovisual education material) However the efficacy rises (43%) when the grup getting smaller or education has given one-to-one by instructors himself. (14)

In a previous multi-centered study in Turkey, only %40 of the student stated that they were satisfied with accessibility to the instructors. (3)

Difficulties in communication between students and teachers during DE have been reported to reduce satisfaction with dental DE. (19, 11) The satisfaction towards communication either with instructors or with peer students in doing DE has been reported as low as 1.53 ± 0.59 in a Likert-type scale 0 to 3 (11)

In this study, most of the student stated that they were able to interact with the lecturers of the courses when necessary ($4\pm 0,69$, 62.5%) , convey their requests and suggestions about courses ($3,78\pm0,82$, 64,1%), and were able to get necessary support when they had problems with lessons ($3,73\pm 0,85$, 57%). However, they also stated that they were not sure about they can be like

themselves in communication with instructors and showed them what kind of student they were. (2,71 ±1,11 , 29,7%) and they were in social and friendly interaction with other students.(2,70 ±1,17 39 %

The positive relation between gender (female), grade (finale), computer usability (advanced), previous experiences of online education (Student familiarity and with DE technology and digital platforms) quality of the content of DE with the satisfaction scores have been reported (10) However no significant difference was found in terms of grade and computer usability in this study. This maybe resulted from this study included only preclinical grades (first and second grade students) and further grades were absent. In terms of computer usability, all students taken the similar online education from COMUZEM for compulsory lessons and 62,5 of them have

intermediate computer usability in their perceptions. Compared to the previous study (10) which half of their students lack any experience in DE , our students experienced during taken the compulsory lessons from COMUZEM. Also similar to the previous multi-centered study (3), no significant difference was found in our study in terms of gender .

The quality of the DE services is very important in student satisfaction (11) In the previous multi-centered study, the reasons for the unsatisfied perception towards DE determined as insufficient information and explanation, insufficient preparations, weak digital content, insufficient training skills of trainers, inefficient DE system, insufficient knowledge of the instructors in DE and insufficient or irrevelant teaching materials (3) It has been reported dental students demonstrated low-moderate satisfaction towards DE when the quality digital content presented , (10) The highest mean response level among factors of the survey was " F6-Materials in this study. This factor included consistent and current information in the course material and specification of the course objectives. The services provided by the university included programs, information management systems , technical support, and infrastructure, and also the distance education center of the university can provide education to the lecturers, high quality digital content, and technical support for DE.

It has been reported that the satisfaction average of the students is higher towards DE when the university, has a distance education center or an open education faculty, (3). Similar to this the mean satisfaction score statistically higher in the group of students who were satisfied with the services provided by the university versus not satisfied with the services in our study (92,53 vs. 76,77) (p 0,000014).

Conclusion

Although DE is the most widely used solution for continuing education during the covid-19 pandemic, the satisfaction of undergraduate dentistry students from distance education was not

sufficient.In order to increase the quality of DE and student satisfaction towards DE, quality distance education materials should be increased under the guidance of distance education centers, trainers should be guided for curriculum transformation, and technical course units and distance education infrastructures of universities should be increased. The services provided by universities play a fundamental role in the advance and development of distance education. Providing equality of opportunity to access distance education technologies, especially for students with financial difficulties and special needs, will increase student satisfaction. The opportunity for students to communicate more with their education may increase satisfaction with distance education. In order to increase student satisfaction, it is recommended to develop and improve the DE service provided by institutions

Limitation of the study

The study was limited by the use of data from a single dental school therefore the results may not be generalizable. A second limitation involves the issue of self-report when using survey research to collect data.

The First limitation of the study is the use of limited data from a single dental school. Therefore the result may not be generalizable. Secondly, only the preclinical students available at the time of the study, therefore the students in the clinical education could not be included to in the study and study sample was relatively small. Thirdly the questionnaire used in this study based on self-

report. It was unclear the objective effect of the DE on academic performance, clinical skills, and learning outcomes.

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Table 1. The Demographic Variables of The Study Participants

Demographic Variables				Gender	
				Female	Male
				N (%)	N (%)
Grade	1.	Age Groups	≤18	2 (3,1)	1 (0,64)
			19-21	16 (25)	15 (0,96)
			≥22	2 (3,1)	0
	2.	Age Groups	≤18	0	0
			19-21	15 (23,43)	10 (6,4)
			≥22	0	3 (1,92)

N; Number , %; percentage

Table 2. The Variables Related to The Participant's Computer Use Experiences

Variables		N (%)
The Devices Used for Distance Education by Study Participants	Smartphones	56 (43.1)
	Laptop Computers	49 (37,7)
	Tablet Computers	13 (10)
	Desktop Computers	12 (9,2)
	1-2 Hour	42 (65,6)

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The Duration of Daily Computer Use	3-4 Hour	17 (26,6)
	5-6 Hour	3 (4,7)
	7 Hour and More	2 (3,1)
The Duration of Computer Experience	Since university	10 (15,6)
	Since high school	20 (31,3)
	Since Middle School	23 (35,9)
	Since Primary School	10 (15,6)
	Before Primary School	1 (1,6)
Perceived Computer Usability	Basic Level	14 (21,9)
	İntermediate Level	40 (62,5)
	Advanced Level	10 (15,6)
Satisfaction From Services for DE Provided by University	Satisfied	46 (71,9)
	Not Satisfied	18 (28,1)

N; Number , %; percentage

Table 3. The Internet and Computer Access for Participants

	The Access to İnternet			
The Access to Computers	I don't have internet access. N (%)	I have access to internet in the limited time periods. N (%)	I have limited access to internet whenever I want N (%)	I have unlimited access that I can use whenever I want N (%)
I don't have computer access.	0 (0)	1 (1,56)	1 (1,56)	3 (4,68)
I use public computer areas (such as internet cafes and etc.).	0 (0)	0 (0)	0 (0)	1 (1,56)
There is a computer around me that I can reach.	0 (0)	1 (1,56)	5 (7,81)	10 (15,62)
I have a personal computer	1 (1,5625)	1 (1,5625)	12 (18,75)	28 (43,75)

N; Number , %; Percentage

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Table 4 The Distribution of The Questionnaire Answers

	M	Std.	Strongly Disagree N (%)	Disagree N(%)	Not Sure N (%)	Agree N (%)	Strongly Agree N(%)
F1 Remote training provides space flexibility and time savings.	3,7031	1,00285	3 (4,7)	4 (6,3)	14 (21,9)	31 (48,4)	12 (18,8)
F3 Provides the convenience of receiving education from home	3,7344	1,04262	2 (3,1)	9 (14,1)	6 (9,4)	34 (53,1)	13 (20,3)
F3 I think distance education suits me.	2,625	1,20185	13 (20,3)	19 (29,7)	15 (23,4)	13 (20,3)	4 (6,3)
F3 Distance education is a suitable alternative for the training I need.	2,5469	1,22059	15 (23,4)	19 (29,7)	14 (21,9)	12 (18,8)	4 (6,3)
F3 Distance education is more effective than traditional education	1,9531	1,01465	27 (42,2)	19 (29,7)	13 (20,3)	4 (6,3)	1 (1,6)
F1 Distance education ensures permanent learning.	2,125	0,95119	19 (29,7)	24 (37,5)	15 (23,4)	6(9,4)	0 (0)
F5 Distance education I am in social and friendly interaction with other students.	2,70313	1,177564	9 (14,1)	25 (39,1)	10 (15,6)	16 (25)	4 (6,3)
F5 In distance education, I can be like myself in my communication with my teacher and show what kind of student I am.	2,7188	1,11936	10 (15,6)	19 (29,7)	16 (25)	17 (26,6)	2 (3,1)
F1 Distance education offers a good learning opportunity for people..	2,5625	1,11091	14 (21,9)	16 (25)	19 (29,7)	14 (21,9)	1 (1,6)
F1 Distance education allows the student to learn at their own pace.	3,0781	1,27621	8 (12,5)	15 (23,4)	15 (23,4)	16 (25)	10 (15,6)
F1Makes the student more active in terms of distance education teaching applications.	2,0781	0,94792	20 (31,3)	25 (39,1)	13(20,3)	6 (9,4)	0 (0)
F1 I find the content of the lessons in distance education sufficient for learning.	3,0313	1,16794	8 (12,5)	14 (21,9)	14 (21,9)	24 (37,5)	4 (6,3)
F1 I understood and learned the lesson given in distance education.	3,3906	0,98589	5(7,8)	6(9,4)	14 (21,9)	37 (57,8)	2 (3,1)
F7 I did not have problems accessing the system.	3,1875	1,13913	4 (6,3)	17 (26,6)	13 (20,3)	23 (35,9)	7 (10,9)
F7 I did not have problems that would reduce my desire to learn.	3,0781	1,22545	8 (12,5)	16(25)	8 (12,5)	27 (42,2)	5 (7,8)
F7 I could easily access the course contents through the System.	3,9375	0,85217	2 (3,1)	1 (1,6)	10 (15,6)	37 (57,8)	14 (21,9)
F1 The E(lesson packages supported my learning by myself.	3,2813	1,01526	3 (4,7)	12 (18,8)	18 (28,1)	26 (40,6)	5 (7,8)
F6 The objectives including the knowledge, skills and behaviors to be acquired by the students were specified in the course resources.	3,6406	0,74252	1 (1,6)	2 (3,1)	21 (32,8)	35 (54,7)	5 (7,8)
F6 Course resources included current information.	4,0313	0,61641	1 (1,6)	0 (0)	5 (7,8)	48(75)	10 (15,6)
F6 The topics in the course materials were consistent with each other.	4,0156	0,51922	0(0)	0(0)	8 (12,5)	47 (73,4)	9 (14,1)
F8 The questions in the exam were consistent with the course contents.	3,875	0,70147	1 (1,6)	3(4,7)	5(7,8)	49 (76,6)	6(9,4)
F8 Final exams were qualified to evaluate my level of knowledge.	3,7969	0,7385	1 (1,6)	2 (3,1)	13(20,3)	41 (64,1)	7 (10,9)
F2 I could get technical support when I had a problem accessing the system	3,3281	0,9604	1 (1,6)	13 (20,3)	20 (31,3)	24 (37,5)	6(9,4)
F2 I was able to get the necessary support when I had problems with the lessons.	3,7344	0,85898	0(0)	8(12,5)	10 (15,6)	37 (57,8)	9 (14,1)
F2 I was able to convey my requests and suggestions about the courses.	3,7813	0,82556	1 (1,6)	5 (7,8)	9 (14,1)	41 (64,1)	8 (12,5)
F2 I was able to get enough support in matters related to student affairs (registration, student certificate).	3,5156	0,71252	1 (1,6)	3(4,7)	24 (37,5)	34 (53,1)	2 (3,1)
F2 I was able to interact with the lecturers of the courses when necessary.	4	0,69007)	0 (0)	2 (3,1)	9(14,1)	40(62,5)	13 (20,3)
Weighted Mean ±Std of All Answers	3,23	0,02					

M; Mean Std ; Standard Deviation, N;Number, %;Percentage

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Table 5. Mean and Standard Deviation of Mean Answer to Factors

Factor	M	Std.
F1	2,6548	0,679
F2	3,6889	0,56657
F3	2,7341	0,91015
F5	2,7302	1,00332
F6	3,9312	0,4682
F7	3,418	0,80538
F8	3,881	0,54414
Weighted Mean ±Std of All Answers	3,23	0,02

M, Mean Std ;Standard Deviation

Table 6. Relationship Between Total Satisfaction Score and Study Variables

Variables		P-value
Gender		0,774
M		
F		
Class year		0,414
First year (1)		
Second year (2)		
Age groups		0,979
≤18		
19-21		
≥22		
Perceived Computer Useability		0,959
Basic Level		
İntermediate Level		
Advanced Level		
The daily duration of the computer use ,		0,893
1-2 Hour		
3-4 Hour		
5-6 Hour		
7 Hour and More		
The Duration of Computer Experience		0,845
Since university		
Since high school		

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Since Middle School		
Since Primary School		
Before Primary School		
The satisfaction of the participants from the DE provided by our university		0,000014
Yes (satisfied)		
No (not satisfied)		

*Student's t-test was used for dichotomous variables, and the ANOVA test was used for polytomous variables.

The statistical significance level was set at P < .05.
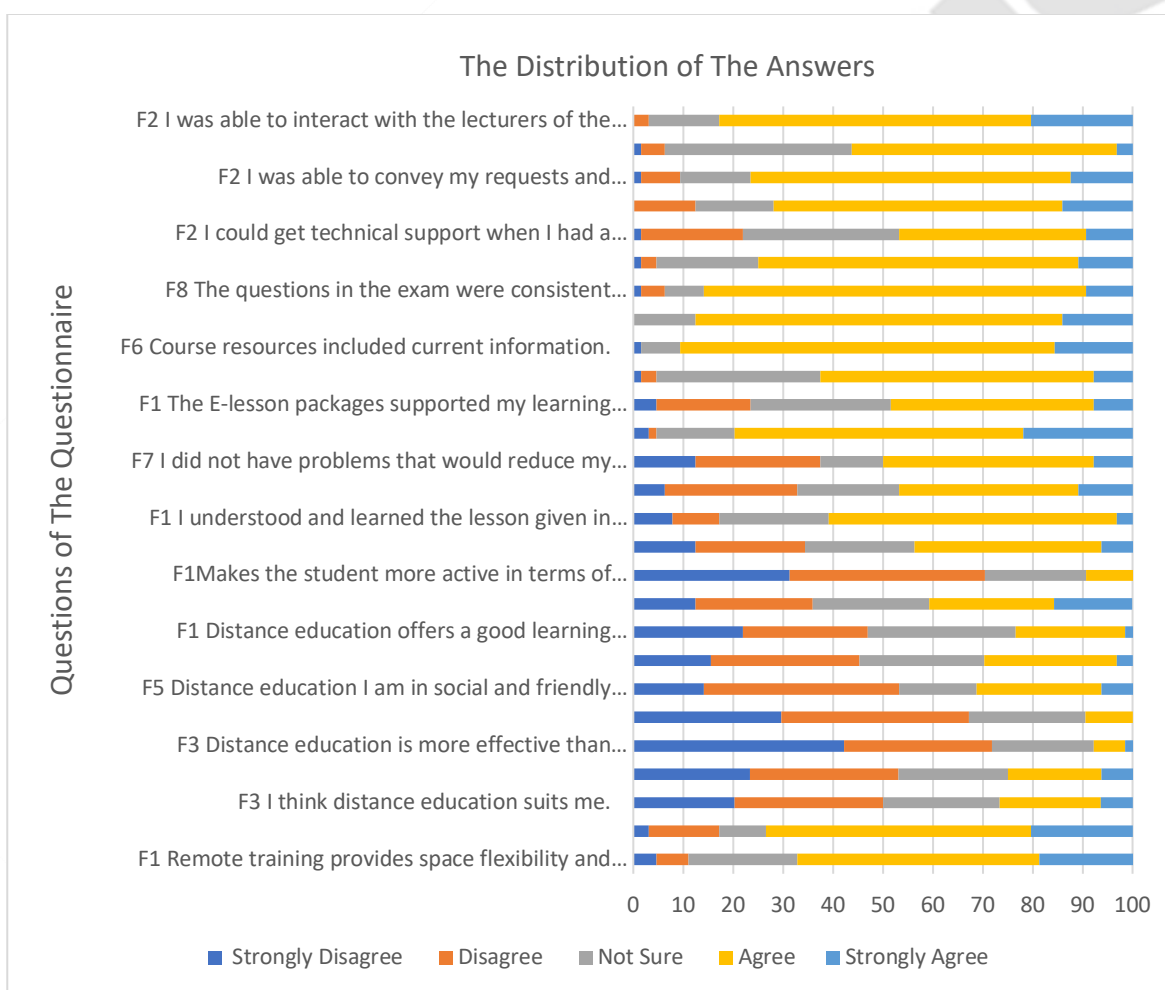
Fig 1. The Percentage Distribution of Answers to the Questionnaire (%)

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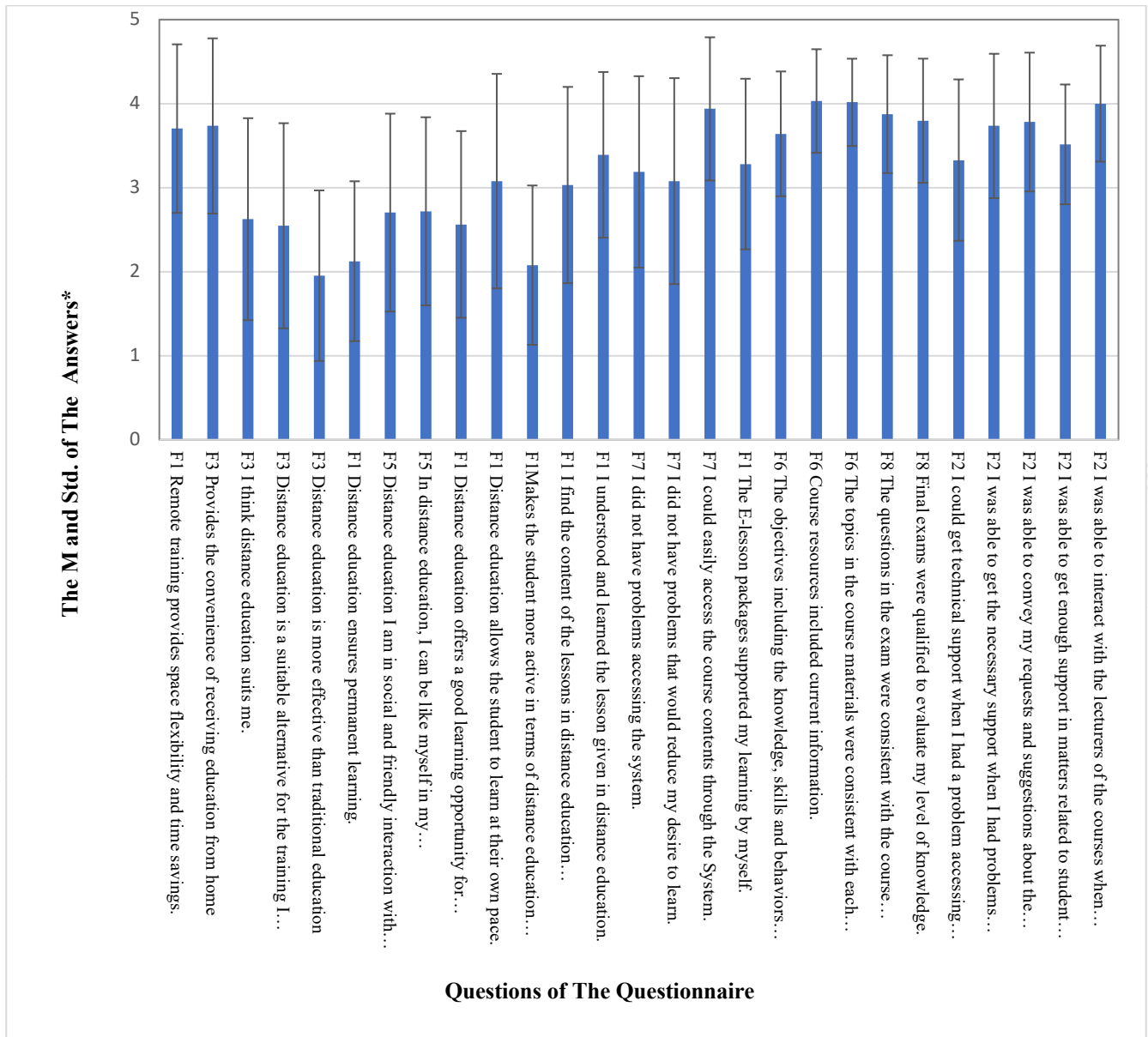
Figure 2. The Distribution of the Weighted Answers to the Questionnaire (%) M, Mean ,Std: Standard Deviation * Answers weighted with corresponding Likert-Scale values

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The Reflections of Changes During the COVID-19 Pandemic Period on Nursing Education

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ABSTRACT

Aim: This study was carried out to determine how nursing education all over the world is affected by the changes in the field of education during the COVID-19 pandemic.

Material and Methods: Findings in this study were created using MEDLINE, ScienceDirect, Scopus, Cochrane, PubMed, Ovid, ULAKBIM databases. Articles were included in the review between 01.11.2020-01.12.2020. Keywords such as "Nursing education in a pandemic" and "theoretical education in nursing in a pandemic", "clinical education in nursing in a pandemic" were used in the screenings.

Results: In most of the studies reached as a result of the literature review, it was reported that nursing educators and students were also affected by the emergency compulsory distance education process. Although nursing education has been transformed from face-to-face education to compulsory distance education due to the ongoing COVID-19 pandemic in the world, it is stated that this method can be used as a basic method for many education programs in the future. In the study findings, it was reported that each country provided theoretical and clinical training services by including digital training opportunities and simulation training techniques within the framework of their conditions.

Conclusion: The investigated studies emphasized that in the new period after the pandemic, technological education methods will be used more in nursing education and that some of the theoretical courses should be given by distance education.

Keywords: *pandemic, nursing education, clinical education, theoretical education*

INTRODUCTION

Corona disease, caused by the virus called SARS - CoV - 2, which was seen in the first months of 2020 all over the world, was declared as a global pandemic by WHO in March 2020 since cases are seen all over the world except Antarctica(1,2,3,4). According to the current data obtained from the World Health Organization, over 80 million people around the world have been diagnosed with

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COVID-19 and nearly two million patients have been lost, bringing difficulties in social, economic and economic areas (1,4,5). Education comes first among the sectors most affected by the COVID-19 pandemic after health(6,7). During the pandemic period, regulations and practices such as travel restriction, quarantine, curfew, social distance and the obligation to use masks came into play in order to stop the spread of the virus (3,6,8). However, when the spread of the virus could not be stopped despite all the measures taken, it was decided to close all academic institutions, and to switch from face-to-face education to distance and digital education, and 770 million students were affected by this process(7,8,9).

In the early days of education, while many educational institutions were unprepared for such a situation, there were disruptions and uncertainties in education, while students had to leave their social groups and education areas where they received practical education almost overnight (7,9,10). In order not to interrupt the education, educational institutions of each country have tried to adapt to this process by using many programs used online with new technologies such as Zoom, Microsoft Teams and Slack(6,7,10). The distance education was taken for protection from the COVID-19 pandemic. The decision also affected nurse educators, who have an important role in raising the generation that will be educated in nursing schools and will serve epidemics (12,13,14). In this period, education was continued by using both traditional education models such as the hybrid model and virtual teaching tools, taking into account the tools used in other science fields in nursing education. However, these tools brought with them various difficulties in use(11, 12,14).

This study is a compilation made to reveal the changes in the compulsory distance education period of nursing education during the pandemic period, to offer suggestions to problems and to contribute to the literature on this subject.

Distance Learning Development

The distance education model has emerged as a result of the fact that traditional education models used in education today cannot meet the increasing demand for qualified education, the effect of the developments in the field of communication, and the efforts to provide more qualified, economic and individual education to more people(15,16,17). In the distance education model, it is a learning method that includes teaching methods such as computer-based education, virtual education, online education, and web-based teaching,in which educational materials are presented

independently of time and place using multimedia technologies such as video, computer, internet(15,16,18)

Looking at the literature; It is seen that names used such as web-based education and e-learning are not standard. These keywords used include the names of distance education, internet education, web-based education. Discussion lists, web pages, additional software, e-mail, forum, multimedia over the network, virtual classroom, teleconference, video conference, digital-analog television, telephone, CD and DVD over the network are some tools that enable learning activities to take place(11,15,16,19). Distance education is offered as the synchronous and the asynchronous. Distance education with synchronous presentation is defined as the set of applications in which the faculty member on the side of the webserver and the students who are in front of the computer screen interact with the course at the same time. The most common application of synchronous presentation is the video conferencing method(15,16). In Asynchronous Presentation, lessons, communication, interaction and assessment-evaluation activities are usually carried out over the web, independent of time (15,16, 19).

The first application of distance education, which gradually increased in the world, started with the "Shorthand Lessons" advertisement published in Boston newspaper in 1728. In the 19th century, "Composition Lessons by Letter" started to be given to women at the University of Sweden, and in 1843 University Correspondence College was established for teaching by letters (6,15,16). This educational model has advantages such as providing access to educational content at the desired time and place, reducing the time spent in the classroom, and providing

transportation to more students at the same time(15,16,19,20). There are limitations such as the loss of social communication, the high-cost technological infrastructure required for qualified online trainings, and ineffectiveness in performing skills and attitude oriented behaviors(17,18,20). The online distance education model has been used increasingly in medicine and health education in the last century due to the development of internet and computer technologies and the increasing need for new education models (9,15,19,21,22,23,24). When the results of the study comparing online education and traditional education methods were examined, there was no difference between online education and traditional education in some studies, while it was reported that online education was superior to traditional education in some studies(21,22,23,25). Researchers

on the subject reported that online distance education models are not effective alone, and that the integration of online distance education models created by preparing quality content with traditional education methods will yield positive results.

Distance Education in Nursing

Health care systems are developing rapidly in many countries. For this reason, nursing students must graduate with the best qualifications to adapt to the changing system. Traditional education models, which are still frequently used in nursing, are one-sided education models and while improving basic cognitive skills, they are insufficient to acquire high-level skills such as critical thinking and problem solving skills(18,26,27). Therefore, the instructors had to switch to new training methods. Learning models such as web-based distance learning and electronic learning have been developed as a result of today's changing student profile, the development of educational technologies, and the transition from teacher-centered learning to student-centered learning(16,19,20). According to the e-learning report (National Workforce Group report) (2006) in health care institutions, it made clear that the need for the use of e-learning as a collaborative strategy in health care is increasing. Considering these reasons, learning methods using developing educational technologies are shown as an opportunity to overcome the incompetence of new graduates in vocational education(15,24,26).

Distance education in nursing education has a 100-year history. It is seen that starting from the 1990s, especially in the USA, England, Germany and other developed countries, undergraduate completion, graduate and certificate programs have been offered through distance education in nursing(18,19,20). In the relevant literature, many studies have been found comparing the results of distance education and traditional education in nursing (18, 20,26). Most of the studies reported that distance education gave good results, but some studies found no difference with traditional education. The researchers stated that the difference in the results was due to the sample numbers and the quality of the designed material. In the results of the study, most of the researchers agree that distance education is complementary to traditional education and integration with traditional methods will make a positive contribution to learning(18.19,20).

Reflection of Compulsory Distance Education in The Pandemıc Period in Nursing

Mandatory measures are taken to stop the spread of the infection during the pandemic period affected nursing education, as in all education areas. Nursing schools, where theoretical education was given first, within the scope of compulsory pandemic measures, were temporarily closed(6,8,31,32,33). Although nursing schools were closed in some countries, students continued their practice in hospitals. Due to the increasing cases of COVİD 19, hospital administrators thought that the continuation of the applications of the students risked the health of both themselves and their families, and the training in hospitals was interrupted first, and after a short time, the practice training was completely stopped(34, 35,36). During the pandemic process, educators started to provide online education services in a short time by using distance education technologies to respond to educational needs in changing conditions, as also included in the nursing philosophy(12,14,34,35,37). Although distance education in nursing has existed for many years, its use in education is limited(18,20). Many of the nursing educators who are used to the traditional education model had to develop educational materials and assessment methods that they used for the first time. Therefore, they had great difficulty in maintaining the quality of educational content in the first period (36,37,38,39) . A part of the nursing curriculum consists of theoretical and practical training. For this reason, educators carried both theoretical and practical training to online platforms(12,11,13, 14).

Theoretical pieces of trainings in nursing education, nursing educators, lectures, teleconferences, presentations containing online educational videos were presented synchronously and asynchronously. In the literature, studies have been found that reveal the effects of distance education in nursing during the pandemic period(19,31). Among these studies, Afşar and Büyükdoğan, who reported that distance education yielded positive results, reported that university students spend more time for themselves thanks to distance education, they listen to the course in a more comfortable environment, they can focus more easily on the lessons, they save time and it is economical in obtaining information(19). In another study on the subject, 42.4% of nursing students stated that the distance education method is economical in obtaining information (31).

The studies are reporting negative results as well as positive results of receiving education with distance education. In the study of Jiménez-Rodríguez and Arrogante, 2020, nursing students emphasized that technological resources and the Internet are important in distance education(40) .

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In a study conducted in Pakistan, it was revealed that 43% of nursing students had internet and connection problems, and 10% could not attend online classes due to power cuts (14). In the study conducted by Adnan and Anwar (2020), it was reported that university students had problems in issues such as limited access to internet facilities, lack of proper communication interaction with students and instructors, and the inadequacy of technology use, and that traditional learning was more motivating(10). As the field of nursing is not only a theoretical but an applied science field, and hospital practices, which have an important role in transforming the acquired cognitive data into psychomotor skills, as a result of the cancellation of hospital practices, the acquisition of these skills without compromising the quality of education with online education has emerged as an important problem(13,35,41). Teaching psychomotor skills is much more difficult and complex than theoretical education in distance education. During this period , all digital simulation applications such as virtual patient simulation, video patient visit applications, educational videos were applied for nursing educators, practical training. Although the execution of theoretical lessons seems possible with distance education, patient care, physical examination, etc. Learning psychomotor skills is not sufficiently accomplished in this training method(8,12,13).

Considering the studies conducted on the subject, in the study conducted by Jiménez-Rodríguez and Arrogante (2020), it was stated that computer-aided simulated scenarios contribute to the

learning and reinforcement of non-technical skills of nursing students such as communication, active listening, appearance, and empathy (40). However, students reported that this method is a disadvantage in developing technical skills. Similarly, in the study of Afşar and Büyükdoğan (2020), students criticized distance education for not being able to practice and not being a substitute for face-to-face education (31). Researchers reported that in health education, which is an applied field, students 'staying away from hospitals, which is a basic education field, negatively affected students' academic performance, motivation, and mental state (8,9,31, 33). In a study conducted with nursing students during the pandemic period in the United States, instructors included clinical practice training; They have presented with applications such as care plans, interactive case studies, online learning activities, communication activities and classroom discussions. He stated that although case discussions were held with the students through distance education, at the end of the term, the students mostly remember the practices they had at the

hospital. (36). For this reason, it is thought that clinical practice cannot be completed with only vision and hearing, and when the five senses are involved in nursing care, the practice is more permanent and no method is as effective as clinical practice. In a study conducted on the subject, it was reported that when third and fourth year nursing students could not take clinical practice lessons enough, their education would be incomplete, they would not feel sufficient, and clinical practice skills could not be learned only by distance education(34). Considering the results of the study, it is recommended that the distance education is given in the pandemic period, which is not yet known to be completed, should be presented in the infrastructure so that the lessons can be watched again, the educational methods such as educational videos, group work and oral exam should be used in studies with students (8, 41, 34, 38.39)

Result

During the COVID-19 pandemic process, due to the interruption of face-to-face education, compulsory online distance education was introduced and this method gained importance. The transition to compulsory distance education is an opportunity for the widespread use of this method and its development, and it will accelerate its integration with other traditional methods. It is thought that organizing online meetings and programs regarding the problems and solution suggestions of nursing educators who provide online distance education during the pandemic period at the national and international level will contribute to the most effective execution of this process.

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The Effects of COVID- 19 Pandemia on the Quality of Life in Geriatric Individuals: A Sample of Denizli

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Abstract

Purpose: Factors such as age, educational status, chronic diseases, medication use, physical disabilities, physical activity status, leisure activities and economic status affect the quality of life in geriatric individuals. The aim of this study is to examine the effect of the COVID-19 pandemic on the quality of life in geriatric individuals aged 65 and over living in Pamukkale town, Denizli.

Methods: A total of 40 geriatric volunteers, 20 females and 20 males were included in the study. Demographic data were recorded in the geriatric individual identification form. Short Form 36 (SF-36) was used to evaluate the quality of life of geriatric individuals.

Results: The mean age of individuals was 69.15±3.12 years. The mean value of physical role limitation among SF-36 sub-parameters was 48.75±28.70, energy-vitality status was 44.87±20.14, physical function was 44.75±16.32 and bodily pain was 44.31±17.39. The mean value of general health status was 42.87±19.50, emotional role limitation 40.66±32.38, social function was 39.56±20.99 and mental health status was 39.40±18.77. When the quality of life values of geriatric individuals were compared according to gender; a statistically significant difference was found in favor of females in physical role limitation (p=0.019). There was no statistically significant difference between genders in other parameters of quality of life (p>0.05).

Conclusion: It was known that social activities and physical activities have important effects on quality of life. The COVID-19 pandemic has negatively affected the quality of life of geriatric individuals.

Keywords: Geriatric individual, COVID-19, Quality of life.

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INTRODUCTION

The number of geriatric individuals is also increasing today, thanks to the increasing quality of health and developing technologies. This increase is seen in our country as in many countries (1). The facilitation of living conditions compared to previous times and the easy-to-obtain health-related treatment, rehabilitation and care opportunities are the main reason for this increase.

The overall increase in well-being in geriatric individuals makes them individuals who can live independently. However, if we consider the COVID-19 pandemic in today's conditions, geriatric individuals who are independent, able to do their own work and continue their various physical activities are more restricted compared to other individuals (2). Of course, this situation affects geriatric individuals very much physically, psychologically and socially. With increasing age in the human body, many changes occur. Among these, decrease in muscle strength, decrease in bone mineral density, joint movement clearance losses, decrease in cardiovascular capacity, circulatory disorders and functional limitations may occur as the causes of physically inactive condition (3,4). In addition, various psychological and behavioral problems such as depression, anxiety, social restrictions, general unhappiness can be seen. The fact that there are so many problems shows the importance of general concept for quality of life and the evaluation of this concept in geriatric individuals.

The aim of our study was to examine the impact of the COVID-19 pandemic on quality of life in geriatric individuals aged 65 and over.

METHODS

The study was conducted between November 2020 and December 2020. The population of study consisted of 40 geriatric individuals aged 65 and over, residing in Denizli, Pamukkale district and agreeing to participate in the study.

Inclusion criteria: Individuals who did not have any diagnosed psychiatric problems were included in the study.

Demographic characteristics of geriatric individuals including such as age, gender and education status were recorded in the data registration form.

Short Form–36 (SF-36) was used to evaluate the quality of life. SF-36 is a valid and reliable generic scale used to measure the quality of life with 36 sub-items of 8 dimensions of health,

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including physical function, emotional role limitation, physical role limitation, energy-vitality, mental health status, social function, bodily pain and general health status. Each dimension is scored between 0-100 points in itself, with higher scores indicating a better health state (5,6).

All volunteers who met the inclusion criteria were informed about the study. After their consent was obtained, the data were collected using face-to-face interview technique.

Statistical Analysis

Data were analyzed using SPSS Statistics 19.0 for Windows®(IBM) and the statistical level of significance was set at α=0.05. Categorical variables were presented as proportions,whereas continuous variables were described as mean and standard deviation.All measurements were checked for normality with the Kolmogorov-Smirnov test. The independent sample-t test was used to compare the quality of life levels by gender.

RESULTS

Of the 40 geriatric individuals living in Pamukkale district and participating in the study, 20 (50%) were female and 20 (50%) were male. The mean age of all individuals is 69.15 ± 3.12 years. Nineteen (47.5%) of geriatric individuals were primary school, 15 (37.5%) were high school and 6 (15%) are university graduates (Table 1).

When dimensions of SF-36 were examined, the mean value of physical role limitation was 48.75± 28.70, energy-vitality status was 44.87±20.14, physical function was 44.75±16.32 and bodily pain was 44.31±17.39. The mean value of general health status was 42.87±19.50; emotional role limitation 40.66±32.38, social function was 39.56±20.99 and mental health status was 39.40±18.77 (Table 2).

Compared quality of life values by gender in geriatric individuals participating in the study; statistically significant difference was found in physical role functions in favor of female individuals (p=0.019). No statistically significant differences were found between the gender in physical function, emotional role limitation, energy-vitality status, mental health status, social function, bodily pain and general health status (p> 0.05).

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DISCUSSION

As a result of our study to evaluate the quality of life of geriatric individuals who had to live in isolation at home due to the COVID-19 pandemic, it was seen that the quality of life values ingeriatric individuals were below their average value.

The COVID-19 pandemic has greatly affected our daily lives in our country as it has in the world. The geriatric population is at an important point in this impact. The quality of life of individuals depends on many different situations. Isolations caused by the pandemic, limitations in social life significantly affect the quality of life.

In the study conducted by Demiral et al., SF-36 mean values and distinctive features in Turkish society were examined; the mean value of physical function is 56.3, the physical role limitation is 64.0, emotional role limitation 86.5. Energy-vitality status 60.9 mental health status 72.0, social function 83.7, bodily pain 70.3 and general health status 62.8 were found (7). In our study; maen value of physical function was 44.75, physical role limitation was 48.75, emotional role limitation was 40.66. Energy-vitality status was 44.87, mental health status was 39.40, social function was 39.56, bodily pain was 44.31 and general health status was 42.87. We think that the lower mean values of 8 sub-parameters in the quality of life than the normative values due to the COVID-19 pandemic. Restricting the various activities of social isolation and geriatric individuals such as walking and moving to a less active life affects their general health status and feeling good.

In the study conducted by Saraiva et al., evaluating the quality of life of the elderly during the COVID-19 pandemic; When asked about the impact of the COVID-19 pandemic on their quality of life, 54% of respondents said the pandemic affected them to some extent, while 23% said they were not affected at all and 23% said they were greatly affected (8). It was reported that the proportion of participants who reported going to another environment from their home at least once a week due to foreign activities decreased from 74% before quarantine to 19% during quarantine, and also the proportion who left their homes every day decreased from 29% to 2%. It has been reported that physical activity decreases significantly before and during quarantine, while older adults who do regular physical activity at least three times a week decrease from 42% to 26%. In parallel with our study, the negative effects of restricted social life, decrease in regular physical activities and vital anxiety on quality of life in geriatric individuals have been reported.

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It is considered that the quarantine process and the restriction of individuals in terms of various physical activities outside, such as domestic exercise programs, are important for protecting the health of the community and providing physical mobility (9,10). It can also be done in the form of a telephone conversation or in the form of a television broadcast; conversations aimed at informing individuals about the disease, recommendations on basic health and care, as well as psychological supports, also provide an important service (11,12).

The limiting of this study is that it was aimed within a limited zone and included individuals with a certain age range. A study should be carried out within larger limits and with a wider age range. Due to the differentiable pandemic conditions, it was evaluated with a questionnaire that can be done in a short time. More holistic and measurement-based evaluation methods of geriatric individuals may be preferred. The limited number of researchers and the limited duration of research, and the small number of individuals who volunteered to participate in the research from geriatric individuals are among the limitedity of the research.

CONCLUSION

The quality of life of geriatric individuals condemned to an inactive lifestyle during the COVID-19 pandemic has been negatively affected. In order to socially activate these geriatric individuals, special programs arranged for them should be made from social media, television programs and phones.

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TABLES

Table 1. Demographic characteristics of geriatric individuals

Variables	Mean ±SD
Age (year)	69.15 ± 3.12
Gender	**n (%)**
Female	20 (50%)
Male	20 (50%)
Education status	
Primary school	19 (47.5%)
High School	15 (37.5%)
University	6 (15%)

SD: Standard deviation

Table 2. Quality of life values of geriatric individuals

SF-36 dimensions	Min-Max	Mean ±SD
Physical role limitation/100	0-100	48.75 ± 28.70
Energy-vitality /100	0-80	44.87 ± 20.14
Physical function /100	15-75	44.75 ± 16.32
Bodily pain /100	22.50-77.50	44.31 ± 17.39
General health /100	5-75	42.87 ± 19.50
Emotional role limitation /100	0-100	40.66 ± 32.38
Social function /100	12.50-75	39.56 ± 20.99
Mental health /100	4-84	39.40 ± 18.77

SF-36: Short Form-36, SD: Standard deviation

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Table 3. Comparison of quality of life values by gender in geriatric individuals

SF-36 dimensions	Female (n=25)	Male (n=25)	t	p-value
Physical role limitation	59.25±25.91	38.25±28.06	2.458	**0.019***
Energy-vitality	49.25±19.88	40.50±19.92	1.390	0.173
Physical function	44.50±16.69	45.00±16.38	-0.096	0.924
Bodily pain	47.25±17.95	38.50±20.46	-0,427	0.672
General health	43.12±18.08	45.50±17.06	1,438	0.159
Emotional role limitation	44.79±24.73	36.54±38.78	0,802	0.427
Social function	36.00±21.04	43.12±20.86	-1,075	0.289
Mental health	42.80±19.64	36.00±17.69	1,150	0.257

*Independent Sample t Test

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The COVID-19 pandemic and acute coronary syndromes

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Abstract

Purpose: In the COVID-19 era, concerns about transmission risk withdraw patients to admit to hospitals and take medical help for even emergencies such as acute coronary syndromes (ACS). The study aims to obtain the impacts of the COVID-19 pandemic on ACS demographics and compare the same period in 2019 from a referral percutaneous coronary intervention (PCI) center perspective.

Methods: The study was conducted using anonymous data from a referral PCI center that provides care for more than 2 million habitants throughout Northern Izmir. Hospital admissions and emergency transfers with a diagnosis of ACS were documented between 11th March and 11th June 2020 and for the same period in 2019 retrospectively. Data about demographics, clinical presentation, and management strategies were collected and compared between the same periods in 2019 and 2020.

Results: Overall, ACS admissions were found to be decreased 6.0% from 2019 (480 patients) to 2020 (451 patients); however, decrement in the first three weeks following the World Health Organization (WHO) declaration on pandemic was sharper (26.7%). Patients over 65 years of age, gender, and type of ACS presentation were not different between 2019 and 2020. Higher rates of PCI (51.3% vs. 59.2%) and lower rates of coronary artery bypass grafting (CABG) surgery (13.5% vs. 10.9%) as a destination therapy for revascularization were observed in 2020 than 2019 (p=0.049).

Conclusion: A slight decrease was detected in emergency admissions for ACS in the study. Interventional cardiologists may develop a tendency to perform the final decision for revascularization in the catheter laboratory.

Keywords: COVID-19 pandemic, Acute coronary syndromes, Interventional cardiac procedures

Introduction:

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SARS-CoV-2 related COVID-19 pandemic affected countries all over the World and global outbreak still continues. Pandemic era changed daily life and healthcare costs were also increased. Extremely increased numbers of need for mechanical ventilation devices and intensive care unit hospitalizations overwhelmed healthcare systems. On the other hand, concerns about risks of transmission withdraw patients to admit to hospitals and to take medical help for even emergency situations such as acute coronary syndromes (ACS). Turkey is one of the last countries announced first proven COVID-19 case, at March 11th, 2020 (1). Following the announcement of first case in Turkey, national government ordered a partial lockdown especially involving citizens over 65 years of age who were thought under to have an increased risk situation. Within the course of outbreak, a general curfew order for weekends was also approved in Turkey.

With the onset of COVID-19 era, many healthcare workers reported a decline in hospital admissions related to ACS. Even studies were published about the effect of COVID-19 outbreak on the decrement in ACS hospitalizations (2-5). Decreased ACS admissions increased concerns among cardiologists about an increase in cardiac mortality and as well as an increase in morbidities such as heart failure syndromes in long term. Some clinicians claimed that either partial lockdown policies depending on population age or concerns of citizens about staying in hospital environment might play role in the decreased number of ACS hospitalizations. Turkish Society of Cardiology published an expert opinion paper about the management of cardiac patients including especially ACS presentations during the ongoing COVID-19 era (6).

In this study, we aimed to observe the effect of COVID-19 pandemic for 3 months period from March 11th to June 11th 2020 on the number of ACS hospitalizations in a high volume, referral catheter center which is capable of performing 7/24 percutaneous coronary interventions (PCI) and compare the acquired data with the same time period of 3 months of 2019.

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Methods:

Study population:

This single center, retrospective cohort study enrolled the patients with ACS who had admitted to the referral center and other health care providers in same geographic region. The study was conducted using anonymous data from a referral PCI center with 2 cardiac catheterization laboratories and inpatient clinics that provides care for more than 2 million habitants throughout Northern Izmir. Individual cases were searched from the referral center database, starting at March 11th 2020, the day which the first proven case was detected in Turkey (1) to June 11th 2020. March 11th 2020 is also the day which World Health Organization (WHO) declared COVID-19 as a global pandemic around the World (7). Hospital admissions and interventional procedures for ACS patients between March 11th and June 11th 2020 were compared with the same time period of March 11th and June 11th of the year 2019. Demographic characteristics of patients such as age, gender, type of ACS presentation and the final decision for the management of ACS were recorded for both 2019 and 2020. The dataset was also evaluated for 3 month period from March to June for 2020 and changes in demographics of ACS patients and trends for the management were searched while the COVID-19 pandemic was going on.

Statistical analysis:

For discrete and continuous variables, descriptive statistics (mean, SD, median, IQR, and percentile) were calculated. The assumption of normality was tested via the Kolmogorov-Smirnov test. To compare the differences between the 2 groups, the Student-t test was used when the parametric test prerequisites were fulfilled, and the Mann-Whitney U test was used when such prerequisites were not met. The data were evaluated using IBM SPSS Statistics for Windows, Version 22.0 (IBM Corp., Armonk, NY, USA). P values <0.05 was accepted as statistically significant.

Results:

Overall number of admissions or referrals with ACS decreased from 480 in 2019 to 451 in 2020 (6.0% overall decrement) (Figure-1). We observed a higher decrement in ACS admissions/referrals as 26.7% for the time period between March 11th and April 2nd, 2020 compared to same time period in 2019 (ACS admissions decreased from 127 to 93 in first 3 weeks within pandemic declaration of WHO).

At demographics perspective, mean age had a tendency to be lower but this did not reach a statistical significance (62.2±12.8 vs. 60.7±12.8 years) (p=0.083). Patients' ratio older than 65 years of age (43.5% vs. 40.5%) and female gender ratio (30.8% vs. 31.5%) were similar between the years (p values were 0.360 and 0.830, respectively) (Table-1).

Relative percentage of patients treated via PCI was higher in 2020 (51.3% vs. 59.2%) (p=0.049). CABG ratio (13.5% vs. 10.9%) and patients who managed medically (35.5% vs. 29.9%) were lower in 2020 than 2019 (Table-1). Overall mortality rate was similar between the years (2.3% vs. 0.9%) (p=0.089). Number of stents implanted per patient were not different between the years (1.45 vs. 1.36) (p=0.190).

Discussion:

Although we detected a 6.0% decrement in admissions/referrals for ACS in first 3 months of COVID-19 pandemic than respective period of the previous year, this slight decrease is much lower than previous studies conducted mainly in European countries (2-4). Also in another study from Turkey, a 58.3% decrease was reported in acute MI hospitalizations in COVID-19 era (5). On the other side, these studies report the ACS admission decrements for only the first few weeks of global outbreak. Similarly, we also detected a higher decrease (26.7%) in ACS admissions/referrals within the first 3 weeks (between 11th March and 2nd April, 2020) following the announcement of first COVID-19 case in Turkey (1). This decrease is much similar to previous studies however it is still lower than them. We think that referral position of the study center rather than admission center only may have a role on slight decrement in ACS

volume in pandemic era. It is also possible that the decrements in admission numbers due to patient's contamination fear and drawbacks about health care provider is major driver in decrements in overall ACS volume in pandemic era. However, at referral center perspective these reasons were not valid and not have substantial effect in ACS volume of the center. Study center is a high volume, tertiary, referral catheterization center for interventional cardiology procedures, so this also might play a role in slighter decrease in ACS volume compared to previous reports.

In our analysis, mean age had a tendency to be lower than the same 3 months period in 2019 but this was not statistically significant (p=0.083). With the announcement of first case in Turkey, a curfew order for citizens who are older than 65 years of age and also who are with chronic illnesses was approved by the national government and this factor might play pivotal role for younger ACS hospitalizations in the course of pandemic (8). Following these curfew orders, concerns about the medical management of ACS patients over 65 years of age have arised among cardiologists.[6] Unfortunately, we do not have any data about the probable cardiac death rates in older patients during the course of COVID-19 outbreak yet. These concerns also exist about the possible future increase in patients with intractable heart failure symptoms. We think that statistical analysis of patients with de novo heart failure admissions should be monitored closely in the forthcoming days in Turkey.

We also observed an increased tendency to perform PCI rather than CABG referral in pandemic era. An increase in rate of patients who were treated with PCI was observed from 51.3% to 59.2% in 2020 compared to 2019 with the onset of outbreak. At the same time a decrease in CABG rates was also observed from 13.5% to 10.9% as a destination therapy in ACS patients (p=0.049). Although statistically borderline decrements in the rates of CABG or the increase of PCI numbers have small differences from the previous year, we think that heart team of the study center have a tendency to withdraw from longer hospitalizations or more aggressive revascularization techniques such as CABG in COVID era. Studies documenting the trends in coronary revascularization options in COVID era are limited. In a preliminary report, CABG

population size in March and April 2020 was observed as 61% of CABG population in 2019. This sharp decrease in CABG rates became lesser when statistical data was expended to a period of first 4 months in 2020 (9). On the other hand, there is no data about the comparison of PCI vs. CABG rates as revascularization choice in ACS population. In our study, we observed a trend to PCI as a destination therapy in ACS population and withdrawal from more complex revascularization procedures and longer hospitalizations.

In conclusion, this preliminary report showed us that partial restraints cover older citizens might have a role in the decreasing mean age of ACS admissions. Interventional cardiologists developed a tendency to finish ACS patients' revascularization in the catheter laboratory and PCI rates as a destination therapy for revascularization increased compared to previous year. Nationwide close monitoring about de novo heart failure rates should be discussed strongly in the future.

Study limitations:

First of all this is a single center, retrospective study and data collection was only performed from the hospital computer system. At a methodological perspective we cannot exclude selection bias, referral bias, and other logistic issues that inevitable parts of retrospective design. We do not have enough data about clinical severity of ACS admissions and also we do not have data about the mechanical complications related to probably delayed emergency admissions. As another limitation, complexity of coronary artery disease and existing comorbidities of patients were not searched in statistical analysis. As a last word, possible co-infection of COVID-19 and probable cardiac involvement was not searched in this study.

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Table-1: Demographic characteristics and trends in clinical management between 2019 and 2020 for ACS patients.

	2019 (480 patients) (March 11th-June 11th)	2020 (451 patients) (March 11th-June 11th)	p value
Age (mean±SD)	62.2±12.8	60.7±12.8	0.083
Percentage of patients over 65 years of age (%, N)	43.5 (209)	40.5 (183)	0.360
Female gender (%, N)	30.8 (148)	31.5 (142)	0.830
Clinical presentation (%, N) • USAP • NSTEMI • STEMI	26.9 (129) 50.8 (244) 22.3 (107)	23.1 (104) 49.7 (224) 27.3 (123)	0.153
Preferred treatment (%, N) • PCI • CABG • Medical	51.3 (246) 13.5 (65) 35.2 (169)	59.2 (267) 10.9 (49) 29.9 (135)	0.049
Average number of stents used for PCI patients (mean±SD)	1.45 (0.76)	1.36 (0.74)	0.190
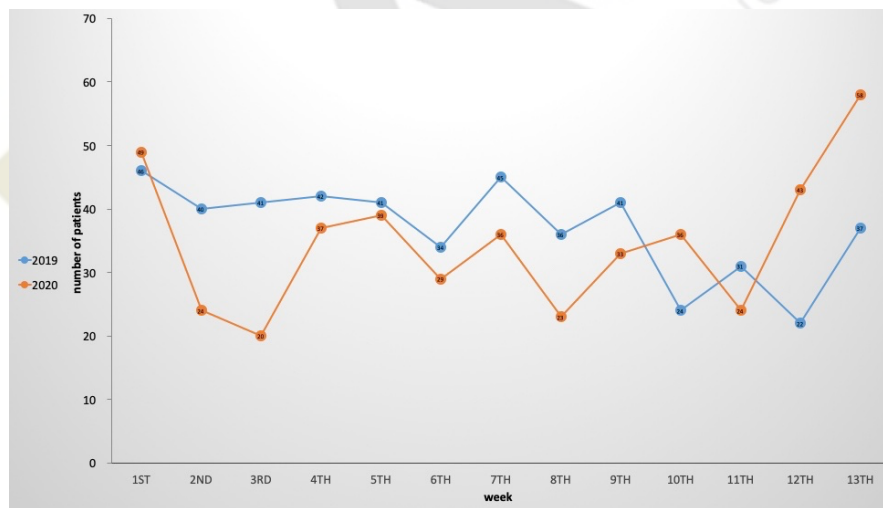
Figure-1: Graphical decline of number of the ACS patients from 2019 to 2020 with the onset of COVID-19 pandemic.

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Concerns of Dental Faculty Students about Distance Learning during the Coronavirus Pandemic

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ABSTRACT

Introduction and Aim: Universities worldwide are heavily affected by physical distance measures due to coronavirus disease 2019 (COVID-19). Dental schools in our country have transferred "face-to-face" learning to online learning since the Spring of 2020. Thus, this cross-sectional study aimed to evaluate the concerns of dental school students regarding distance learning during the coronavirus pandemic.

Methods: An anonymous questionnaire was sent by WhatsApp messenger to students at a public university. The questionnaire was tested on 150 students including, first, second, and third classes. The time for completing the questionnaire was approximately 5 minutes and there were fifteen questions.

Results: It was found that students agreed that distance learning was necessary to continue education during quarantine, but enjoyed less than it. The students concerned that their practical learning would be interrupted and feared that the school year would fail.

Conclusion: The recent COVID-19 outbreak has negatively impacted dental education. Policies and protocols containing a detailed plan for the future of education in dental schools should focus on considering.

Keywords: COVID-19, dental education, distance learning, infection, distance education.

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INTRODUCTION

In late 2019, a new Coronavirus (SARS-CoV-2) was detected in Wuhan, China, and a pandemic of coronavirus disease (COVID-19) was declared by the World Health Organization (WHO) on March 11, 2020.[1] The SARS-CoV-2 virus is transmitted by contact with secretions or aerosols, and asymptomatic subjects and incubating patients are carriers of the disease. Aerosols from infected persons may pose an inhalation threat at certain distances and in confined spaces, especially if there is insufficient ventilation.[2]

Today, many measures are designed and implemented by all health authorities around the world for infection control. The COVID-19 pandemic has impacted on all aspects of life, such as the closure of schools, companies, and public spaces, and changing the business world. The COVID-19 outbreak has greatly affected the implementation of the dentistry curriculum, where face-to-face education was used very effectively. The COVID 19 pandemic not only created the need for distance education but also provided the chance to accelerate digital transformation in dental education.[3] The COVID-19 pandemic may have a positive impact on future dental education.[4]

Online learning can only apply to theoretical learning content, as hands-on training on phantoms and patient care in the pre-clinical curriculum is indispensable applications for dental education.[4] The dentistry curriculum requires clinical training and professional socialization. Therefore, in Turkey health-related higher education institutions and their programs did not widely use distance learning before the pandemic. It was difficult for faculties and students to suddenly embed distance learning strategies into an educational program without prior preparation and training. 2020 Spring Semester, all courses of the dentistry education in Turkey was decided to be done with distance learning instead of "face to face". This situation has continued in the Fall of 2020 as the pandemic continued.

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To the best of our knowledge, no studies have been conducted in Turkey to evaluate the concerns of dental students regarding distance learning during the coronavirus pandemic. Thus, the purpose of this study was to evaluate the concerns of dental school students about distance learning during the coronavirus pandemic.

MATERIALS AND METHODS

Before the COVID-19 outbreak, practical preclinical lessons were accompanied by theoretical "face-to-face" courses over a 16-week period in the University of Çanakkale Onsekiz Mart, Dental School. The teaching included theoretical courses and preclinical training in the first 3 years. This descriptive and cross-sectional study was conducted with students of a state dental school who were educated first, second and third years in December 2020. Ethical approval was obtained from the Scientific Research and Publication Ethics Committee at Çanakkale Onsekiz Mart University. The students were informed about the aim and method of the survey, their verbal consent was obtained.

The sample size was determined to be 130 with a power analysis performed based on 0.05 level of significance, in a 0.95 confidence interval, 0.09 effect size, and 0.95 ability to represent the population of dental students (version 3.0. 10, G * Power; Franz Faul Universidad, Kiel, Germany). In sample selection, the number of students to be taken from classes was determined by the stratified sampling method. The determined students were ranked according to their class lists, and 150 students for the research group were created with a simple method with a table of random numbers.

A Google Forms (Google Inc, Mountain View, CA, USA) questionnaire was constructed and sent by WhatsApp messenger to students. A previously used questionnaire to evaluate the concerns of students of health-related higher education courses regarding distance education during the coronavirus pandemic in the study of Peloso et al.[5], was translated into Turkish. A pilot study was carried out on 10 students to test the structuring and understandability of the questions. After the pilot study, the final version of the 15-question questionnaire was created.

The survey items evaluated personal information, emotions about the coronavirus pandemic, distance learning, and the impact of distance learning on higher education course performance.[5] The level of anxiety\stress in terms of the pandemic was assessed with a numerical rating scale (0=no anxiety\stress\concern to 10=extremely anxious\stressed\concerned).[6] A total of 150 students (61 boys and 89 girls) answered the survey. The answers received were tabulated in Excel for statistical analysis and descriptive statistics were calculated.

RESULTS

The mean age of the students was 19.09±3.21 years. Most of the students were females (59.4 %); 40.6 % were males. 14.6% of the participants reported COVID-19 symptoms. 89.4% of them were not in the risk group for COVID-19.

A total of 50 % of the students were anxious about the coronavirus outbreak, but 32 % of them were calm. The mean level of self-reported anxiety was 4.95 (s.d.= 1.3), indicating low anxiety about the quarantine. 81.4 % were complying with quarantine by leaving home only when necessary, and 16.6 % by not leaving the home. Most of the students (64 %) participated in distance education during the quarantine. But, almost half (40.6 %) did not enjoy distance learning; 35.4 % partially enjoyed it. 46% of the participants had difficulty in distance learning, besides, 26 % could follow the lessons without any difficulty. Only 4.6 % were not following distance learning activities.

About how the quarantine might affect higher education courses, 70% of students were concerned that their clinical and vocational learning would deteriorate due to quarantine, but only 34.5% thought that theoretical learning would decrease. 29.3 % were afraid of exams and 56 % were afraid that they would fail the year. Many students (58.6 %) thought that the activities of distance learning offered to them by the faculty were consistent with their learning content. 42.6% considered that the frequency of activity was enough and 49.4% thought that it partially helped to learn. Establishing a study routine (44 %) and learning without faculty (39.3 %) were the main challenges in distance education. The level

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of concern about the effect of quarantine on higher education was extreme at 23.4%. After the quarantine, 35.3% of the students wanted to continue some online learning activities, and 40.7% were not sure.

DISCUSSION

The COVID-19 pandemic has caused anxiety in society due to many restrictions that have completely changed daily life around the world. During this period, social distance measures are necessary and have a very compelling impact on dental education, where face-to-face learning is essential.[7] To prevent the spread of the virus, online learning has been begun since Spring Semester 2020 in Turkey. As we know, there is no study to evaluate the concerns of dental students regarding distance learning during the coronavirus pandemic in Turkey. Therefore, this study assessed the students of dental school concerns about distance learning during the coronavirus pandemic. The results of the current study showed that students agreed to the necessity of distance learning to continuing education during quarantine but enjoyed less than it.

Half of the students were found to be concerned, but the average level of anxiety was low about the coronavirus outbreak, in the current study. As almost all the students followed the quarantine rules, their anxiety levels may have been low. Many students were satisfied with the content and frequency of the distance education activities offered to them by the faculty. On the other hand, most of the students were determined to worry that their clinical and professional learning would deteriorate in the pandemic outbreak. They were worried that they would fail within the year. This is explained by the fact that the curriculum of dental education requires preclinical laboratory applications and face-to-face learning activities.

Distance learning requires a high level of self-discipline and motivation of students. Peloso et al.[5] evaluated the concerns of students regarding distance learning in health-related higher education institutions during the coronavirus pandemic in Brazil. Peloso et al.[5] showed that the most common

challenge mentioned was establishing a study routine, similar to our study. In this study, learning without faculty was one of the main difficulties in distance education.

Jones et al.[8] evaluated the transformation of a large basic interprofessional course into an asynchronous online learning environment and determined that the majority of students preferred face-to-face courses, 18 % preferred online courses and 12.7 % did not have any idea. Agius et al.[9] compared the impact of the COVID-19 pandemic on their students of a single dentistry school in Malta. Researchers[9] resulted that the students in general accepted online teaching as a good alternative to face-to-face lecturing considering the circumstances, but they preferred to do it in the classroom. Similarly, in this study, most of the students participated in distance learning during quarantine, however, almost half did not like it. Only very few of the students did not follow the distance education activities.

It took time to suddenly turn traditional teaching strategies into distance education and successfully implement it. Peloso et al.[5] conducted a survey in Brazil at a relatively early stage of the pandemic. It may not reflect the perceptions of students in the later stages of the pandemic as the pandemic prolongs, causing more problems for patients, healthcare professionals, and institutions. This survey was conducted in Turkey in December 2020. Since it was a period in which students and educators adapted relative to distance learning, it showed the concerns more clearly.

The limitation of this study was that participants were included from a single state university from Turkey. Thus, further studies are needed to plan with participants from many private and public universities. Higher education institutions may learn from each other's experience and convert learning activities for the future in emergencies to ensure education standardization during the COVID-19 pandemic.

CONCLUSION

Students agreed that distance learning was required to continue education during the quarantine. However, compared to face-to-face learning, they enjoyed less with distance learning. The students worried that their practical learning would be interrupted and afraid that the school year would fail. The COVID-19 pandemic has been negatively affecting dental education and therefore it would be beneficial to prepare detailed protocols for the future of education.

Compliance with Ethical Standards: Çanakkale Onsekiz Mart University Ethics Committee

Author Contribution: Concept, Design, Data Collection, Analysis, Literature Search and Writing Manuscript – OCG.

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The Effect of Covid-19 Pandemic on Psychological Endurance Levels of Turkish Cyclists

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ABSTRACT

In this study, it was aimed to compare the psychological endurance (PE) scores of cycling athletes before and during Covid-19 pandemic. The study included 32 cyclists; 13 women and 19 men participating in national and international competitions.

The socio-demographic information form with 17 questions and the "Psychological Endurance Scale" developed by Şerife Işık were used as data collection tools. SPSS package program was used for statistical analysis of the data. To determine pre-test and post-test differences of PE scores, "dependent groups t" test, to determine differences between demographic characteristics and scale scores ANOVA test was used. We apply post hoc test to find the differences between the groups.

As a result of the research; no significant difference was found between the mean scores of the "challenge", "self-commitment" and "control" sub-dimensions of the scale before and during the pandemic period of cyclists ($p > 0.05$). When analyzed according to gender variable, it was found that PE total scores ($p = .047$) and mean scores of the "challenge" sub-dimension ($p = .006$) were statistically different ($p < 0.05$) in the normal process before the pandemic. On the other hand, during the pandemic process, it was found that there was no significant difference between PE total scores and all sub-dimension average scores ($p > 0.05$). When PE scores were examined according to specialty of cyclists, it was determined that both sub-dimensions and PE total scores did not change significantly before the pandemic ($p > 0.05$); but it was found a significant difference only in the "control" sub-dimension during the pandemic process ($p = .027$, $P < 0.05$).

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As a result, PE total scores were not significantly affected by the pandemic on cyclists; however, it can be said that PE scores in sub-dimensions may differ in terms of gender and specialty variables.

Keywords: covid-19 pandemic, psychological endurance, cyclist

Introduction

Psychological endurance (PE) is a character trait provided by the individual through self-control that can ensure that the health and mood of people remain positive in adverse situations. In other words, it can be defined as the individual's positive self-recovery power and "positive psychological capacity" that can be developed in the face of failure, conflict, or even an increased burden of responsibility (3). Kobasa defined PE as "personality trait that works as a source of resistance when faced with stressful life events" (12). It is stated by Olsson that the most important element of PE in unwanted situations is "regaining power". Individuals perception styles, approaches, reactions and the methods they prefer to combat these conditions may differ in crisis, anxiety and stressful situations (10).

Sports psychologists have researched what psychological characteristics elite athletes should have in order to create more efficient programs. According to their research, they suggested 11 psychological characteristics that should be in high-level athletes and PE is among these items (9). Performance is an important factor in stress for individuals who make sports as a professional, and since athletes are focused on winning, they have strong stress and anxiety before the competition. Such athletes are not only physically challenged in competition, but also psychologically and socially. For this reason, it moves away from the purpose of sports, which is one of the most natural and effective ways to protect health, it becomes threatening both psychology and physical health. The emotional state of the athletes has both positive and

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negative effects on their performance. However, since the stress level and problem solving ability of athletes differ, the same results may not occur in coping with adverse situations. For example, according to the characteristics of athletes with high anxiety and stress levels, their performances may not be affected to the same extent (10).

PE scale consists of sub-dimensions of self-commitment, challenge and control. Self-commitment is the tendency to deal with various areas of an individual's life and to give himself / herself rather than move away from new experiences. People who are superior in self-commitment are endurance people who have faith in reaching the job they want to do, regardless of their responsibilities, even in stressful environments (3). Individuals with a high level of self-commitment consider themselves and their environment interesting and worth the time. therefore, they can find something meaningful in everything they do. The challenge is the belief that change is a natural part of daily life and a stimulus for improvement rather than a threat to security (12). It means struggling and is a concept that supports the development of the individual. The reason why such people are considered combative is their belief that they can put the change in their lives back in order. They make an inference even in failure, and stressful events are very important for them in decision-making (3). Control, which is the belief that when faced with difficulties in life, instead of being helpless, it can affect the results of events, It includes self-discipline, success-oriented, autonomy and intrinsic motivation, decision-making skills, personal freedom and choice (14, 12). Emotions such as anxiety, stress, and depression experienced by individuals are problems that harm their psychological well-being. Such adverse situations can affect people and Individuals with high PE can keep their stress levels low by using their problem-solving skills in the face of adverse situations. Therefore, psychological resilience is an effective personality trait on coping with negative situations (3);

It has been reported that psychological resilience during these processes facilitates the individual to evaluate stressful situations and to cope effectively (14, 12).

Elite athletes must be able to withstand the physiological and psychological challenges of sport in order to compete. Athletes who want success must be psychologically resistant while struggling with the physiological dimension of the competition. In the literature; While strong scientific studies have been done on physiological subjects to increase performance in elite cyclists, it has been observed that psychological factors have been studied very little (18). Dealing with stress during competitions is as important as dealing with opponents. The fatigue caused by the long duration of the competition and the decrease in endurance creates a psychological pressure on the athlete. The fact that the athlete turns this situation in his favor is an important process in terms of success (10). Considering the training and match periods, cycling athletes should have high intensity training for a long time, cycling is an endurance sport and the athletes doing this branch should have a strong physiology and physiology as well as a strong psychology with some psychological effects brought about by fighting shoulder to shoulder, is also a reality. It is thought that it is important to determine the psychological endurance of female and male cyclists, especially competing athletes who race at an international level, with their sportive performances. In some studies, PE was basically stated by scientists as a factor that facilitates performance under harsh conditions (13). Therefore, it can be said that in order to become a cycling athlete, only physical strength is not sufficient, and in order to be successful, athletes must be psychologically sound within the scope of overcoming every problem (10).

In December 2019, a type of virus emerged in Wuhan, China's Hubei province, due to coronavirus 2 (SARS-CoV-2 or COVID-19). This virus has been reported to be a serious, global epidemic (11). Known as severe acute respiratory syndrome, coronavirus 2 (SARS-CoV-2)

causes an infectious disease (COVID-19) that spreads to more than 200 countries and affects more than 6 million people (17). During this epidemic period, many people, young, old, women and men, were affected both physically and mentally. It was declared a "pandemic" by the World Health Organization (WHO) on 11 March 2020. Personal measures by WHO and other healthcare organizations around the world to combat the increasing danger of the covid-19 virus; quarantine, isolation and social distance have been suggested (11). For the athletes, it becomes difficult to train due to the measures taken during the pandemic process and it is thought that there is an increase in stress and anxiety due to the uncertainty of both training and competitions. Professional and recreational athletes of almost all levels and ages were affected in this unexpected process. Considering that especially high-level competitors do their work in a stable and planned way in line with their goals, the thought that all their plans were interrupted and that they could not achieve the goal or were not ready for the competitions may have increased the psychological effects of the athletes. In a study related to this, it was reported that the COVID-19 process may cause interruptions in the training programs of athletes and have negative physical and psychological effects in the long term (15).

When the studies on PE are examined, it is stated that this concept is a learnable feature (4) and Abraham said; "There is endurance in everyone, there is no person on earth who cannot be durable. For some this is easier than for others. Maybe they were born this way, with ice in their veins. But anyone can learn to be resilient, regardless of their backgrounds, experiences, values, or beliefs. Mental resilience is not a mythological concept, and few people have this trait. This concept can be uncovered and developed in the training field. It can be consolidated every day "(1). In addition, studies have stated that PE can be improved, and many methods based on the role of coach and the influence of the environment have been mentioned in this regard (16). In

addition, studies have reported that psychological resilience of athletes is also related to sports experience, and experienced athletes have higher endurance (7, 13).

In line with these results obtained from the studies, it is necessary to determine the psychological levels of various sports branches and to investigate the effects of independent variables on this concept. It is important to research target focus and psychological resilience among cyclists, to improve performance, to increase motivation for success and to contribute to relevant studies in this field. Due to the possible psychological effects of the Covid-19 epidemic, which is a current global problem, on athletes, it is considered important to investigate psychological endurance in the study, therefore it is planned to investigate whether it has changed during the pandemic process. Based on this, the aim of the study is to investigate whether the psychological resilience of men and women who are international competitors in different categories, at the national team level, is affected by the pandemic period.

Material-Method

Participants

The sample is registered in the national team of Turkish Cycling Federation, which is between 17-26 years of age; 19 men and 13 women in the cadets, youth and elite categories, total of 32 riders. This study was carried out in Alanya district of Antalya province during the national team camp process. Psychological endurance scores of all athletes, the "Psychological Endurance" scale and the personal information of the athletes were evaluated with a "personal information form". The feedbacks of the 17-item personal information form (PIF) prepared by the research team were carefully examined, questionnaires that had deficiencies in the form, were filled incorrectly, systematically marked the same choices in the questionnaire, or left blank options more than acceptable values were excluded from the evaluation. The total

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number of licensed and active as a racing cyclist in Turkey Considering that 400 is composed conviction will represent the universe of inventory received from 32 people. The universe of the study consisted of licensed athletes due to Turkish Cycling Federation.

Data Collection Tools

In the study, "Personal Information Form" with 17 items developed by the researchers to collect information about the socio-demographic characteristics of the athletes and the "Psychological Endurance Scale" developed by Şerife Işık were used as data collection tools. The aim of the study was explained to the athletes participating in the study, the informed consent form was read, and their written and verbal consents were obtained. Personal information form and research data were applied to the participants according to the Declaration of Helsinki. Questionnaires were collected anonymously and athletes were free to withdraw from the study at any time.

Personal Information Form (PIF):

It was developed by researchers to collect personal information about athletes. In the personal information form, there are a total of 17 questions that measure the physical characteristics of the athlete such as age, gender, height and the socio-cultural level of the athlete such as the age of sports, educational status, income level, place of residence, education level of parents.

Psychological Endurance Scale (PES):

PES, one of the data collection tools, is a scale developed by Işık and whose validity and reliability study is conducted. The scale consists of 21 items and three sub-dimensions (challenge, self-commitment, control), it is a 5-point likert type ranging from "strongly disagree" and "strongly agree". As a result of the exploratory factor analysis, it was determined that the scale consists of 21 items and three sub-dimensions. These dimensions have been named as self-commitment, control, and challenge in accordance with the literature. The three-factor

structure of the scale was confirmed by confirmatory factor analysis. In addition, it was found that the differences between the averages of 27% lower and upper groups in the scale items are significant. While the cronbach alpha reliability coefficient for the whole scale is .76, the cronbach alpha reliability coefficients for each sub-dimension are between .62 and .74. The reliability coefficient of the scale on our sample was found to be .883. As a result of the findings, it was revealed that the scale measures the resilience personality trait validly and reliably (12).

Analysis of Data:

SPSS package program was used for statistical analysis of the data. The information obtained from both scales from the athletes was scored in accordance with the scoring guidelines. To determine the pre-test and post-test differences in psychological resilience scores obtained, "dependent groups t-test" was used, and ANOVA test was used to determine whether there was any difference between demographic characteristics and responses to tests. Tukey test, one of the post hoc tests, was used to find the groups in which the difference was found between the groups that differed as a result of the test. The data were tested at $\alpha = 0.05$ significance level.

Results

The "shapiro wilk test" was conducted to determine whether the scores obtained from our sample with the PE test had a normal distribution. Pre-test p value for PE (p =,091) and post-test p value (p =,303) were not found to be significant, the data showed a normal distribution on our sample (p> .05). Accordingly, "dependent group t test" was conducted to look at the difference between pre-test and post-test.

Table 1. Socio-demographic characteristic of cyclists

Variables	Categories	N	%
Categories	Junior men	18	56,3
	Junior women	6	18,8
	Elite women	8	25
Specialties	Climber	5	15,6
	Time Trialist	16	50
	Sprinter	5	15,6
	Mountain biker	6	18,8
Education	High school	26	81,3
	College	1	3,1
	University	5	15,6
Economic Level	Below minimum wage	14	43,8
	Minimum wage	4	12,5
	Above minimum wage	2	6,3
	Perfect	12	37,5
Living place	Country	1	3,1
	Town	11	34,4
	Metropolis	20	62,5
Mother's education	None	4	12,5
	Primary school	17	53,1
	Middle school	7	21,9
	High school	3	9,4
	University	1	3,1
Father's education	None	-	-
	Primary school	11	34,4
	Middle school	7	21,9
	High school	9	28,1
	University	5	15,6

In line with the data shown in Table 1, 56.3% of the participants are junior men, 25% elite women and 18.8% junior women. About half of the participants are male and the other half are female athletes. In terms of specialties, half of the participants (50%) are time trialists, the other half are mountain bikers (18.8%), climbers (15.6%) and sprinters (15.6%).

"Cronbach alpha" internal consistency coefficients were calculated to evaluate the reliability of the scales. According to the results obtained, the reliability coefficient was 0.91 for the

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"challenge" sub-dimension in the PE scale, 0.64 for the "self-commitment", 0.75 for the "control" and 0.883 for the whole scale.

Table 2. Comparison of cyclists psychological endurance sub-dimensions score

Sub-dimensions		N	Mean	SD	t	p
Challenge	Pre-test	32	4,31	0,74	-,290	0.774
	Post-test		4,35	0,44		
Self-control	Pre-test	32	4,19	0,54	-,382	0,705
	Post-test		4,23	0,42		
Control	Pre-test	32	4,02	0,61	-,581	0,566
	Post-test		4,09	0,53		
Psychological endurance	Pre-test	32	4,17	0,56	-,492	0,627
	Post-test		4,23	0,40		

*p<0.05

As a result of the analysis, when the mean scores of the "challenge", "self-commitment" and "control" sub-dimensions and PE mean scores were compared, no significant difference was found between the pre-pandemic and pandemic period (p = 0.627, p> 0.05). During the pandemic, sub-dimensions and PE total score averages increased, but this increase did not significantly affect PE of cyclists. As a result, PE of cyclists has increased during the pandemic period; however, this increase is not statistically significant.

The mean scores given by cyclists for PE were compared both before the pandemic (pre-test) and during the pandemic period (post-test) by gender. The data obtained accordingly are shown in Table 3.

Table 3. Comparison of cyclists PE total and sub-dimension average scores by gender before and during the pandemic

	Variables	N	t	p
Pre-test (Before pandemic)	Challenge	32	2.967	**,006***
	Self-control	32	1.657	,108
	Control	32	1,069	,294
	Psychological endurance	32	2.075	**,047***
	Challenge	32	.094	.926

Post-test (After pandemic)	Self-control	32	-.261	.796
	Control	32	-.794	.434
	Psychological endurance	32	-.405	.689

*p<0.05

When the scores of the cyclists' PE scale and its sub-dimensions before and after the pandemic were compared by gender; it was determined that the difference between PE pre-test mean scores of male and female athletes was statistically significant (p = .47, p <0.05). Before the pandemic, it was determined that PE pretest mean score (4.42) of female cyclists was higher than the average of male athletes (4.03). It can be said that female cyclists have higher psychological endurance than men in the normal period before the pandemic. On the other hand, when the scores in the pandemic process were compared, while PE scores of women decreased (4,19), PE scores of male athletes increased (4,25). During the pandemic process, it was found that there was no significant difference between the psychological endurance scores of female and male cyclists (p = .692, P> 0.05).

In the normal period before the pandemic, the means in PE challenge sub-dimension of cyclists were found as (4.71) for female athletes and (4.08) for men, respectively. Before the pandemic, the mean challenge scores of female athletes were similar to PE pretest scores; it was found that is higher than men. It was found that the pretest scores of the challenge sub-dimension were significantly different between female and male athletes (p = .006, P <0.05). On the other hand, the pretest scores of self-commitment sub-dimension were found as (4.38) for female and (4.07) for male cyclists, respectively, It was determined that there was no significant difference between the scores of the sub-dimension of self-commitment in the normal process before the pandemic in female and male cyclists (p = .108, p> 0.05). Similarly, the pre-test scores of the control sub-dimension were found as (4.18) for female and (3.94) for male cyclists, respectively. There is no significant difference was found between the control sub-dimension scores in the

normal process before the pandemic in female and male cyclists (p = 294, p> 0.05). Before the pandemic, PE scores of the cyclists were significantly different only in the challenge sub-dimension, whereas no difference was observed in the sub-dimension of self-commitment and control.

When the post-test scores of PE sub-dimensions were compared according to gender; post-test means of challenge sub-dimension were found as (4.33) for females and (4.35) for males, respectively, It was determined that there was no significant difference between the scores of the challenge sub-dimension during the pandemic process in female and male cyclists (p = .926, P> 0.05). Post-test scores of self-commitment sub-dimension were found to be (4.33) and (4.26), respectively, for female and male cyclists, and similarly, it was found that there was no significant difference between the scores of the commitment sub-dimension during the pandemic process in female and male cyclists (p =. 796, p> 0.05). The post-test scores of the control subscale were found as (4.33) and (4.16), respectively, for female and male cyclists, and no significant difference was found between the control sub-dimension scores in the pandemic process in female and male cyclists (p = .434, p > 0.05). It was determined that there was no difference in PE scores of the cyclists in the sub-dimensions of challenge, commitment and control during the pandemic process by gender.

Discussion and Conclusion

In this study, it was investigated whether PE of the cyclists who race at international level is affected by the pandemic. As a result of the analysis, it was seen that PE of the cyclists was not affected by the pandemic process. However, when analyzed according to the gender variable, it was seen that the pre-pandemic challenge sub-dimension and PE values differ significantly between genders; on the other hand, during the pandemic process, there was no statistically

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significant difference between genders, neither in PE scores nor in sub-dimensions. Challenge means combativeness, and cycling is a branch that includes combat. As a result of the analysis, the fact that female cyclists have higher average challenge compared to male cyclists can be attributed to the fact that female cyclists are more challenging. Since the fighting values of female cyclists are lower during the pandemic period compared to the pre-pandemic period, it can be inferred that the pandemic has an effect on the psychological endurance of female cyclists. The differentiation of the whole scale according to gender in the normal process before the pandemic (p = .47) may be related to the high difference (p = .006) in the sub-dimension of challenge. In the sub-dimension of challenge, there are expressions such as "trying new things", "learning and developing for new things", "taking risks for this", "being excited to learn something". From this point of view, it can be said that female cyclists are more courageous and excited than male cyclists to take risks in order to try new things, learn, develop and discover a new lifestyle.

According to the findings, while PE scores before the pandemic were in favor of female cyclists, they were in favor of men during the pandemic period. It was observed that PE of female cyclists decreased with the pandemic, whereas PE of male cyclists increased with the pandemic. It was determined that the sub-dimensions of PE post-test total scores did not differ according to gender, however, the total scores of the test did not differ between genders during the pandemic process (p = .692, p> 0.05) too. The sub-dimension of self-commitment is about "I enjoy life", "I am devoted to what I do", "I enjoy what I do", and it can be said that the perception of the stated expressions in female and male cyclists is the same. In the sub-dimension of control, it consists of items such as "controlling life", "acting within the plan", "self-confidence in the work done", "anticipating the problems that may arise". Based on this, the control sub-dimension mean scores of female and male cyclists regarding the perceptions in the expressions

are not statistically different, it gives rise to the thought that cyclists' approaches to these concepts are similar.

Similar to our study, Kalkavan et al. reported that PE of female and male athletes differed in sub-dimensions on high-level mountain bikers in 2020 (13). Also, Kalkavan et al. reported that PE of female and male athletes differed in lower dimensions study on high-level mountain bikers in 2020 (13). In addition, they found that female cyclists exhibit lower PE than men in unexpected situations, and these findings are consistent with the results of the present study. Similar to the findings, Altay et al. reported that there was no difference between male and female cyclists in the study in which they measured PE of elite road cyclists (2). On the other hand, Buhrow et al. reported that mental endurance does not differ according to gender and that psychological training can be applied to all athletes (5, 13). In addition to these findings, Altay et al. stated in their study that PE depends on the cultural background of athletes and is a multidimensional ability in the face of various life events by men and women of different age groups (2). In addition, Connaughton et al. reported that athletes with high sports age have higher levels of PE than those with lower sports age (6). In the study conducted by Kalkavan et al. on mountain bikers, they observed an increase in the total score level as the year of doing sports increased and they associated this with the fact that it takes up to 10 years for the psychological performance level of mountain bikers to reach their peak. In this context, it may be beneficial to examine the experience, sports age and socio-cultural variables in order to determine PE of cyclists and to understand their effect on the pandemic process more clearly.

It is considered important for cyclists to have high PE, to show good performance and to demonstrate their physical capacity. In situations that develop suddenly and unexpectedly such as a pandemic and require interventions at every aspect of their lifestyle, athletes are not only physically affected negatively; They can also be negatively affected psychologically and

mentally. It is thought that PE of athletes who race both on an amateur and international level should be improved and mental training should be given importance as much as physical training should be given to the athlete in such processes. Considering that especially the PE of female athletes decreased during the pandemic process, trainers and managers should make their plans for PE of female athletes in such processes.

Endurance sports such as cycling are often difficult and complex; psychological factors such as anxiety, self-confidence, tolerance, fear of failure, stress, etc. are thought to be important in performance (8, 19, 18). Studies have suggested that psychological skills training and thus skills such as PE, especially goal setting, can be a useful approach in mental management in cycling. However, there is insufficient evidence for the effectiveness of such factors on international level cyclists. Researchers have not tried to obtain findings about psychological processes that are important for performance in elite cyclists independently from amateur cyclists (18). In this context, increasing studies on important psychological factors affecting future sports performance, such as our current research, will shed light on individuals engaged in cycling. It is thought that it would be appropriate to conduct such studies by considering factors such as gender, sports age and sports level of the athletes.

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Determination of Students' Knowledge, Attitudes and Behaviors About COVID-19

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Abstract

Purpose: The aim of the research is to determine the knowledge, attitude levels and correct behaviors of the students studying at the Health Services Vocational School, today, where the fight against COVID-19 continues intensively.

Methods: The universe of this descriptive study consists of 322 students studying at the Vocational School of Health Services of a university in Northern Cyprus. The data of the study were collected online with a data collection form consisting of four parts and prepared in line with the literature. Necessary permissions were obtained from the University Scientific Research Ethics Committee, the Director of Vocational School of Health Services and students to carry out the study. The data of the study were analyzed using the Statistical Package for the Social Sciences program. The data was evaluated and interpreted at 95% confidence interval, significance as $p < 0.05$.

Results: The rates of the students in wearing masks, gloves and attention of social distance were determined as follows: 99.4% of the students wore masks, 57.8% did not wear gloves, and 66.5% did not pay attention to social distance. The students' mean score of COVID-19 knowledge was determined as 24.01±1.95, and their attitude knowledge score average was determined as 49.56±9.18. Both averages indicate that students' knowledge scores are at 'good level'

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Conclusion: Information, attitude and behaviour determination studies conducted with students studying in the field of health are also of great importance in terms of the diagnosis of society.

Introduction

Four cases of pneumonia of unknown etiology were reported on 29 December 2019 in Wuhan, China's Hubei province (1, 2). In the following process, this new situation was named as '2019 novel coronavirus' (2019-nCoV) as a result of the analysis made with samples taken from patients (3). The disease, which was named as COVID-19 by the World Health Organization (WHO) in February 2020 (4), was declared as a 'pandemic' by the WHO, when it started to spread seriously all over the world in March 2020 (5). According to WHO data as a declared 06 January 2020, >85 million cases and >1.8 million deaths occurred worldwide (6), >2.2 million cases, >22 thousand deaths in Turkey (7), a total of 1710 cases and 9 deaths occurred in Northern Cyprus (8). In Southern Cyprus, >27 thousand cases and >2 thousand deaths occurred (6).

COVID-19 is transmitted through droplets (such as sneezing, coughing). The transmission occurs in different ways such as direct inhalation of the secretion droplets, aerosol transmission in closed environments, or contacting hands to eyes, nose and mouth after touching contaminated surfaces (9-11).

Various measures have been taken and continue to be taken in the process following the increase in cases. Generally; Measures such as closing and restricting entry and exit to countries, stopping collective activities, interrupting education, quarantine practices, putting into practice issues such as masks, gloves and social distance appear during the pandemic period (12). During this period, it is possible to improve the course of the pandemic through the implementation of correct policies and correct control. This can only be achieved with correct knowledge, attitude and behavior (13).

In this direction, studies evaluating knowledge, behavior and attitude during the pandemic period have been brought to the literature. In the study in which the knowledge level, protective behaviors and risk perceptions of students studying in the field of health were examined, the level of knowledge was found to be 90.3%, and their attitudes towards protective behaviors were found as high as 99% (13). In a study examining the level of knowledge and behavior of dentists about COVID-19, the level of dentists working in the public sector was found to be

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100% and 95.2% of those working in private practice (14). In another study conducted with faculty of medicine students in Jordan, it was stated that the knowledge and attitude levels of the students were "good" (15).

The aim of the research is to determine the knowledge, attitude levels and correct behaviors of the students studying at the Health Services Vocational School, today, where the fight against COVID-19 continues intensively.

Methods

The universe of this descriptive study consists of 322 students who are studying at the Vocational School of Health Services of a university in Northern Cyprus in 25th-29th December, 2020. Informed consent was obtained electronically from all participants. The questions in the questionnaire were developed after reviewing pertinent in line with the literature (13, 15, 16). The data of the study were collected online with a data collection form consisting of a structured multiplying-choice questionnaire divided into four parts. There were five introductory characteristic and COVID-19 question in the first part. The questions were age, gender, infected and fear status about COVID-19, infection status of family members. The second section was included 30 units COVID-19 information questions. Each question has two options as 'right' and 'wrong'. Correct answers were scored as "1" (one), and wrong answers as "0" (zero) points. The highest score that can be obtained from knowledge questions is 30. A score between 0-10 indicates 'poor', 10-20 points indicates 'moderate' and between 20-30 points indicates 'good' level of knowledge. The third part of the form consists of behavioral items (wearing a mask, wearing gloves and social distance). Each item consists of 'yes' and 'no' options. In the fourth and last part of the form, there are 13 statements to determine students' attitudes towards COVID-19. The items in each of these statements are given with a 5-point Likert scale as follows: 'never' (1 point), 'sometimes' (2 points), 'often' (3 points), 'generally' (4 points) and 'always' (5 points). The highest score that can be obtained from the attitude section is 65. The increase in attitude score indicates a positive correlation with attitude level.

Necessary permissions were obtained from the Near East University Scientific Research Ethics Committee (YDU/2020/86-1222), Vocational School of Health Services and students to carry out the study.

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Statistical Analysis

The data of the study were analyzed using the Statistical Package for Social Sciences (SPSS) program. Kolmogorov-Smirnov Z test was used to analyse the conformity of the data to normal distribution. Introductory characteristics of students were determined by frequency distribution, and knowledge and attitude score criteria were determined with mean ± standard deviation (SD), minimum and maximum values. According to the results of the distribution test, analysis was provided with Mann-Whitney U tests for binary variables and Kruskal-Wallis H tests for analyses containing more than two variables. Correlation analysis was conducted to determine the effect of knowledge score average on attitude average. The data was evaluated and interpreted at 95% confidence interval, significance as p<0.05.

Results

The distribution of the introductory characteristics of the students is shown in Table 1. According to this; 67.1% (n=216) of the students are between the ages of 18-20 and 60.2% (n=194) of them are women. 89.4% (n=288) of the students and 60.9% (n=196) of their families did not get COVID-19 and 69.6% (n=224) fear COVID-19.

Table 2 shows the students' rate of attention to wearing masks, gloves and social distance. It was determined that 99.4% of the students wore masks, 57.8% did not wear gloves, and 66.5% did not pay attention to social distance.

The students' mean score of COVID-19 knowledge was determined as 24.01±1.95, and their attitude knowledge score average was determined as 49.56±9.18. Both averages indicate that students' knowledge scores are at 'good level' (Table 3).

The knowledge score averages of non-individual students between the ages of 18-20, who are male, who are not caught in COVID-19, who are afraid of COVID-19, and who have caught COVID-19 in their family, were found to be higher than other variables. No statistical significance was determined in the comparison of knowledge score average and introductory characteristics (p>0.05) (Table 4).

When the attitude score averages of the students are examined; the scores of people who are in the age range of 27-29, who are female, who have caught COVID-19, who are afraid of COVID-19, and who have an individual in their family who have caught COVID-19, have been found

to be higher than other variables. A statistical significance was determined between the students' attitude score average and gender (p=0.036) (p<0.05) (Table 4).

The result of the correlation analysis between the students' general knowledge and attitude point averages is given in Table 5. According to this; it was determined that there was a negative and insignificant relationship between knowledge and attitude mean scores (r=-0.134, p>0.05)

Discussion

Lack of information can lead to more spread and uncontrolled disease during the period of COVID-19 pandemic (16). Even in this period, the knowledge levels of professionals working in the field of health and students who receive education in this field play a critical role in the control of the disease (13). By ensuring that healthcare professionals and students are trained on this issue, both individual and social protection can be provided (17).

In our study, the knowledge level of the students was determined as 'good' (Table 3). There are studies in the literature to determine the level of knowledge of students and different measures. In a study investigating the awareness of patients who applied to the Otorhinolaryngology Polyclinic regarding the COVID-19 pandemic; it has been determined that the level of knowledge of individuals living with individuals in the risk group, high income and education level, and aware of the epidemic since December 2019 (18). In another study where the knowledge, perception and attitude levels of individuals living in Egypt towards COVID-19 were determined, it was found that the knowledge levels of the individuals were "good" (19).

In the study investigating the knowledge, attitude and precautionary practices of people living in Bangladesh regarding the COVID-19 outbreak, it was found that the individuals included in the study had the right information with a very low rate of 48.3% compared to other studies (20). In another study conducted with pharmacy students, it was stated that 83% of the participants had the correct information (21).

In our research, the subjects of wearing masks, wearing gloves and paying attention to social distance were also investigated in order to prevent COVID-19 transmission. It was revealed that 99.4% of the students wore masks, 57.8% did not wear gloves and 66.5% did not pay attention to social distance (Table 2). The mask reduces the number of droplets that will spread from people with positive COVID-19 and contributes positively to pandemic management (22, 23). Similar to our study, it was determined that 93.3% of healthcare workers used surgical

masks in the study in which the compliance of healthcare workers with infection control measures within the scope of COVID-19 was examined (24).

The use of gloves can reduce the risk of transmission from person to person. However, restrictions may be imposed on the use of gloves. Because the same glove used for a long time can also increase the risk of contamination (25). Contamination risk can be reduced by following the WHO's recommendations on the use of gloves (26). Another issue whose importance is understood during the pandemic process is social distance. In preventing the transmission of COVID-19, it is also important to pay attention to social distance rules as well as wearing masks and gloves. In this regard, WHO has determined some strategies for the prevention and control of infection in the hospital. One of these strategies is; The distance between employees (staff) and the patient is recommended to be 1 meter (27). In order to prevent or minimize the transmission of the virus, it is necessary to pay attention to social distance by maintaining a distance of two meters between people (28).

The attitude levels of the students included in the study were determined as 'good' (Table 3). Similar to our study results, there are studies reporting results with "good and positive attitude" level. There is a study about COVID-19 outbreaks of medical students in Turkey, as determined in a study of the attitudes and concerns has been determined that students have a positive attitude. As a result of this study, the attitude scores of female students who were educated in the clinical period were found to be higher (29). In our study, the attitude score of female students was found to be higher, and a statistically significant difference was found between the mean score and gender ($p<0.05$) (Table 4). In another study, the knowledge and attitudes of healthcare professionals about COVID-19 were examined. According to the results of the study; It has been determined that the knowledge and attitudes of health workers are at a good level (8.17 ± 1.3) (between 4-10) (30). In a study conducted in China, determining the level of knowledge and attitude, it was found that people with relatively high socio-economic levels and women have high knowledge and attitudes (31).

Conclusion

According to the results of our study, the knowledge and attitude levels of the students studying at the Vocational School of Health Services are "good" about COVID-19. It should not be forgotten that these students continue to receive the necessary training during the COVID-19 pandemic to take their place among the health professionals of the coming years, and we believe

that the immediate end of the pandemic can be achieved largely through education. Information, attitude and behavior determination studies conducted with students studying in the field of health are also of great importance in terms of the diagnosis of the society.

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Tables

Table 1. Students' introductory features (n=322)

Feature	Number (n)	Percentage (%)
Age		
18-20	216	67.1
21-23	84	26.1
24-26	12	3.7
27-29	4	1.2
30 and above	6	1.9
Gender		
Female	194	60.2

	Number	Percentage
Male	128	39.8
Getting/Caught COVID-19 Situation		
Yes	34	10.6
No	288	89.4
Fear of COVID-19		
Yes	224	69.6
No	98	30.4
The presence of a family member who contracts COVID-19		
Yes	126	39.1
No	196	60.9
Total	**322**	**100.0**

Table 2. Distribution of students' wearing masks, wearing gloves and paying attention to social distance (behavior) (n=322)

		Number (n)	Percentage (%)
Waring mask	Yes	320	99.4
	No	2	0.6
Wearing gloves	Yes	136	42.2
	No	186	57.8
Social distance	Yes	108	33.5
	No	214	66.5
Total		**322**	**100.0**

Table 3. Students' knowledge and attitude score averages (n=322)

	Average	SD	Minimum	Maximum
General Knowledge Score	24.01	1.95	17	30
General Attitude Score	49.56	9.18	13	64

SD: Standard Deviation.

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Table 4. Comparison of students' general knowledge and attitude mean scores with introductory characteristic features (n=322).

Introductory Feature	General Knowledge Average ± SD	Min.	Max.	p	General Attitude Average ± SD	Min.	Max.	p
Age								
18-20	24.17±2.00	17	30		49.29±8.96	13	64	
21-23	23.57±1.79	20	28		50.83±8.27	23	61	
24-26	24.00±2.19	21	27	0.283	45.66±18.52	13	59	0.423
27-29	23.00±1.41	22	24		**54.50±9.19**	48	61	
30 and above	**25.00±1.73**	23	26		46.00±3.60	43	50	
Gender								
Female	23.94±1.91	20	28	0.547	**50.63±8.94**	13	64	**0.036***
Male	**24.10±2.02**	17	30		47.93±9.35	13	63	
Getting/Caught COVID-19 Situation								
Yes	23.64±1.99	21	27	0.261	**52.17±6.06**	39	62	0.225
No	**24.05±1.95**	17	30		49.25±9.44	13	64	
Fear of COVID-19								
Yes	**24.03±2.04**	17	30	0.736	**50.58±8.23**	13	64	0.062
No	23.95±1.74	20	27		47.22±10.78	13	63	
The presence of a family member who contracts COVID-19								
Yes	23.92±1.96	20	28	0.591	**49.66±7.34**	31	64	0.368
No	**24.07±1.95**	17	30		49.50±10.22	13	63	

SD: Standard Deviation, Min: Minimum, Max: Maximum, *p<0.0

Table 5. The result of the correlation analysis between the general knowledge and attitude score average of the students (n=322)

	General Knowledge Score Average	
	r	p
Overall Attitude Score Average	-0.134	0.089

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COVID-19 Fear and Depression in Postpartum Women during the COVID-19 Pandemic

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Purpose: The aim of this study was to determine COVID-19 fear and depression levels in postpartum women during the COVID-19 pandemic.

Methods: This descriptive and cross-sectional study was carried out from September to December 2020 with 133 postpartum women who gave birth in the state hospital where the study was conducted after 15 March 2020. Inclusion criteria of the study were being older than 18 years, having had a delivery between the 38th and 42nd weeks of pregnancy, being in the 4-week to 9th month postpartum period, having had a healthy newborn, and being volunteer to participate the study. The study was approved by the Turkish Ministry of Health Scientific Research Platform on Covid-19 and Duzce University Non-Interventional Health Research Ethics Board (No: 2020/127). Data was collected using the Questionnaire Form, the Fear of COVID-19 Scale (FCV-19S) and the Edinburgh Postnatal Depression Scale (EPDS). The data collection survey was administered online via Google form. Statistical analysis was performed using SPSS for windows version 20.0 software

Results: The average age of the women was 30.74 ± 4.89 (range 20–43 years). The prevalence of postpartum depression was 33.1%. The mean total scores of FCV-19S, and EPDS were 19.76 ± 6.76 and 9.89 ± 6.15, respectively. A positive, significant correlation was determined between FCV-19S and EPDS scores ($r=0.337$, $p<0.001$). The majority of women (59.4%) state that they think that COVID-19 will not be transmitted to their baby through breastfeeding.

Conclusion: Using strategies to decrease fear of COVID-19 are crucial in prevention of postpartum depression during the COVID-19 pandemic.

Keywords: COVID-19; pandemic; fear; postpartum depression

INRODUCTION

The emergence of a new strain of Covid-19 on 30 January, 2020, was declared a 'public health emergency of international concern' by the World Health Organization. Covid-19 led to a global pandemic infecting more than 89 million people worldwide, and continued to spread increasingly rapidly (1). The rate of spread of the Covid-19 pandemic and rising death rates caused fear and panic. Increasing mortality rates mean that vulnerable communities must be identified and protected (2).

Fear of Covid-19 has led to increased depression, anxiety, and suicidal ideation among pregnant women, a group susceptible to infections (3). The peripartum period (including conception, pregnancy, and postpartum) may be a time of significant susceptibility to major depressive and other mood disorders, and is frequently associated with the onset or flare-up of psychiatric disease (4). Postpartum depression (PPD) is a mood disorder capable of exhibiting characteristics such as irritability, feeling anxious and alone, depressive state, feelings of guilt, fatigue, anxiety, sleep disorders, loss of interest, suicidal ideation, and other somatic symptoms (5-8). A sad emotional state, feelings of weakness, worthlessness, listlessness, pessimism, anxiety, and the patient harming either herself or her baby may be seen in the context of the disease. These symptoms may range from mild to severe (9).

Research into the effects of the Covid-19 pandemic on the mental states of pregnant women has revealed increases in problems such as stress (10), depression (11), anxiety (12), and suicidal ideation (3,10,13). Suicide is the principal cause of maternal deaths in the one-year period following birth. Twenty percent of women with PPD consider self-harm (14). The Covid-19 pandemic represents an important risk factor in terms of mental health among women in the postpartum period since it reduces levels of mental state diagnoses and access to psychological or pharmacological treatment. Late diagnosis can result in worsening of psychological state

(15). PPD levels and fear of Covid-19 among women in the postpartum period therefore need to be determined since early detection of PPD in the Covid-19 pandemic can permit the requisite interventions to be made.

METHODS

Design and sample

This descriptive and cross-sectional study was carried out from September to December 2020 in Turkey. The population of the study consisted of women who gave birth in Duzce University Research and Practice Hospital where the study was conducted after March 15, 2020. The inclusion criteria included: (a) to be aged over 18, (b) having had a delivery between the 38th and 42nd weeks of pregnancy, (c) being in the 4-week to 9th month postpartum period, (d) having had a healthy newborn, (e) having a number of telephone to communicate, and (e) being volunteer to participate the study. The sample size of the study constituted with 133 postpartum women who met the inclusion criteria of the study.

Instruments

The data was collected using the Participant Information Form, the Fear of COVID-19 Scale (FCV-19S), and the Edinburgh Postnatal Depression Scale (EPDS).

The participant information form

The form was developed by the researchers in compliance with the literature and consisted of 12 questions on women socio-demographic characteristics and obstetric history and their perceptions about COVID (3,10,11).

The fear of COVID-19 scale

The FCV-19S was developed by Ahorsu et al. (3) to assess the fears of COVID-19 among individuals. The validity and reliability test of the scale was performed by Satici et al. 88 (16). The scale is a one-dimensional 7-item, 5-point Likert-type scale. The total score ranges from 7-

35, where higher scores indicate higher fear of COVID-19. The study performed by Satici et al. indicated that the Cronbach alpha was 0.84 (16). In the study, the Cronbach alpha was determined as 0.88.

The edinburgh postnatal depression scale

The EPDS was developed by Cox et al. to assess the risk of postnatal depression (17). The validity and reliability test of the scale was performed by Engindeniz et al. (18). The scale is a one-dimensional 10-item, 4-point Likert-type scale. The total score ranges from 0-30, where 13 and above higher scores indicate more severe depressive symptoms. The study performed by Engindeniz et al. indicated that the Cronbach alpha was 0.79 (18). In the study, the Cronbach alpha was determined as 0.89.

Ethical consideration

The study was approved by the Turkish Ministry of Health Scientific Research Platform on Covid-19. Ethical approval was obtained from the Duzce University Ethical Committee (approval number: 2020/127). Written permission was also obtained from the university hospital in which the study was conducted. Women were informed about the research and, and informed consent was obtained. After data collection, women with depression risk were directed to a medical institution.

Statistical analysis

Statistical analysis was performed using SPSS for windows version 20.0 software (IBM Corp.). Descriptive statistics were presented as percentage (%), mean and standard deviation (M±SD), and min–max values. X^2 test was used to compare difference in distribution of a categorical variable. Independent sample t-test was used to analyze the comparison of two independent groups. Pearson correlation coefficient was used to analyze the relationship between two independent continuous variables. Linear logistic-regression-analysis was used to determine the

predictors of being exposed to postpartum depression status. The significance level of the tests was accepted to be p<.05.

RESULTS

Table 1 demonstrated that the frequency distribution of some variables of women. The mean age of the women was 30.74±4.89 (range 20–43 years). Of the women, 64.7% graduated from university and greater, most of them had intermediate income status, were employed and delivery type was caesarean section (46.6%, 57.1%, and 66.2% respectively).   The majority of women (59.4%) state that they think that COVID-19 will not be transmitted to their baby through breastfeeding. Only 24.8% of the women said they intended to receive the COVID-19 vaccine when one is approved.

Figure 1 demonstrated that the reasons of negative attitudes towards COVID-19 vaccines of the women. While, 36.8% of the women having negative attitudes towards COVID-19 vaccines, expressed worries about side effects, 52.6% expressed concern about safety. 10.5% expressed their opinions that natural immunity might be better than a vaccine.

Table 2 demonstrated that the mean of FCV-19S total and item scores of. The mean total score of FCV-19S was 21.12±6.56, and the mean scores of the items ranged from 3.77 to 1.75. The main fears about COVID 19 were: feeling uncomfortable while thinking of coronavirus (item 2, 3.77±1.32) and watching news-stories about coronavirus on social-media (item 5, 3.66±1.29).

Table 3 demonstrated that the EPDS mean scores, and depression prevalence. It was determined that the mean EPDS score of the women was 9.89±6.15, and 33.1% (n=44) met the cut off score for depression risk (≥13).

Table 4 demonstrated that the correlation between the FCV-19S, and EPDS scores. A positive and significant correlation was determined between total mean scores of FCV-19S, and EPDS

(r=0.337, p<0.001). This result shows that as the FCV-19S total mean score increased, the total mean scores of EDS also increased.

Table 5 demonstrated that the analysis of linear-regression as a predictor of postpartum depression. This result show that fear of COVID-19 significantly and positively predicted the postpartum depression status (β=0.33, p<0.001). The fear of COVID-19 explain a total variance of 11% for postpartum depression (R=0.337, R^2=0.114, p<0.001).

DISCUSSION

The COVID-19 pandemic has led to significant changes, uncertainty, social deterioration, overwhelm health systems, a high morbidity and increase mortality rates. The COVID-19 pandemic also represents an important risk factor in terms of mental health among women in the postpartum period since it reduces levels of mental state diagnoses and access to psychological or pharmacological treatment. Late diagnosis can result in worsening of psychological state (15).

In this study, the mean fear of the coronavirus for postpartum women was 19.76 ± 6.76. A study has found 20.03 as a mean score of fear of the COVID-19 based on data from the general public in Turkey. This result is correspond to the findings of this research (16). Another study conducted in the general public in Iran showed the fear level of the COVID-19 mean was (27.39 ± 6.39). This mean is higher than this study (19). Differences between Turkey and Iran might result from the difference in COVID-19 epidemiology, mortality and morbidity rates.

In the present study, a mean depression score of women in the postpartum period was 9.89±6.15, and 33.1% of women had a risk of depression (the point of the EPPD scale was taken as 13). This result is higher than the PPD rate (12.9%) before spreading of the pandemic in Turkey (20). In line with this research, in a study evaluating the PPD rate for pregnant women during the COVID-19 pandemic process in Turkey, 35.4% of women were found to be at risk

of depression (21). Results from studies conducted in other countries evaluating the depression rates of women in the postpartum period showed that 60.7% of women in Arabia (22) and 30% of women in China are at risk of PPD (23) (the point of the EPPD scale was taken as 10). In a study conducted in Italy has showed that 44% of women in the postpartum period have a PPD risk (the point of the EPPD scale was taken as 12) (24). These variations may return to other factors in relation to the demographics of participants, and the application of quarantine, the availability of providing health care, and different cut-off score of the EPPD scale.

The findings from this study shows that there is a positive and significant correlation between FCV-19S and EPDS scores (r=0.337, p<0.001). Similar to the findings from this study, concerns of pregnant Chinese women about the COVID-19 were an important determinant of their anxiety (12). It is considered that the fear of the COVID-19 has adversely affected women's mental health in pregnancy period in Iran. The risk for depression, the level of anxiety and suicidal thoughts were increased, for instance (3). These findings are consistent with the literature stating that stressful life events such as pandemics negatively affect mental health levels (25).

56.4% of mothers in this study thought that their baby would be infected with COVID-19 while breastfeeding. A study conducted in India showed that (28%) of mothers thought their babies would be infected with COVID-19 while breastfeeding (26). Studies based on the transmission of COVID-19 to the baby with its breastfeeding highlighted that no COVID-19 finding was found in any of the breast milk samples (27,28). This research and other studies show that mothers need to be informed about the transmission of the COVID-19 to their babies through breastfeeding. For this reason, it is extremely important to inform breastfeeding mothers correctly about the transmission of COVID-19.

In the present study, only 24.8% of women had positive attitudes towards COVID-19 vaccine. In a research conducted in Turkey, 49.7% of participants stated that they would get vaccinated (29). In a study conducted in England with parents who have a child of 18 months or younger, the majority of their parents (55.8%) stated that they could be volunteer to be vaccinated (55.8%) (30). It is seen that women's positive thinking in this study to do with COVID-19 vaccination are lower than other studies. The reason behind why women in this study has not tended to think positively about vaccination could be associated with safety concerns of the vaccine.

CONCLUSION

This study indicates that the COVID-19 fear was moderately high among postpartum women and almost two fifth of the women had postpartum depression risk during pandemic. Fear of COVID-19 effect the postpartum depression status negatively, it was also a significant predictor of postpartum depression (p<0.001). In addition, only 24.8% of the women had positive attitudes towards COVID-19 vaccine. In this context, it is recommended to increase the awareness among healthcare professionals about negative impacts of the fear of COVID-19 and depression on postpartum women, and to decrease the concerns among women about COVID-19 vaccine using a reliable sources.

Informed Consent: Informed consent was obtained from the women.

Compliance with Ethical Standards: Written permission was received from the Duzce University Non-Interventional Health Research Ethics Board (approval number: 2020/127).

Peer-review: Externally peer-reviewed.

Author Contributions: Concept: AA, FA, Design: AA, FA, FGG. Data Collection or Processing: AA, FA, FGG. Analysis or Interpretation: AA, Literature Search: AA, FA, FGG Writing: AA, FA, FGG.

Conflict of Interest: No conflict of interest was declared by the authors.

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Table 1. Frequency distribution of some variables of women (n=133)

Characteristics	Mean	± SD
Age	30.74	4.89
	Frequency	**%**
Education status		
High school and below	47	35.3
University and greater	86	64.7
Income status		
Good	21	15.8
Intermediate	62	46.6
Poor	50	37.6
Employment status		
Employed	76	57.1
Not employed	57	42.9
Delivery type		
Vaginal	45	33.8
Caesarean	88	66.2
Do you think COVID-19 will be transmission to the baby through breastfeeding		
Yes	54	40.6
No	79	59.4
Do you think you are to get a COVID-19 vaccine when becomes available?		
Likely	33	24.8
Unlikely	57	42.9
Unsure	43	32.3

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Table 2. The mean scores of the fear of COVID-19 scale of women (n=133)

	Items	M	SD	min-max
1	I am most afraid of coronavirus-19	3.48	1.28	1-5
2	It makes me uncomfortable to think about coronavirus-19	3.77	1.32	1-5
3	My hands become clammy when I think about coronavirus-19	1.75	1.03	1-5
4	I am afraid of losing my life because of coronavirus-19	2.89	1.43	1-5
5	When watching news and stories about coronavirus-19 on social media, I become nervous or anxious	3.66	1.29	1-5
6	I cannot sleep because I'm worrying about getting coronavirus-19	1.88	1.06	1-5
7	My heart races or palpitates when I think about getting coronavirus-19	2.30	1.31	1-5
	Total mean FCV-19S	19.76	6.76	7-35

Abbreviations: FCV-19S, Fear of Covid-19 Scale; M, Mean; SD, Standard Deviation

Table 3. The mean scores of the EPDS of women (n=133)

Scales	n	%
EPDS *(M*, *SD)*	9.89	6.15
None risk Depression (*M*<13)	89	66.9
Risk Depression (*M*≥13)	44	33.1

Abbreviations: EPDS, Edinburgh Postnatal Depression Scale; M, Mean; SD, Standard Deviation

Table 4. The correlation between the FCV-19S and EPDS scores

	Analyses	EPDS
FCV-19S		
	r	0.337
	p	0.000*

Abbreviations: FCV-19S, Fear of COVID-19 Scale; EPDS, Edinburgh Postnatal Depression Scale (EPDS)
*Significance level of <0.001.

Table 5. Fear of Covid-19, as a predictor of postpartum depression

	B	Std.E	Std.β	t	p
Constant				15.300	0.000
FCV-19S	0.371	0.090	0.337	4.100	0.000*
R = 0.337, R^2 = 0.114, Adjusted R^2 = 0.107, F = 16.811, *p<0.001					

Abbreviations: FCV-19S, Fear of Covid-19 Scale; EPDS, Edinburgh Postnatal Depression Scale.
*significance level of <0.001
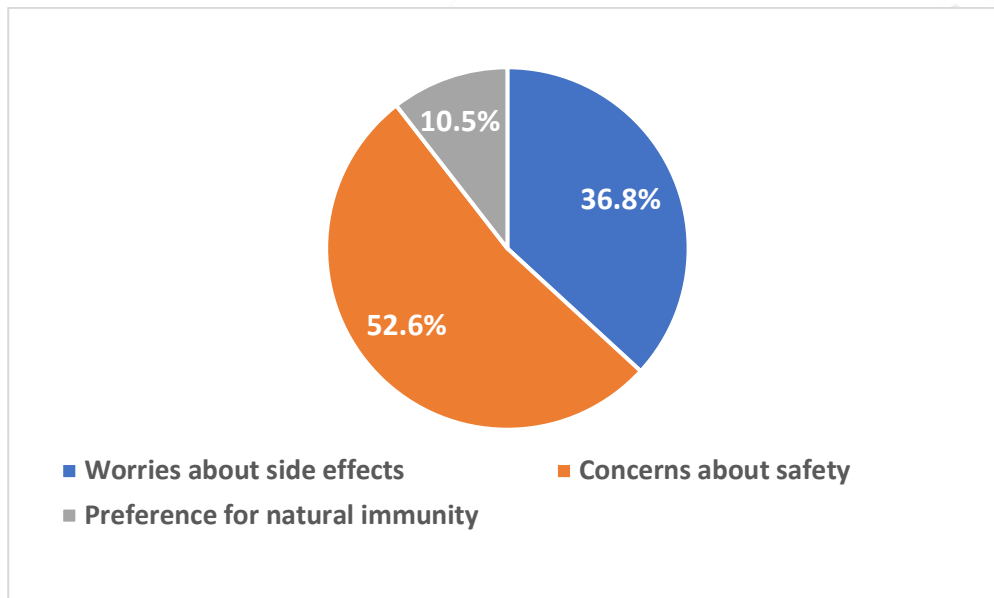
Fig. 1 Negative attitudes towards COVID-19vaccines (n=57)

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Perspectives of Academicians Lecturing at Medical Faculties on Distance Education in Covid-19 Period

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ABSTRACT

Aim: Aim of this study is to determine the views of the akademicians lecturing at medical faculty during the Covid-19 pandemic, regarding their perspective on the pandemic with the distance education system. In line with the aim of the study, a survey was applied to the akademicians lecturing at medical faculty of the universities in TRNC.

Methods: The survey, has four parts, was prepared according to the five-point Likert scale, except for first. First has thirteen questions about students' demographic information. Second has five questions about technology. Third has four questions about their self-efficacy and last has seven questions.

The survey was delivered via online forms. Participants read and accept the informed consent form. The survey data were analyzed with descriptive statistics with SPSS.

Analyzes results, the views of the akademicians lecturing at medical faculty during the Covid-19 pandemic, as a result of their experiences with the distance education system during the pandemic period, were determined regarding their perspectives, self-efficacy and distance education courses.

Results and Discussions: As a result, it is seen positive that medical education can be taught in any environment related to the distance, providing flexible education opportunities and saving time, while the inadequacy of the laboratory lessons, the inability to make eye contact with the students and the students not following the lessons were determined as negative aspects. It has been suggested that medical education should be given through a reverse education system that blends traditional education methods with distance education methods.

Keywords: Distance Education, Medical faculty, Pandemic Period, Akademicians

INTRODUCTION

After Covid-19 was accepted as a worldwide pandemic in 2019, education in schools was suspended with the first case in all countries(1, 2). In order to prevent the epidemic, distance education began to be implemented instead of face-to-face training. Various methods such as synchronous and asynchronous have been used in distance education(3). The pandemic caught all countries unprepared(4). With the progress of the pandemic, distance education applications started(5). However, distance

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education posed major problems for both educators and students. These problems are internet infrastructure problems and the lack of devices to connect to the internet. With these problems, people's motivation may decrease(6). Therefore, the opportunities and motivations of academicians in distance education should be examined.

Aim of this study is to determine the views of the akademicians lecturing at medical faculty during the Covid-19 pandemic, regarding their perspective on the pandemic with the distance education system. In line with the aim of the study, a survey was applied to the akademicians lecturing at medical faculty of the universities in Turkish Republic of Northern Cyprus.

METHODS

The survey form, consisting of four parts, was prepared according to the five-point Likert scale(7), except for the first part. In the first part, there are thirteen questions about the demographic information of academics and their general situation regarding distance education. In the second part, there are five questions about technology, systems and applications used in online education. In the third part, there are four questions about the self-efficacy of academics. In the last part of the questionnaire, there are seven questions aimed at determining the opinions of the academicians about the health sciences courses they give through distance education(2, 8, 9).

The survey was delivered via online forms. Participants read and accept the informed consent form. The survey data were analyzed with descriptive statistics with SPSS.

Analyzes results, the views of the akademicians lecturing at medical faculty during the Covid-19 pandemic, as a result of their experiences with the distance education system during the pandemic period, were determined regarding their perspectives, self-efficacy and distance education courses(7, 10).

Survey(4, 7, 11):

Demographic features

Gender

Male

Woman

Age

30 and below

31 - 40

41 - 50

51 and above

Title

Faculty Member

Teaching staff

University type

State

Foundation

Have you taught Distance before?

Yes

No

Which systems do you use in distance education?

Adobe

Zoom

Skype

Blackboard

Microsoft Teams

Google Classroom

Moodle

Hangouts Meet

Edmodo

Teamlink

I do not know

In which way do you provide interaction in the distance education?

Synchronous

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Asynchronous

Mixed

<u>Which resources are used in your lessons in the distance education environment?</u>

Video recordings taken by the instructor

Video recordings of others

By uploading various documents (PDF, slide, Word, book etc.) prepared by the instructor

By uploading someone else's various documents (PDF, slide, Word, book, etc.)

How were you teaching the lessons before Covid-19?

Using wood in the classical way

Using PDF, Slide

Both methods

<u>Would you like to use distance education methods in your lessons after Covid-19?</u>

Yes

No

I am indecisive

<u>Has the pandemic affected your perspective on your profession?</u>

Yes

No

I am indecisive

<u>If the pandemic affected your perspective on your profession, how?</u>

Positive

Negative

I am indecisive

<u>How did the pandemic affect your competencies in your profession?</u>

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Positive

Negative

Did not affect

For questions, choose the most appropriate Statements.

Strongly Disagree, Disagree, Undecided, Agree, Strongly Agree

Our distance learning center provides adequate technical support when I need it.

Our distance education center has provided sufficient training on the use of the post-Covid-19 distance education system.

The distance education system and applications we use are easy to use.

I had technical problems while using the distance education system (connection, lack of infrastructure, etc.).

I had a hard time getting used to the use of the system.

During the distance education process, I do not have any problems following the course resources and activities and accessing the system used.

I have the necessary knowledge and skills about how to use the distance education software used at my university.

During the distance education process, I started to use internet resources related to my field more effectively.

The distance education process contributed to my professional development.

It is appropriate to use distance education methods in my lessons.

Students are more interested in distance education lessons than in formal education.

Their ability to access lessons regardless of place and time increases their interest in the lesson.

Since there is no face to face communication, I have difficulty interacting with the lesson.

I think face-to-face compensation programs should be done after the Covid-19 period is over.

I think practical lessons should be done face to face.

I think that distance education is not necessary during the pandemic.

Your comments

RESULTS AND DİSCUSSİONS

During the pandemic period, the whole world was closed to their homes(12). For this reason, the distance education method was used. Anadolu University in Turkey is implementing distance education for many years. But this is the first time that such comprehensive distance education has been performed all ower the world(13).

According to the survey data, the academicians who teach at universities in TRNC; average age between 41 and 50, work at foundation universty, first time at distance education, use moodle, perform own synchronous. They want to use online education for some lectures. Academicians improved their ability of distance education. They don't waste their time on the way. Academicians think distance education has both positive and negative effects. First of all academicians want to see students. Because they know whether the student understands the lesson on students face. But some students do not turn on their camera. Academicians think just some practical lectures shoud be perform face to face.

As a result, it is seen positive that medical education can be taught in any environment related to the distance, providing flexible education opportunities and saving time, while the inadequacy of the laboratory lessons, the inability to make eye contact with the students and the students not following the lessons were determined as negative aspects. It has been suggested that medical education should be given through a reverse education system that blends traditional education methods with distance education methods.

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Comfort Level of Nurses Caring for Patients with Covid-19 Infection: A Comparative Study

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Abstract

Purpose: This study was conducted to compare the comfort levels of nurses who care for patients with Covid-19 infection compared to nurses who care for patients without Covid-19 infection.

Methods: The sample of the study consisted of 521 nurses in social media (instagram, facebook, etc.) groups who agreed and could be reached between October 15 and November 15, 2020. Research data were collected via Google forms consisting of "Individual Description Form" and "Nurse Comfort Questionnaire (NCQ)". Written permission was obtained from ethics committee and nurses. Data were evaluated using number percentage distributions and independent sample t test and One-way Anova.

COVID-19 Pandemisinde Araştırma-Yayın ve Eğitim Süreçlerine Bakış Kongresi, 15-16 Ocak 2021

Results: The average age of the nurses was 27.95±5.61, 83.1% (n = 433) were female, 66.4% (n = 346) were single, 77% (n = 401) had a bachelor's degree and 44.9% (n = 234) worked in internal surgery units. 67.2% (n = 350) of the nurses provided care to patients with Covid-19 infection in the last month and 38.8% (n = 202) had to live away from their home/family during the pandemic. Total score average of the NCQ was 93.06±15.16 (44-147). The sociocultural, psychospritical and physical sub-dimension mean scores were 32.45±7.47, 33.41±5.52, 27.2±5, respectively. A significant difference was found between the NCQ total and sub-dimension scores according to the nurses' state of providing care to the Covid-19 patient (p <0.005).

Conclusion: The comfort levels of nurses who care for Covid-19 patients were found to be lower compared to nurses who do not care.

Key Words: Covid-19, Nursing, Comfort Theory, Pandemic

Introduction

Novel Coronavirus (2019-nCoV) called "Coronavirus Disease-2019, COVID-19" by the World Health Organization is one of the biggest epidemics that the world has faced in recent years[1–4]. COVID-19 started as a viral outbreak in the city of Wuhan in Hubei province in central China in December, 2019[2,3,5]. Subsequently, it was concluded that the virus caused pneumonia known as New Coronavirus Pneumonia (NCP)[4,6]. Although coronavirus infects individuals of all age groups, it appears that the elderly and those with chronic diseases are the most affected from this disease[7,8]. According to World Health Organization data, more than 52 million people has been infected by COVID-19 which resulted in more than 1 million deaths[9]. Based on the data of the Ministry of Health, more than 400,000 people were infected in Turkey resulting in more than 11000 deaths. The Ministry announced that the total cases in intensive care in our country were over 3000 and the intensive care occupancy rate was over 70%[10].

Healthcare professionals have an important role to play in managing health related crises such as epidemics. Nurses, the largest group of healthcare professionals, spend more time with patients and play an important role in the care, control, and treatment of this disease[6,11–14]. The increase in the number of intensive care patients in this period has particularly revealed the importance of care which forms the basis of nursing. Nurses are the key points in the clinical management of the disease with significant roles such as preventing the infection and providing supportive care in oxygen and mechanical ventilation support[15]. In addition, nurses perform holistic nursing care by providing not only physical but also psychosocial patient care. Nurses

are key players in ending the epidemic with appropriate support via providing psychosocial patient support, educating patients/relatives, advocating patient rights and teaching accurate healthy behaviors[16].

However, nurses working with great devotion in the management of the disease during the pandemic period experience have been experiencing physical and psychosocial difficulties themselves as they are at the forefront of patient care[14,17,18]. These difficulties may have been affecting patient care by hindering nurses' comfort levels.

The fundamental purpose of a professional discipline is to provide services with scientific knowledge content in the practice of the profession and to enrich the existing information content. In line with this purpose, the concept and theory studies supporting the practices in the nursing discipline have been ongoing. "Comfort Theory" is one of the current and most important theories in nursing which are the indicators of nursing science. Based on the holistic approach, Kolcaba defines the concept of comfort in nursing as "the satisfaction of basic human needs for relief, ease, or transcendence that arise from stressful health care situations". The essence of this theory, defined as the outcome or function of nursing care, is to relieve the individual in all dimensions[19]. In many aspects, the hospital environment has a negative effect both on patient comfort and on the nurses. After the emergence of the new pandemic in the world, immense changes have occurred in the working environment of the nurses who care for COVID-19 patients. Considering that the infection is common among healthcare personnel due to the contagious nature of this infection, it is predicted that changes in patient care will result in stress, anxiety and satisfaction levels of the nurses who care for patients with COVID-19 infection. In addition, nurses experience problems such as burnout, anxiety, fear, insomnia, etc during the pandemic period as a result of caring for more critical patients, higher stress and work pressure, excessive working hours, difficulty working with protective equipment and the necessity to stay away from their families[3,4,12,17,20–23]. In addition, nurses experience hardships and disadvantages such as facial deformities and the need to speak loudly due to the long-term use of protective equipment[21]. These factors are among the factors which affect the comfort level of nurses. During this period, it is crucial to identify and implement effective strategies for maintaining comfort levels so that nurses serving in the front line are able to provide better patient care[16]. Hence, nurses' comfort levels should be determined to identify the effective strategies. In line with this urgent need, this study aimed to determine the comfort level of nurses who care for patients with COVID-19 infection. In addition, the study set out to test the

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hypothesis that the comfort level of nurses who care for patients with COVID-19 infection may be different from other nurses and if so, to explore the factors generating the difference.

Methods

The study was conducted between October 15, 2020 and November 15, 2020 in a descriptive manner by using online questionnaires on social media accounts of the Emergency Nurses Association. 521 nurses who followed the social media accounts of the Emergency Nurses Association at the time and gave consent to participate in the study were included as participants. Three nurses from the participant group were excluded from the study because they did not share information about the clinic in which they worked and one nurse did not share information about the province in which she worked. In the framework of the study, Participant Information Form and Nurse Comfort Questionnaire were shared on the social media accounts of the Emergency Nurses Association and the nurses participated in the study online.

Participant Information Form included questions to obtain information about the nurses who consented to participate in the study such as age, gender. the clinic they worked in, the province in which they worked, educational status, marital status, place of residence, whether they lived apart from their home/family during the pandemic period, whether they liked their profession, work experience as a nurse and whether they provided patient care for COVID-19 patients in the last month.

Nurse Comfort Questionnaire (NCQ) was developed by Ferrandiz and Martin-Baena in 2015. The Turkish validity and reliability of the scale was conducted by Yücel et al in 2019. The 39-item questionnaire aims to measure the socio-cultural, psycho-spiritual and physical dimensions of the individual. Each item on the questionnaire has a Likert type score ranging from 1 to 4, from "strongly disagree" to "strongly agree". The minimum score that can be obtained from the questionnaire is 39 while the maximum score is 156. Higher scores point to higher comfort levels and lower scores display lower comfort levels. The questionnaire has three sub-dimensions: socio-cultural, psycho-spiritual and physical. The total Cronbach alpha coefficient of the scale was found to be 0.915. The Cronbach alpha coefficients of the three sub-dimensions of the scale were as follows: 0.859 for the Psycho-spiritual dimension, 0.846 for the Socio-cultural dimension and 0.818 for the Physical[24,25].

Statistical analysis

All data collected from the participating nurses were saved online via Google Forms and analyzed by using SPSS for Windows 26.0 program. Descriptive statistical methods (mean, standard deviation, median, frequency, percentage, minimum, maximum) were used for data analysis. Kolmogorov-Smirnov test was used to analyze whether the data were suitable for normal distribution. *One-way* analysis of variance (ANOVA) was used to investigate whether more than two independent groups had a significant difference based on arithmetic mean. The post-hoc Tukey test was used to investigate which groups caused the significant difference between groups. Independent sample t test was used to investigate whether two independent groups had a significant difference based on arithmetic mean. $P < 0.05$ value was considered significant.

Ethical Considerations

Ethical approval for this study was obtained from the Ministry of Health Scientific Research Platform (2020-06-09T21-57-34) and from the Research Ethics Committee of a university (2020/92-75) during the planning process. Research and Publication Ethics principles were followed throughout the process. The nurses who participated in the study were informed about the research and their consent was obtained online through Google forms to take part in the study.

Results

The mean age of the nurses included in the study was 27.95 ± 5.61: 83.1% (n = 433) of the nurses were female; 66.4% (n = 346) were single; 77% (n = 401) were undergraduate and 62% of them (n = 323) lived in the Aegean-Mediterranean regions. It was determined that 63.5% of the nurses (n= 331) had 0-5 years; 44.9% (n = 234) worked in internal surgery units, 37.8% (n = 197) worked in intensive care and 17.3% (n = 90) worked in the emergency service and 85% (n = 443) liked their profession. It was found that 67.2% of the nurses (n=350) provided care to patients with COVID-19 infection in the last month and 38.8% (n=202) had to live apart from their homes/families during the pandemic process.

Nurses' total mean NCQ score was found to be 93.06 ± 15.16. While the lowest score obtained by nurses from the scale was 44, the highest score was 147. NCQ mean scores for the sub-dimensions were found to be $32,45 \pm 7,47$ for the socio-cultural sub-dimension, $33,41 \pm 5,52$ for psycho-spiritual sub-dimension and 27.2 ± 5 for the physical sub-dimension (Table 1).

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No significant difference was found between nurses' total questionnaire scores and sub-dimension scores based on gender, educational status, the region they lived in, the clinic they worked in and the status of living separately from their families during the pandemic (p> 0.05).

A significant difference was found between the NCQ total (p = 0.000) and sub-dimension mean scores (p = 0.000, p = 0.002, p = 0.002, respectively) according to the nurses' state of caring for COVID-19 patients during the last month. Accordingly, it was determined that nurses who cared for COVID-19 patients had lower comfort scores both in the total score and in all sub-dimension scores (Table 2).

Table 3 presents the detailed analysis results displaying the difference between the total questionnaire score and sub-dimension mean scores based on nurses' marital status, whether they liked their profession and working experience.

A significant difference was found between NCQ total and sub-dimension mean scores (p <0.005) according to whether the nurses liked their profession. Accordingly, nurses who did not like their profession had lower comfort scores both in total NCQ and in all sub-dimensions (Table 3).

While there was no significant difference between the NCQ total and psycho-spiritual sub-dimension mean scores based on nurses' marital status (p> 0.005); there was a significant difference between socio-cultural (p=0.032) and physical (p=0.044) sub-dimensions. Accordingly, the socio-cultural and physical comfort scores of married nurses were identified to be lower (Table 3).

While there was no significant difference between the NCQ total and psycho-spiritual and physical sub-dimension mean scores based on working experience (p>0.005), a significant difference was found between the socio-cultural sub-dimension score (p=0.015). Accordingly, it was concluded that the socio-cultural comfort scores of nurses with a working period of more than 10 years were lower compared to less than 5 years (Table 3).

Discussion

The COVID-19 pandemic, which started in December 2019, is an health crisis with a wide global spread. As in all other pandemics, the group most affected by this pandemic was healthcare workers[26,27]. The relevant literature reports that nurses, in particular, continue to work with great devotion and sacrifice although they are well aware of the risks they may face in the pandemic[28,29]. Care, which is an indispensable part of nursing, has acquired even more

significance during this period[30,31]. Nurses have become the key players of this pandemic period especially due to the high number of patients who need care in parallel with the intensive care occupancy rates and therefore there is a need for a higher number of nurses[6,13,14,32,33].

Caring for a COVID-19 patient poses an occupational risk for nurses as it does for other healthcare professionals. Caring for COVID-19 patients affects all aspects of nurses' work life and social life and this leads to a decrease in the quality of care over time[34]. Nurse comfort, which is another factor related to the quality of care, is the relief and comfort felt by the nurses as a result of meeting their needs[35,36]. Ensuring the comfort of the nurses is a therapeutic requirement for the continuity of both nurse and patient comfort[24]. Identifying the nurses' comfort needs ensures taking the required comfort measures to meet these requirements and to have more qualified nursing care. Therefore, this study aimed to present the comfort level of nurses. Based on the study results, it was found that the nurses had a mean NCQ score of 93.06 ± 15.16. The socio-cultural, psycho-spiritual and physical sub-dimensions mean scores for the questionnaire were 32.45 ± 7.47, 33.41 ± 5.52, 27.2 ± 5, respectively. According to these findings, nurses' comfort levels were at moderate levels in both the total questionnaire and its all sub-dimensions. The fact that the nurses in this study worked in intensive care and emergency services may have caused their comfort levels to be moderate. The reality of witnessing suffering and death and communicating complex information to patients and families with poor coping skills increases the risk of developing burnout[37]. This situation has a negative effect on nurse comfort. In addition, the fact that more than half of the nurses (67.2%) included in the sample provided care to patients diagnosed with COVID-19 may have caused this result. The impact of the contagiousness of the disease besides the change in the nurses' working environment during the pandemic period was found to affect the nurses' comfort levels[37]. Ross and Bell (2009) reported that the comfort level of nurses is moderate in emergency interventions such as thoracentesis and precipitous vaginal delivery. In Maiorini's study, the total comfort level score indicated that nurses were very comfortable managing in acute infusion reactions from antineoplastic agents[38,39]. Cone ve Giske (2017) was found that nurses' level of comfort in spiritual assessment was high[40].

Due to the scarcity of study samples showing nurses' comfort level by using Kolcaha's theory except for a guide, it was not possible to make comparisons with similar studies[37]. Therefore, the article discusses nurses' comfort over some of the factors affecting work comfort such as stress, anxiety, disquiet and work setting.

According to studies, healthcare professionals dealing with COVID-19 patients experience high levels of anxiety[41–43]. It was found in a study that 37.8% of the nurses caring for COVID-19 patients had dysfunctional anxiety levels while another study reported that 77.3% of frontline nurses experienced anxiety[44]. The studies conducted during the pandemic period in Turkey demonstrated that nurses' anxiety and hopelessness levels were high and that the anxiety levels of nurses were higher than other healthcare personnel[45,46]. Physical fatigue, helplessness and interpersonal alienation caused by pandemic and accompanying health threats have led to negative emotions such as fear, anxiety and helplessness which affect nurses' physical, psycho-social and affective states[12,17,22,37,42,47–49]. This negative impact may be the reason why nurses caring for COVID-19 patients were found to have lower comfort levels in our study. In addition, nurses' awareness of the significance and severity of this disease during the pandemic period can also be associated with the findings in this study.

Comfort theory has three sub-dimensions as socio-cultural, psycho-spiritual and physical, in which comfort needs are determined[50]. Socio-cultural comfort includes socio-cultural factors such as communication with teammates, social and organizational support from teammates and the lifestyle support provided with the work schedule[19]. Social support, which creates positive emotional states in nurses during stressful events such as epidemics, is important[51]. It was observed in this study that while all nurses had moderate socio-cultural comfort, the socio-cultural comfort of nurses caring for COVID-19 patients was lower than others. Social or organizational support is one of the factors that affect COVID-19 anxiety in nurses[52]. A study conducted in this field showed that the social support and organizational support levels perceived by nurses during the pandemic period were at a moderate level. Other studies also have similar results. Nurses are affected from a psychosocial perspective due to reasons such as long working hours, having to stay apart from their families and the risk of disease transmission. Since higher socio-cultural levels - will lead to increased job performance, job satisfaction and work commitment in nurses, it is imperative to implement measures to improve this dimension of comfort in the workplace[53,54]. Providing administrative support in the workplace leads to a decrease in nurses' psychological distress and stress level while increases their self-confidence and motivation[55,56]. It is important to establish early support systems such as interpersonal interaction between nurses to facilitate nurses' adaptation to the pandemic. Turning to colleagues for social support can provide sociocultural relaxation and alleviate the psychospiritual stress associated with managing complex care plans in coronavirus

patients. Engaging in casual, humorous conversations between nurse colleagues and managers are essential. Keeping in touch with family and friends via the phone or Zoom can also provide sociocultural relaxation[37]. This will help increase their comfort levels.

Physical comfort includes factors that affect the physical condition of nurses such as adequate nutrition, the temperature of the work setting and the comfort of the patient rooms. In this study, it was observed that all nurses had moderate physical comfort, but it was found that the physical comfort of nurses caring for COVID-19 patients was lower than others. It is very well documented that nurses' work conditions are fast-paced and tiring. A study conducted in this field demonstrated that the increase in the number of patients increased the working hours of nurses about 1.5-2 times compared to their regular hours during the COVID-19 epidemic which leads to an increase in workload and causes nurses to experience physical fatigue[57]. Also, this pandemic period has brought along several physical difficulties such as having to wear protective equipment during long working hours, inability to rest sufficiently and have adequate nutrition. Protective equipment makes it difficult for nurses to breathe, hear and communicate. In addition, protective equipment is reported to limit nurses' mobility, increase their body temperature and sweating and cause a feeling of suffocation. Nurses state that it is very difficult to provide care under these conditions. Furthermore, due to the possibility of infection during sleep while wearing protective clothing, most nurses developed sleep disturbances and poor rest habits[58]. Due to these negative situations, nurses work under physically more difficult conditions compared to other nurses, which decreases their physical comfort levels[20,21]. Similarly, other studies also demonstrated that nurses caring for COVID-19 patients felt physical fatigue and discomfort caused by epidemics, intense work, caring for a larger number of patients and lack of protective equipment[57]. Health policies should be established to reduce the risk of contamination to the individuals in nurses' homes. It is believed that these problems can be solved by shortening the nurses' work hours, providing sufficient number of breaks in their shifts and providing them with new protective clothing[58].

Psycho-spiritual comfort includes emotions and concepts such as the elements that give meaning to the nurses' life, self-concept, feelings of belonging, fear, anger, anxiety about the future and self-awareness[19]. In this study, it was found that the psycho-spiritual comfort levels of all nurses were at a moderate level. It was identified that the psycho-spiritual comfort levels of nurses caring for COVID-19 patients were even lower. Nurses' mental health was negatively affected in this period similarly just like in the previous pandemics and natural disasters[59,60].

The studies conducted in this field concluded that nurses experienced psychological problems such as fear, hopelessness, anxiety, burnout and depression at higher levels[12,37,51,61]. In their study, Kang et. al. reported that 17.5% of nurses received psychological support after a pandemic[65]. Feelings of fatigue, discomfort and helplessness that emerged in the early period caused by the pandemic often stem from overwork, fear, anxiety and concern for patients and family members. It was found in this study that 38.8% of nurses had to live apart from their homes/families during the pandemic process. Nurses caring for COVID-19 patients are exposed to problems such as staying away from their families and friends, the risk of contamination etc. as well as the loss of their colleagues or patients due to the epidemic. All these create loss of psycho-spiritual comfort in nurses. It is reported that such periods may cause compassion fatigue in nurses[62]. The existence of compassion fatigue indicates that nurses should stay away from that setting for a while. The psychology of nurses can only protected this way[63].

The other factors affecting the comfort level of nurses in this study were marital status, affinity to the profession and seniority. The socio-cultural and physical comfort levels of married nurses were found to be lower than single ones. It was determined socio-cultural and physical comfort levels of married nurses were lower than those of single nurses. Married nurses who had children had higher levels of concerns about their family members[57,64]. Considering that married nurses had children in our sample, it was an expected result that their socio-cultural comforts were lower. This may be the result of nurses' fear and anxiety of being carriers and contaminating their children, especially when they return home from work. A study reported that married nurses were more stressed during this period[44,45]. It is necessary to manage the separation of female nurses from their children for work purposes with appropriate planning.

It was found that nurses with no affinity for their profession had lower comfort scores in total and in all sub-dimensions. Taking preventions as a result of determining the comfort level of nurses will increase their confidence, which will enable them to perform their tasks with affinity, to be more motivated and manage the process better.

It was determined that the socio-cultural comfort scores of nurses with more than 10 years work experience were lower than those with 5 years of experience. Longer work experience causes an increase in nurses' burnout levels. Burnout is known to be a factor which affects comfort. Unlike this study, nurses' experience was associated with higher comfort levels in one study[38].

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Conclusion

The comfort levels of nurses who care for Covid-19 patients were found to be lower than nurses who do not care for Covid-19 patients. As the working year increases in nurses, sociocultural comfort levels have decreased. It was found that the socio-cultural and physical comfort levels of married nurses were less, but there was no difference in the psychospritical dimension. Also, the comfort levels of nurses who do not like the nursing profession were lower. Based on these findings, it is suggested to;

-assess the physical, psycho-spiritual, socio-cultural comfort needs of nurses who care for COVID-19 patients,

-provide support and adequate protective equipment to protect nurses from infection,

-to increase the number of nurses caring for COVID-19 patients and support them psychologically,

-organize preventive mental health services for nurses,

-use the comfort theory as a guide in nursing care.

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Table 1. Nurse comfort questionnaire total and sub-scale score means

	n	M±SD	Min-Max
Socio-cultural	521	32,45 ± 7,47	14-55
Psycho-spiritual	521	33,41 ± 5,52	14-53
Physical	521	27,20 ± 5,00	11-44
Total	521	93,06 ± 15,16	44-147

Note. M= mean, SD= standard deviation

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Table 2. Differences of comfort level according to the condition of caring for the patient with Covid-19 infection

	n	%	Socio-cultural	Psycho-spiritual	Physical	Total score
Caring for the Patient with Covid-19 Infection						
Yes	350	67.2	31.22±7.32	32.89±5.72	26.72±4.99	90.82±15.16
No	171	32.8	34.97±7.13	34.47±4.91	28.19±4.89	97,64±14.12
			t=-5.540	t=-3.110	t=-3.185	t=-4.926
			df=519	df=519	df=519	df=519
			p= 0.000	p= 0.002	p= 0.002	p= 0.000

Note. t= independent sample t test

Table 3. Differences of comfort level according to the the nurses' marital status, whether they like their profession and working experience

	n	%	Socio-cultural	Psycho-spiritual	Physical	Total score
Do you like your profession?						
Yes	443	85,0	33.56±7.20	33.98±5.03	27.71±4.89	95.25±14.21
No	78	15,0	26.13±5.57	30.17±6.92	24.32±4.66	80.61±14.41
			t= 8.667	t= 5.799	t= 5.687	t= 8.370
			df=519	df=519	df=519	df=519
			p= 0.000**	p= 0.000**	p= 0.000**	p= 0.000**
Marital status						
Married	175	33,6	31.46±7.19	33.37±4.91	26.58±4.67	91.41±13.50
Single	346	66,4	32.95±7.56	33.42±5.80	27.51±5.14	93.89±15.88
			t= -2.152	t= -0.121	t= -2.021	t= -1.769
			df=519	df=519	df=519	df=519
			p= 0.032*	p= 0.904	p= 0.044*	p= 0.078
The time they work						
0-5 years	331		33,14±7,53	33,54±5,50	27,47±4,98	94,15±15,19
5-10 years	108		31,60±7,56	32,63±5,78	27,27±5,26	91,70±15,94
Over 10 years	82		30,78±6,75	33,61±5,22	26,01±4,61	90,45±13,61
			F=4,207	F=0,740	F=2,620	F=2,515
			df=2	df=2	df=2	df=2
			p=0,015*	p=0,478	p=0,074	p=0,082

Note. t= independent sample t test, F= One-way analysis of variance, * p<0.05, ** p<0.001

COVID-19 Pandemisinde Araştırma-Yayın ve Eğitim Süreçlerine Bakış Kongresi, 15-16 Ocak 2021

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DETERMINATION OF THE PROBLEMS EXPERIENCED BY POSTGRADUATE NURSING STUDENTS AT THE THESIS STAGE DURING THE PANDEMIC PERIOD

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ABSTRACT

Aim: Considering the working conditions of the postgraduate nursing students, who are in the nursing profession, during the pandemic triggered by Covid-19 disease, it is important to examine the problems experienced by the students on distance education. This study aims to determine the problems experienced by the postgraduate nursing students at the thesis stage regarding distance education during the pandemic period.

Methods: This descriptive research was carried out between September-October 2020 and its sample includes 306 postgraduate nursing students. To collect the research data, the questionnaire form, containing students' opinions on distance education, and the Visual Analogue Scale (VAS) for stress was used.

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Results: Of the students included in the study; 49.7% (n=152) were aged between 26-30 years, 72.9% (n=223) were female, and 33.5% (n=101) were studying at a term above Term 7. 83.7% (n=256) of the students stated that they experience the anxiety for extending graduation from school, 77.8% (n=238) mentioned that pandemic process decreased their motivation for their thesis, and 86.9% emphasized that uncertainty of pandemic process makes them anxious.

Conclusion: In the conclusion, we determined that students suffer moderate stress due to pandemic regarding freezing their registration, failure to get ethical approval, and failure to meet with their supervisors, and the majority of them stated that the pandemic decreased their motivation for their thesis. We also found that they experience high levels of stress on matters such as extending graduation from school, failure to get institutional permission, and failure to gather data.

Keywords: COVID19, nursing education, postgraduate

Introduction

The Coronavirus disease (COVID-19), which originated in Wuhan City of China in early December 2019, has been identified as the cause of respiratory illness (1). The rapid spread of COVID-19 has had serious consequences for many countries. Therefore, the World Health Organization (WHO) has declared a public health emergency of international concern over the global outbreak of novel coronavirus (2019-nCoV) (2). On March 11, 2020, the WHO made the assessment that COVID-19 can be characterized as a pandemic (3). Different countries have reacted to COVID-19 in various ways, such as closing the schools and suspending formal education (2, 4). According to UNESCO (2020), more than 1.5 billion students in 165 countries across the planet, which corresponds to 87% of the student population in the world (4), are or have been affected by school and university closures due to COVID-19. The closure of the schools has revealed the importance of using innovative teaching techniques and approaches in education (5). One of the technologies that facilitate the continuity of education during pandemic has become the distance education (6).

Nursing education in Turkey continues in a system of education that awards people different diplomas, including bachelor's degree, master's degree, and doctor of philosophy (7). Compared to undergraduate education, in postgraduate education, it is tried to upskill the individual with the ability to conduct more comprehensive scientific research, to solve complex

problems, to specialize in professional fields, and methods and skills of knowledge generation (8). Postgraduate education covers a long-run process consisting of lectures and theses (9). Students experience various problems during thesis process, such as deciding on the topic of thesis, finding references, and failure to get sufficient support from advisor (10). The COVID-19 outbreak has caused significant changes in the working lives of many people, including postgraduate process (11). A postgraduate student needs a certain amount of time at his or her disposal to conduct the study, write the thesis, and get it approved. The pandemic has virtually brought this to a halt and the students are losing precious time (12). These problems and difficulties experienced in the PhD process affect students' completion of their education successfully, causing some to leave their PhD, and many to complete their PhD by exceeding the normal length of it (10). Quickly shifting to distant teaching due to pandemic is expected to bring various negativities (13-15). In a study, students stated that they have troubles in internet access for distant education and therefore, they are not able to follow the online classes (15). In another study, students mentioned that the distance education process has psychological effects and they have internet access problems (16). When the studies are examined, it is seen that nurses and nursing students are exposed to stress related to uncertainty in pandemic (17-25).

When the literature is reviewed, it is seen that there are several studies examining undergraduate students' views on distance education. However, there is no study investigating the problems experienced by postgraduate students regarding the distance education during the pandemic, in particular. In our study, therefore, we aimed to determine the problems experienced by students, who continue their postgraduate thesis studies in nursing during the pandemic, in distance education.

METHOD

Material and Method:

This descriptive research was carried out between September-October 2020 to determine the problems experienced in distance education by postgraduate nursing students at the thesis stage during the pandemic period.

Population and sample: The research population included the postgraduate nursing students at the thesis stage in Turkey. In terms of determining the sample, OpenEpi software was used

for sampling method with known universe among 1500 postgraduate nursing students. According to the sample size, 306 students at 95% confidence interval were reached.

Method and data collection tools: While collecting research data, the questionnaire form prepared by the researchers in line with the literature (26-28), which covers students' opinions on distance education, and Visual Analogue Scale (VAS) for stress was used.

Survey for Opinions of Students on Distance Education: The survey form includes 22 items regarding students' age and gender and demographic factors covering the postgraduate thesis period, and 2 open-ended questions including solutions to primary questions and problems they experienced during the pandemic period.

Visual Analogue Scale (VAS) for stress: The Visual Analogue Scale (VAS) is a measurement instrument for subjective characteristics or attitudes that cannot be directly measured. A VAS is usually a 100-mm long horizontal line with verbal descriptors (word anchors) at each end to express the extremes of the feeling.

Data collection: The survey form was created in Google forms. The questionnaire was sent to postgraduate nursing students in Turkey online via e-mail and Whatsapp. An informed consent page was presented to the students on the entrance page of the questionnaire and the students who agree to participate in the study continued the survey. Data were collected between September and October 2020.

Data analysis: The analysis of the data obtained from the research will be carried out in the SPSS (Statistical Package for Social Science) 21.0 package program. In the analysis of data, numerical and percentage distribution were used.

Ethical Approval

For our study, ethical approval was obtained from İzmir Bakırçay University Non-invasive Investigation Ethics Committee (93802310-050.01.04-E.6971) and permission from the COVID-19 Turkey Research Platform (2020-11-03T14_14_51).

RESULTS

Of the students included in the study; 49.7% (n=152) were aged between 26-30 years, 72.9% (n=223) were female, and 33.5% (n=101) were studying at a term above Term 7 (Table 1).

It was found that, of the students; 65% (n=199) did not freeze their registration during pandemic period, 35.3% (n=108) applied for the ethical approval; and of the students applied for the

ethical approval, 6.0% (n=7) did not get permission due to pandemic, 42.8% (n=131) applied for the institutional permission; and of the students applied for the institutional permission; 56.9% (n=102) failed to get the institutional permission due to pandemic, 62.9% (n=172) did not gather data of thesis, 16% (n=49) failed to meet their supervisors due to pandemic. 83.7% (n=256) of the students stated that they experience the anxiety for extending graduation from school, 77.8% (n=238) mentioned that pandemic process decreased their motivation for their thesis, and 86.9% emphasized that uncertainty of pandemic process makes them anxious (Table 2).

It was found that 73.5% (n=225) of the students want to take the qualifying exam through face-to-face meeting, 63.1% (n=193) want to take the thesis proposal exam through face-to-face meeting, and 59.1% (n=168) want to take the thesis defense exam through face-to-face meeting (Table 3).

Students' stress levels regarding the following matters were found as follows: freezing their registration, $7,00 \pm 2,49$; failure to get ethics committee approval due to pandemic, $7,20 \pm 2,04$; failure to get institutional permission due to pandemic, $7,60 \pm 2,09$; failure to gather data for thesis due to pandemic, $8,96 \pm 1,17$; failure to meet their supervisor due to pandemic, $7,54 \pm 2,69$; and their level of anxiety for extending graduation from school was found as $8,43 \pm 1,61$ (Table 4).

The Problems Experienced by Postgraduate Nursing Students at the Thesis Stage during Pandemic Period

When students were asked about the problems they have experienced, with open-ended questions, the responses obtained were as follows: "implementation stage", "cancellation of permissions", "failure to gather data", and "loss of motivation". Most of the students stated that they had difficulty in gathering thesis data.

Some of the statements about the problems experienced by the students were as follows:

"I could not make any study in the clinic. I had to carry out my study with patients for the topic of my thesis, but I could not make an interview with patients due to the pandemic."

"During the pandemic, I started collecting my thesis data a few months late. The institution where I write up my thesis and the institution I work for are located in different provinces. Traveling inter-cities (only the road takes about 5 and a half hours) to collect data every week was very risky during the pandemic period."

"The fact that I would conduct my study in the hospital made my research difficult during the pandemic period. The unit where I would carry out my study has been closed due to the pandemic. I don't know how to collect the data."

"I could not obtain the necessary permissions for my thesis, since getting institutional permission from the hospitals was canceled. Therefore, I could not start applying my thesis."

"I suffered a serious loss of motivation due to the pandemic. This situation also increased my stress and anxiety levels."

Proposed Solutions for The Problems Experienced by Postgraduate Nursing Students at the Thesis Stage during Pandemic Period

When students were asked about the proposed solutions for the problems they have experienced, with open-ended questions, the responses obtained were as follows:

"Provided that necessary health measures are taken, permissions and approvals for theses and research should be stretched, and the conditions for carrying out a study should be increased."

"Our supervisors intuitively to suggest us to change the topic of our theses as soon as possible and to take the thesis proposal step could be a solution."

"Regular meeting of the members of the committees such as ethical committee, ethics committee in hospital, etc., and making improvements in obtaining data collection permissions."

"If the institute staff have to stay at home during the pandemic, they should perform job follow-up through the system when they are at home.

Discussion

The outbreak of COVID-19 lead to an unprecedented impact on academic activities (29). This study aimed to determine the problems experienced by postgraduate nursing students in the thesis period during the pandemic and the stress levels caused by these problems in students. In light of the data collected from the postgraduate nursing students at the thesis stage during the ongoing process of the Covid-19 pandemic, it was concluded that the students mostly experienced high levels of stress for failure to gather thesis data due to the pandemic. Supporting our results, Dubey and Ranjan (2020) reported that the decrease in the number of patients applying to polyclinics in training hospitals due to the pandemic also prevented ongoing postgraduate research projects (12). Kapasia et al. (2020) stated that 42% of the postgraduate students were mostly suffering from stress (29).

The purpose of postgraduate education programs in nursing in Turkey is to provide students with in-depth and comprehensive knowledge of the field they have chosen, and to upskill

analytical thinking skills and the ability to conduct independent evidence-based research at the level to be used in nursing practices (30), and this program covers a period of 3-4 years consisting of course period, qualifying exam, thesis proposal and thesis study (31). Postgraduate students carry out many processes together, such as choosing a course, choosing an advisor, deciding a topic for thesis, determining a qualifying and thesis monitoring committee, submitting their thesis proposals, writing and submitting a semi-annual report, developing material, applying and writing the thesis, etc. (32). In our study, we found that 73.5% (n=225) of the students want to take the qualifying exam through face-to-face meeting, 63.1% (n=193) want to take the thesis proposal exam through face-to-face meeting, and 59.1% (n=168) want to take the thesis defense exam through face-to-face meeting. This result is believed to be due to the fact that students think that exams will most likely be delayed due to the pandemic.

Exhaustion and prolonged completion time in doctoral programs turn into a costly situation for both students and universities. Because exhaustion of the students during the process and leaving the doctoral program negatively affects the productivity and prestige of a program, too (33). Studies on the subject (34-36) revealed that 50% of Ph.D. students failed to complete their thesis, and 20% of them failed at the thesis stage even though they completed the course phase. In other words, although many students successfully complete the course period in the doctoral program, which is a complex process, it is reported that they have difficulties in completing the thesis writing process (37, 38). In our study, we determined that postgraduate nursing students had a high level of anxiety to extend graduation from school and that this situation affected their motivation.

The burden of the COVID-19 pandemic not only affected the curriculum for postgraduate students, but also the ongoing thesis review studies (12). In our study, we identified that 56.9% (n=102) of the postgraduate nursing students were not able to get the institutional permissions due to the outbreak, and 62.9% (n=172) were not able to gather their thesis data. One of the students expressed this process as follows: "The fact that I would conduct my study in the hospital made my research difficult during the pandemic period. The unit where I would carry out my study has been closed due to the pandemic. I don't know how to collect the data." Supporting our results; İpek Akbulut et al (2013) stated that the problems faced by Ph.D. students during the implementation phase of the thesis were getting permission to implement, physical troubles, and problems with the implementation period (37).

Due to the Covid-19 pandemic, students are at a disadvantage in accessing and completing their education, and they are concerned about what interruptions to their programs might mean for their career advancement (39). As a result of our research similar to the reasons affecting these concerns, we found that 86.9% (n = 266) of the postgraduate nursing students at the thesis stage reported that the uncertainty of the pandemic period makes them anxious. This result may have long-term effects on students' stress levels regarding the academic delays due to the uncertainty of the pandemic process and likely to graduate later than they expected.

Communication with the advisor is very important for an efficient thesis process in postgraduate education (40). Balı and Dönmez (2018) stated that the students in both the course, qualifying and thesis stages did not get enough support from their advisors in this process (10). Barutçu and Onaylı (2016) revealed the importance of being close to the thesis supervisor in terms of physical distance in the thesis writing process and they stated that the fact that students who are far from their thesis supervisor cannot meet with their supervisors often makes the thesis process difficult (41). In our study, similarly, we found that 16% (n=49) of the postgraduate nursing students did not meet with their supervisors due to the pandemic and they, therefore, suffered moderate stress and that this reduces the motivation of 77.8% (n=238) of the students regarding the thesis during the pandemic process. Although the reasons for insufficient supervisor support may differ, since it may lead to several consequences in terms of students, such as dissatisfaction, prolongation of studies in the doctoral process, and failure to complete the doctorate on time, it should not be ignored (42, 43).

Conclusion

In the conclusion, we determined that the Covid-19 pandemic cause students suffer moderate stress regarding freezing their registration, failure to get ethical approval, and failure to meet with their supervisors. We also found that they experience high levels of stress on matters such as extending graduation from school, failure to get institutional permission, and failure to gather data. It was observed that more than half of the students could not gather thesis data due to the pandemic, the majority of them stated that the pandemic decreased their motivation for their thesis, and the uncertainty of the pandemic process has increased their concerns. Considering the concerns experienced by the students, in order for the thesis period to be carried out during the pandemic process, we recommend that necessary arrangements should be made, data collection processes should be continued without changing the present thesis topics by adapting

to hospital conditions, and while determining new thesis topics, supervisors should select topics by identifying accessible samples.

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Table 1. Demographic Characteristics of Postgraduate Nursing Students at the Thesis Stage (n:306)

Age	n	%
20-25	30	9,8
26-30	152	49,7
31-35	108	35,3
36 and older	16	5,2
Gender		
Female	223	72,9
Male	83	27,1
Course Term		
Term 4	46	15,0
Term 5	52	17,0
Term 6	72	23,5
Term 7	35	11,0
Other	101	33,5
TOTAL	306	100

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Table 2. Distribution of the Problems Experienced by Postgraduate Nursing Students at the Thesis Stage during the Pandemic (n:306)

Freezing their registration during Pandemic	n	%
Yes	107	35,0
No	199	65,0
Application for Ethics Committee Approval		
Yes	108	35,3
No	198	64,7
Getting Ethics Committee Approval		
Yes	101	87,2
No (due to Pandemic)	7	6,0
No (for reasons other than Pandemic)	8	6,8
Application for Institutional Permission		
Yes	131	42,8
No	175	57,2
Getting Institutional Permission		
Yes	18	4,4
No (due to Pandemic)	102	56,9
No (for reasons other than Pandemic)	7	3,7
Gathering Data for Thesis		
Yes	46	17,2
No (due to Pandemic)	172	63,9
No (for reasons other than Pandemic)	51	18,9
Meeting Supervisor		
Yes	236	77,1
No (due to Pandemic)	49	16,0
No (for reasons other than Pandemic)	21	6,9
Anxiety for Extending Graduation from School		
Yes	256	83,7
No	50	16,3
Pandemic Decreased My Motivation For My Thesis		
Agree	238	77,8
Partially agree	40	13,1
Disagree	38	9,1
The Uncertainty of the Pandemic Process Makes Me Anxious		
Agree	266	86,9
Partially agree	33	10,8
Disagree	7	2,3

Table 3. Distribution of Preferences of Postgraduate Nursing Students at the Thesis Stage to Take the Exam (n:306)

Qualifying exam;	n	%
I want/would like to take the exam online.	81	26,5
I want/would like to take the exam through face-to-face meeting.	225	73,5
Thesis proposal;		
I want/would like to take the exam online.	113	36,9
I want/would like to take the exam through face-to-face meeting.	193	63,1
Thesis defense;		
I want/would like to take the exam online.	138	45,1
I want/would like to take the exam through face-to-face meeting.	168	59,1

Table 4. Stress Level Score Means of Postgraduate Nursing Students at the Thesis Stage

Stress Levels	$X \pm SS$	Min-Max
Stress level regarding freezing their registration	$7,00 \pm 2,49$	1-10
Stress level regarding failure to get ethics committee approval due to pandemic	$7,20 \pm 2,04$	4-9
Stress level regarding failure to get institutional permission due to pandemic	$7,60 \pm 2,09$	3-10
Stress level regarding failure to gather data for thesis due to pandemic	$8,96 \pm 1,17$	6-10
Stress level regarding failure to meet their supervisor due to pandemic	$7,54 \pm 2,69$	1-10
The level of anxiety for extending graduation from school	$8,43 \pm 1,61$	4-10

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Being a Digital Child and Digital Education in the Covid 19 Pandemic

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Abstract:

Many people started to learn, play, communicate and establish a different socialization network on the internet while the opening of the digital world at the end of the 90s. Indeed, inevitably, children born at this age have grown up different from their parents, used to think differently, and have become "digital native" children with different habits and boundaries. Today, these children are the newest consumers of post-secondary education. By the reason of the COVID-19 pandemic, the average age of using digital education of this new generation has dropped due to restriction or even stopping of going out, going to school processes. Additionally, by taking digital technology one step further, they started to do their education processes more intensely on the screen. Accompanying technological development, materials learned through tablets and computers can be reinforced in a fun and interactive way, and thanks to virtual reality, a museum with artistic value in another part of the world can be visited or it is now possible to go to space. Children who has switched to this digital education platform quickly due to the COVID-19 pandemic, in fact, adapted to this process more quickly than adults. Studies have

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shown that these children think differently than adults who do not grow up on the digital platform, and their cognitive structures are parallel rather than sequential. This may explain why the transition is easy in children of the digital age. However, they may face the risk of negatively experiencing memory, attention, and learning since they can do many tasks at the same time (listening to lectures, entering social media, messaging, etc.). In the next period, platforms related to educational processes will need to be supported with technologies that increase study and learning performance. For this reason, the education system and educators must be open to learning and development.

Keywords: Digital child, COVID-19 pandemic, education

The opportunity to enter a new world emerged with the opening of the doors of the digital world at the end of the 90s. This world was a different world with different forms of communication beyond what is known, enabling learning, playing, communicating, and acquiring different social environments on the internet. In another sense, it is possible to call this new world order digital acculturation. It must be admitted that; In this new world order, children who opened their eyes tended to grow up differently from their parents and to develop their minds and habits differently. In order to put it precisely, a generation has grown that can easily access information with just one click or google as soon as they open their eyes in the morning.Educators, parents, and physicians in the lives of these "digital native" children, who can access information so easily and therefore do not make much effort to keep it in mind, who are about to lose the habit of reading books, considered their duties in this new process of change.This was the COVID-19, which was recognized as a pandemic by the World Health Organization in March 2020, and the social processes that came with it.

During the quarantine days, when the Covıd 19 pandemic swept the world, children began to stay on the screen more and more. This time, this screen addiction was not only for socializing, playing games, but also for continuing the rest of their unfinished educational life with online and online lessons. Thesis that argue that the digital age has robotized people, started to benefit from these digital platforms for the continuity of education. The adaptation process has been completed quickly by educators, and parents. There are several theses defending the negative effects of the digital age. Supposably this was related to the fact that the critical approach towards the culture of the new generation and its media, as Don Tapscott mentions in his book

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"Growing in the Digital Age", is that people feel threatened and defensive in the face of change.Therefore, the most important factor in the digital acculturation process that accelerates with the Covid 19 pandemic should be to ensure that individuals healthily benefit from technology and to speed up education processes for this. In order to understand and complete this process, it is necessary to know some of the characteristics of digital natives and digital immigrants born into the digital age.

In 2003, Prensky divided those who were familiar with digital media tools into "digital natives" and "digital immigrants". Digital natives consist mainly of generations born in 1980 and later, and include "Millennials (students of the millennium), Digital Natives, Net generation, The gamer generation, Next <generation, N-Generation" Cyber Kids (cyber children) are known by names such as Homo Zappiens (zapper). The behavior of these two generations, whose perception is completely different, attracts the attention of many different branches of science, such as technology, sociology, communication, marketing, politics. It is usedin different contexts such as professional study and university/course work. Because of these features, digital natives are said to be more prone to learning online.

It used to be thought that brain development was completed until a certain age. However, researchs, using modern brain imaging systems, showed that although brain development is largely completed by the age of 25, it continues to be shaped according to the conditions of the person. Considering the area covered by technology, the internet, and computers in our lives, it is being investigated whether the brain is also affected by these factors. Studies show that today's children are exposed to approximately thirty thousand hours of digital information flow until they reach their twenties. It is a curiosity that how this process affects their brain development. A study of teenagers who are playing and not playing computer games showed that those who play computer games have better visual attention than those who do not.The reason for this is thought to be related to the fact that children who play on computers perceive many stimuli at the same time and react to them immediately. Digital natives perceive images such as icons and pictures faster than their parents. Since their visual memory develops better, they can learn the information based on visual sources more easily and better. From an educational point of view, it is known that the focus and learning power of the student decreases in homework and documents based on text, which is not supported by visual resources.

Digital natives have some characteristics different from the generations before them; They want quick access to information. They prefer visuals or graphics instead of text, and instead of reading an article or text from beginning to end, they prefer to read randomly in capsules. They learn information randomly, not in a particular order. For example, while digital immigrants read the step-by-step guide to learn how a household appliance works, internet age children think about trying it out on their own and getting support from the guide in parts they don't understand. They prefer games over serious studies. Their cognitive structures are not sequential but parallel. They want to do many jobs at the same time. They want to learn by discovering.

Looking at the features listed above, digital natives access information; speed, visuality, and fun are at the forefront. While reaching the data quickly, they want it to be rich in visuality, short if possible, in packet data. It might be related to they deal with not only one but many issues at the same time, they can not focus on the same subject for a long time, their performance decreases, and also memory and attention are negatively affected.

It is possible to say that the education system actually adapts to the new system faster during this pandemic process. Due to the distance education of schools and high usage of digital platforms. The learned materials can be reinforced at home more entertainingly and interactively. It is possible to go to ancient Greek cities or space, and programs that teach mathematics on the computer can determine whether the student is bored and arrange the break times. Technological tools, in case usage appropriate training techniques, will become "supplementary in education" qualified helpers. When all these applications are combined with the learning differences and perception differences of the digital natives mentioned above, it is inevitable to see a significant performance increase in the education process.

As a result, it is necessary to introduce technology into schools and classrooms in a way to support education, to support students' ability to produce solutions, to ensure that school curricula can be adapted to new conditions, and the education system and educators should be open to learning and development. In addition to these, issues such as digital literacy and creative thinking should be given importance.

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The association between COVID-19 infection and Vitamin D Levels

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Abstract

Introduction: The COVID-19 pandemic has been the largest in world history

since the 1918 Spanish flu. Vitamin D deficiency that is the health problem of the

whole world, has also been defined as a "pandemic". In this study, we aimed to investigate the relationship between COVID-19 and vitamin D levels.

Material and Method: Who was diagnosed with COVID-19 after diagnosis of SARS-CoV-2 RNA in respiratory tract samples (n: 38) and healthy control group (n: 30) with negative test results (n: 30) were compared in terms of serum vitamin D levels that admitted to our hospital between April 2020 and May 2020.

Results: The mean vitamin D levels of the patients were 9.9 ± 4.1 ng / mL and it was 15.2 ± 7.9 ng / mL in the control group. Levels of vitamin D were higher in the control group and the difference was statistically significant ($p < 0.001$). Vitamin D level was found to be seriously insufficient in 63.2% of patients diagnosed with COVID-19, and vitamin D was found insufficient in 34.2%. There was a significant inverse correlation between the severity of the disease and serum vitamin D levels and vitamin D levels were found lower as the severity of the disease increased ($p < 0,001$).

Conclusion: Vitamin D supplementation may provide possible benefits to reduce the risk of infection in healthy individuals or it can be as supportive therapy in COVID-19 patients. Randomized controlled trials with more patients are required to evaluate these recommendations.

Introduction

Coronavirus disease (COVID-19) is a viral pandemic that started in China on the last day of 2019 and it spread to the whole world in a short time. Thousands of people infected with the SARS-CoV-2 virus die, while most patients show asymptomatic or mild clinical signs. It is not yet known why the infection progresses heavily in some people. It has been suggested that an irregular immune response and "cytokine storm" caused by overproduction of proinflammatory cytokines may be the main cause of tissue damage in severe cases (1).

The immunomodulatory effects of vitamin D on natural and acquired immune responses are known. Vitamin D receptors (VDR) have been identified in all immune system cells, especially antigen-presenting cells such as T and B lymphocytes, macrophages, and dendritic cells (2). Vitamin D and its relationship with upper respiratory tract infection, severe pneumonia, respiratory syncytial virus (RSV), and seasonal influenza have been shown in recent studies (3).

The relationship between COVID-19 and serum vitamin D levels was investigated, in this study.

Materials and Methods

The study was carried out prospectively in Ankara 29 Mayıs State Hospital between April 2020 and May 2020 in two groups as case and control group. Patients over 18 years old who were diagnosed in an infectious disease clinic as

COVID-19 SARS-CoV-2 RNA positivity in the respiratory field by RT-PCR (Reverse Transcriptase Polymerase Chain Reaction) were included in the case group. Healthy individuals who did not have COVID-19 symptoms and signs and healthcare workers who were found to have negative RT-PCR (Reversary Transcriptase-Polymerase Chain Reaction) test results and who did not smoke were included in the control group. Those who received calcium or vitamin D replacement therapy, chronic kidney failure, thyroid, and parathyroid disease and a history of metabolic bone disease were excluded from both groups. After obtaining the ethics committee, serum samples were collected to determine vitamin D levels. Written informed consent was taken from all the participants. Serum samples from the case group were taken within the first week from the date of diagnosis.

Serum 25 (OH) vitamin D levels were measured in the Cobas e601 device using a competitive electrochemiluminescent immunoassay method (Roche Diagnostic, Mannheim, Germany). Values below 10 ng / mL were as severe insufficiency, values between 10-20 ng / mL were as insufficiency, and values above 20 ng / mL were considered sufficient.

Patients diagnosed with COVID-19 were classified as 'mild', 'medium', 'severe', and 'serious' according to the clinical findings of the disease. Patients with asymptomatic or mild upper respiratory tract infection symptoms (fever, runny

nose, myalgia, etc.) were as mild, patients with high fever, cough, mild pneumonia findings with imaging methods but without dyspnea and hypoxemia were as moderate, patients with severe pneumonia findings detected by imaging methods, with a respiratory rate> 30 / minute and SpO2 level in the room air <90% were as have heavy, Patients with symptoms of respiratory failure, ARDS (Acute Respiratory Distress Syndrome), septic shock, and multiple organ failure were classified as serious (4, 5).

The data were analyzed using IBM SPSS 25.0 statistical software. Chi-Square (χ2) test was used to compare descriptive statistical methods (frequency, percentage, mean, standard deviation, median, min-max, Q1-Q3) as well as qualitative data while evaluating the study data. The suitability of the data to normal distribution was evaluated by Kolmogorov-Smirnov and Shapiro-Wilk tests. Mann-Whitney U test and Kruskal-Wallis H test were used for comparisons of non-normally distributed data. Bonferroni test was used to find the difference, in cases where there was a difference in multiple comparisons. Correlations between the variables were evaluated with Spearman's Rho Correlation Test. Values with a probability of (P) α = 0.05 are considered as important and meant there is a difference between the groups, the larger values are considered insignificant and meant there is no difference between the groups. Power analysis

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is made with G * Power 3.1.9.4 statistical package program, and it is found n1 = 30, n2 = 38, α = 0,05, effect Size (d) = 0,8; power = 88%.

Results:

The median age of the patients (n = 38) included in the study was 37.4±14.0 and 60.5% of the patients were male. The average age of the control group (n: 30) was 37.9 ± 8.3 and 36.7% were male. There was no statistically significant difference between the two groups in terms of age and gender (p=0,087).

The mean vitamin D level of all patients (n = 68) included in the study was 12.2 ± 6.6. The mean vitamin D level of the patients was 9.9 ± 4.1 ng / mL and it was 15.2 ± 7.9 ng / mL in the control group. Vitamin D levels were higher in the control group and the difference was statistically significant (p<0,001) (Table 1). Vitamin D level was found to be seriously insufficient in 63.2% of patients diagnosed with COVID-19, and vitamin D was found insufficient in 34.2%.

20 (52.6%) of the patients were mild, 10 (26.3%) were moderate and 8 (21.1%) were in the clinical picture when the patients included in the study were grouped according to their clinical severity. There were no patients with a severe chronic course. There were a statistically significant difference between the groups in terms of age and vitamin D levels. The severity of the disease increased proportionally with age (r=0,451 p=0,005). Vitamin D levels; were 11.8 ± 4.3 ng / mL in the mild group, 8.9 ± 2.1ng / mL in the moderate group, and 6.3 ± 2.2 ng

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/ mL in the heavy group. There was a significant inverse correlation between the severity of the disease and serum vitamin D levels and ve vitamin D levels were found to be lower as the severity of the disease increased (r=-0,595, p<0,001) (Figure 1).

Discussion:

The World Health Organization (WHO) declared COVID-19 as a "pandemic" on 11 March 2020. As the epidemic began to take control of China, it quickly spread to other countries, causing an unexpected number of people to die, especially in Europe. The disease creates different epidemic curves in different countries and regions. It is stated that parameters such as the elderly population, demographic structure, health system preparedness for an epidemic, and preventive measures applied are determinative in this difference, In epidemiological studies (5). On the other hand, vitamin D deficiency has been defined as a "pandemic" in recent years. Europeans found vitamin D deficiency in 40.4% and severe vitamin D deficiency in 13%, regardless of age, race, and latitude, (6). In our study, it was found that vitamin D levels of COVID-19 patients were significantly lower than the control group.

Environmental factors such as sun exposure, geographical latitudes, seasonal changes, and air pollution are effective in endogenous vitamin D production. The prevalence of vitamin D deficiency ranges from 40% to 100%

worldwide (7, 8). Interestingly, vitamin D deficiency is more common in subtropical and middle latitude countries than in tropical and high latitude countries. On the other hand, almost zero rates have been reported in countries in the high latitude belt, such as Norway, Sweden, Finland, and Denmark. Contrary to what is known, the inverse relationship between vitamin D deficiency prevalence and latitude is explained by high amounts of vitamin D supplements, food intake and health policies applied, in these countries (9). The relationship between vitamin D deficiency prevalence and latitudes in 40 countries more affected by COVID-19 was examined by regression analysis and a significant relationship was found (10). In our study, vitamin D levels were found to be significantly low in patients with COVID-19 and these results support the relationship between said vitamin D deficiency and COVID-19.

The frequency of vitamin D deficiency has been reported at rates ranging between 12.9-59%, in studies conducted in our country (11, 12, 13). In our study, similar rates were observed in the control group, but severe vitamin D deficiency was slightly higher in the patient group. Further studies are needed to examine this relationship, considering that many different factors are affecting the prevalence of vitamin D deficiency and the outbreak of COVID-19.

The detection of Vitamin D receptors (VDRs) in immune system cells suggests that vitamin D regulates some immune-related processes. It has been

shown in vitro that the active form of vitamin D turns into 1.25 (OH) 2D, in active T and B lymphocytes, as well as endothelial cells lining the upper and lower airways (14). Besides, 1.25 (OH) 2D metabolites have been reported to stimulate surfactant synthesis in Type II alveolar cells (15). ACE-2 receptors in type II pneumocytes are the main target of coronaviruses. The underlying pathology is thought to be damage to Type II pneumocytes and tissue damage due to excessive immune response, in severe disease observed in approximately 20% of COVID-19 patients (16, 17). The pathogenesis of the SARS-CoV-2 virus, however, is still full of unknowns. The damage to the lungs is fatal in some patients, while some patients show an asymptomatic course without any signs of pneumonia. In our study, an inverse proportion was observed between the severity of the disease and vitamin D levels in patients with severe disease, in which vitamin D levels were significantly lower. The factors affecting the clinical course will be seen more clearly, via clarifying the pathogenesis of COVID-19.

Positive effects of vitamin D supplementation on the immune system have been demonstrated in animal experiments and studies in humans. It has been tried especially in the treatment of influenza and other respiratory infections in recent years (2). Vitamin D is effective in respiratory tract infections by stimulating the secretion of cathelicidin, an antimicrobial peptide in lung tissue, suppressing chemokine production, and inhibiting dendritic cell activation (3). High-dose

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vitamin D treatment was applied in COVID-19 patients treated in the intensive care unit, but the results were not satisfactory (18).

Conclusion

The COVID-19 pandemic is a rapidly evolving process, with new identified disease findings, new prognostic factors, and new treatments. Recognizing the factors involved and developing curative or preventive treatments will open the door to understanding the pathogenesis of the disease. Supplementing or taking vitamin D with food is likely to be useful as supportive therapy in the follow-up of COVID-19 patients or to reduce the risk of infection in healthy individuals. Studies with randomized controlled and larger patient groups are required to evaluate these recommendations and to consolidate our results.

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Table 1. Patient and control group general characteristics and vitamin D levels

		Control (n=30)	Patient (n=38)	p value
Gender*	Female	19 (%63,3)	15 (%39,5)	0,087 [a]
	Male	11 (%36,7)	23 (%60,5)	
Age (6) **		37,9 ± 8,3 39,0 (29,8 – 44,3)	37,4 ± 14,0 34,5 (26,0 – 46,3)	0,400 [b]
Vitamin D levels**		15,2 ± 7,9 12,6 (9,7 – 17,8)	9,9 ± 4,1 9,1 (7,1 – 11,9)	0,000 [b]
	<10	8 (%26,7)	24 (%63,2)	
	10-20	16 (%53,3)	13 (%34,2)	0,004 [a]
	≥20	6 (%20,0)	1 (%2,6)	

*: n (%), **: Average ± SD / Median (Q1-Q3), [a]: Chi-Square Test, [b]: Mann-Whitney U Test

Table 2: Demographic characteristics and vitamin D levels of the patients according to the severity of the disease

		Mild [1] (n=20)	Moderate [2] (n=10)	Severe [3] (n=8)	p value
Gender*	Female	9 (%45,0)	2 (%20,0)	4 (%50,0)	0,331 [a]
	Male	11 (%55,0)	8 (%80,0)	4 (%50,0)	
Age (year)**		33,5 ± 13,9	36,4 ± 9,3	48,5 ± 14,8	**0,020 [b]**
		27 (25 – 42)	35 (28 – 45)	45 (38 – 64)	
Vitamin D Levels**		11,8 ± 4,3	8,9 ± 2,1	6,3 ± 2,2	**0,001 [b]**
		10,3 (8,8–15,2)	9,1 (7,4–9,9)	6,3 (4,6–7,1)	
	<10	9 (%45,0)	8 (%80,0)	7 (%87,5)	
	10-20	10 (%50,0)	2 (%20,0)	1 (%12,5)	ns
	≥20	1 (%5,0)	--	--	

*: n (%), **: Average ± SD / Median (Q1-Q3), a: Chi-Square Test, b: Kruskal-Wallis H Test

Figure 1. The relationship between disease severity and vitamin D level
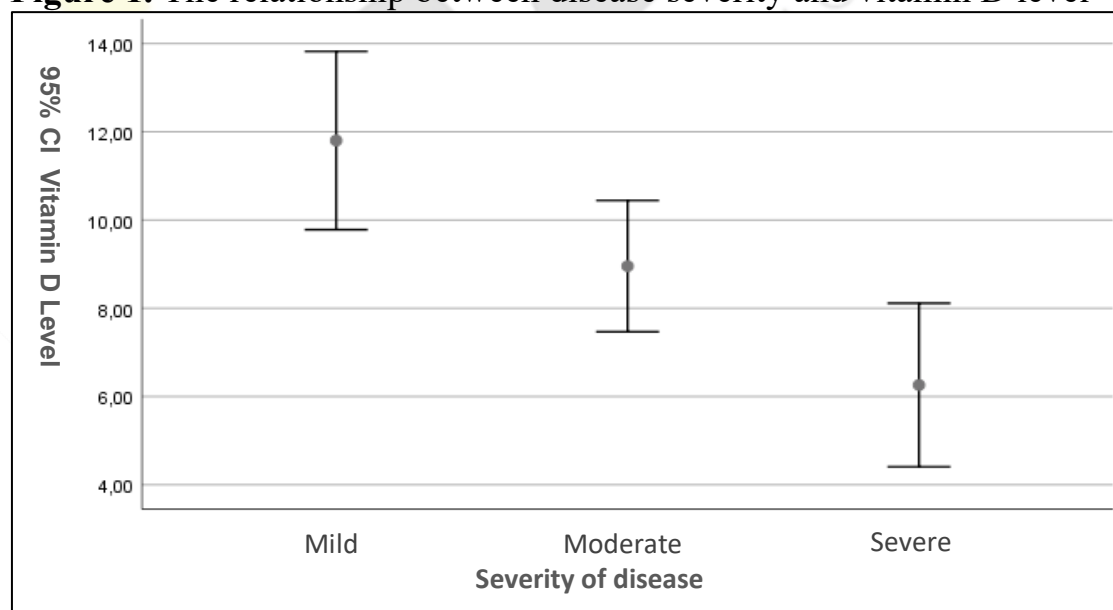
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ANXIETY LEVELS AND RELATED FACTORS ACCORDING TO THE BECK ANXIETY SCALE OF ORAL DENTAL HEALTH WORKERS DURİNG COVID-19 OUTBREAK

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Abstract

Purpose: The risk of getting infected is higher for dental health workers due to close contact with infected patients. This study aimed to investigate the association between anxiety and the COVID-19 pandemic amongst oral and dental health workers through the Beck Anxiety Scale.

Methods: A 21-item electronic survey was sent to a total of 236 dental health workers. While the first part of the survey was related to the participants' demographic information, the second part inquired about their clinical performance during the COVID-19 pandemic. The third part included the Beck Anxiety Scale.

Results: A total of 236 dental health workers (186 females and 50 males) were included in the study. The mean age of participants was 31.1 (±5.27). There was a significant difference between job and anxiety (p<0.002). The mean of anxiety scores was determined as 12.5 for dentists, 14.6 for dental assistants, and 6.33 for nurses. Statistically significant differences were found between anxiety and gender, age, educational attainment, and workplace of the participants (p<0.005). However, there were no statistical differences between anxiety and marital status and having children (p>0.005).

Conclusion: In the study, the dentists, dental assistants, and nurses were found to have varying levels of anxiety. Relevant psychosocial support and training could be provided for healthcare professionals, who work in dental clinics during such a severe outbreak, to reduce their mental burden. This situation might be taken into consideration by the public health policy planners of our country.

Keywords: COVID-19; anxiety; dentist; dental assistants; nurses

Introduction

A novel coronavirus (SARS-CoV-2) appeared in Wuhan (Hubei Province, China) at the end of 2019 and spread across the world (1). The spread was declared as a pandemic by the World Health Organization (WHO) in March 2020 (2). Since the beginning of the outbreak, the Ministry of Health has declared the total number of cases as 2,100,712 and the total number of deaths as 19,111 in Turkey so far (25th December 2020) (3).

The data reported by WHO until the same date above shows that there have been 77,920,564 confirmed cases and 1,731,901 associated mortalities worldwide. Symptoms vary widely depending on the condition of the new coronavirus cases. Cough and high fever are usually seen in this disease (4). However, patients with severe conditions may die as a result of lung infection and organ failure (5). This virus is mostly transmitted in three ways: direct transmission (through coughing, sneezing, or droplet inhalation), contact (oro-nasal-ocular route), and aerosol transmission (6).

Many professions, of course, have been affected by the pandemic. However, healthcare workers are more likely to get infected as they deal with treating infected patients. Among the professional groups with the highest risk, dentists and dental professionals have previously emerged as the most sensitive groups with the highest risk score of 92.7 and 99.5 out of 100, respectively (7). It was also reported in another article published on March 15, 2020 that dentists were one of the most risky occupational groups in the Covid-19 outbreak (8). Droplet and aerosol transmission of SARS-CoV2 is a major concern in dental clinics and hospitals. Due to the nature of dental treatment settings and applied treatment procedures, there is always a risk of SARS-CoV-2 infection (9).

We aimed to explore anxiety levels of dentists and auxiliary staff, shown among the professionals with high-risk, and associated factors by the Beck Anxiety Inventory in Turkey during the pandemic. Thus, the ultimate purpose was to guide public health policies for dentists during the pandemic.

Methods

The questionnaire used in our study was prepared electronically using Google Forms and delivered to the participants across Turkey via e-mail or WhatsApp

(https://forms.gle/TkSRx3JuiwpMfpSN8). The study included only the staff of institutions providing dentistry services.

The questionnaire consists of three parts in total. The first part includes questions about the sociodemographic characteristics of the participants such as gender, age, educational attainment, marital status, having children, and the institution type.The second part covers questions about dental practice during the COVID-19 pandemic (**Table 1**). Finally, the third part includes the Beck Anxiety Inventory. Healthy volunteers of both genders over the age of 18 employed in institutions providing dentistry services were included in the study.

BECK-A scale is an inventory consisting of 21 questions. For each question, participants mark an answer with a score between 0 and 3. The score range is between 0 and 63. According to Beck anxiety scale; anxiety levels are categorized as mild, moderate, and severe (10).

Jamovi 1.6.10 software was used for statistical analyses.Descriptive statistics were presented related to demographic characteristics and coronavirus problems of the participants.Since the values in the Beck Anxiety Inventory are ordinal, Kruskal Wallis analysis was performed.Post-hoc comparison of the factors was done with Dwass-Steel-Critchlow-Fligner paired comparison. The significance level was accepted as 0.05.

Results

Of the 236 volunteer healthcare workers participating in the study, 186 were females and 50 were males. The mean age of the participants was 31.1+5.27. 182 (77.1%) were dentists, 34 (14.4%) were dental assistants, and 20 (8.5%) were nurses. Sociodemographic characteristics of the participants are shown in **Table 2**.

It was discovered that 39.8% of the dentists participating in the study continued to work routinely during the pandemic, 35.6% only intervened in emergency cases, and 24.6% took temporary leave.

It was found that all the dentists and auxiliary staff participating in the study used surgical masks at least, and 157 (66%) of them used N95 masks.

The mean anxiety score of the female participants was found to be significantly higher than the males (p <0.001).

Our study determined that there was a significant difference between age and anxiety scores(p = 0.002). The mean anxiety score of healthcare workers aged 40-50 years was 16.4, while it was 9.09 for those aged 20-30 years.

There was no significant difference between anxiety scores and marital status and having children (p> 0.005).

A significant difference was found between the professional group and anxiety scores (p <0.002). On the Beck Anxiety Inventory, dentists scored 12.5, dental assistants scored 14.6, and nurses scored 6.33.

It was determined that the anxiety levels of healthcare workers without undergraduate education were significantly higher than those with undergraduate and further education (p <0.011).

There was a significant difference between the institution type and anxiety levels (p=0.02). It was determined that healthcare workers in oral and dental health centers had a higher value of 17.5 than those working in other institutions.

It was discovered that there was a significant difference between living an older adult and anxiety levels (p <001).

The healthcare workers having taken a temporary leave during the pandemic had significantly lower anxiety levels when compared to others (p <0.002).

Those, however, deployedin contact tracing teams had significantly higher anxiety levels than the others (p <0.002).

It was detected that healthcare workers not feeling safe when using protective equipment in dentistry practices had significantly higher anxiety levels (p <001).

It was determined that the anxiety levels of healthcare workers with a pre-pandemic psychiatric diagnosis were significantly higher (p <001).

Finally, healthcare workers who were reluctant to go to work and needed psychiatric support during the pandemic had significantly higher anxiety levels (p <001).

The group comparisons (demographic characteristics and dental practices during the pandemic) by the mean scores is given in Table-3.

Discussion

The findings revealed that healthcare workers employed in institutions providing dental services had different anxiety levels by their professional groups. The mean anxiety values were found to be 12.5 for dentists, 14.6 for dental assistants, and 6.33 for nurses, respectively. Since healthcare workers' previous anxiety levels were not known, no data could be obtained on whether there was an increase in these levels. However, this study was conducted in a period when the number of cases was increasing in Turkey. Therefore, there was likely an increase in their anxiety levels.

The results of a study conducted in Turkey showed similar results with our study, pointing out the high levels of stress and future anxiety in dentists during the pandemic (11). In another study examining the levels of psychological distress among dentists and dental health professionals in Israel, it was uttered that there was a high risk for dental staff to develop psychological distress (12). In a study conducted in Italy, significant psychological distress was reported among dentists during the COVID-19 pandemic (13). The study conducted with dentistry staff demonstrated that anxiety levels tended to increase among those who were frequently exposed to droplets and aerosol, and, thus, having a higher risk of getting infected (14).

In our study, anxiety scores were found to be significantly higher in female healthcare workers compared to their male counterparts (p <0.001). In a study conducted at the beginning of the pandemic in China, it was reported that more sleep disorders and acute post-traumatic symptoms were observed in females (15). Another study revealed that female healthcare workers had higher rates of anxiety and depression (16). The fact that women were more prone to anxiety was explained by family pressure and the hormonal effects (17).

While the mean anxiety score of the participants aged 40-50 was 16.4, it was 9.09 for the ones between 20-30 years. Besides, living with an older adult in the same house was realized to be a factor increasing anxiety. In a study investigating the effect of the pandemic on healthcare workers in Italy, it was reported that the risk of developing post-traumatic stress symptoms increasedby age (18). As indicated in many studies in the literature, one of the factors of going through severe COVID-19 disease and mortality due to it is advanced age. We think that this situation also increases the anxiety levels in healthcare workers (19,20).

In our study, anxiety levels of dentists and dental assistants were found to be significantly higher than nurses (p <0.002). In a study conducted on medical doctors and nurses in Turkey, it was reported that the anxiety of nurses was more than doctors, which was addressed with the difficulty of working conditions of nurses due to COVID-19 and their role in the care of and physical contact with COVID-19 patients (21). In dental practices, nurses have less physical contact with patients, and this task mainly lies with dentists.

The present study also revealed that the anxiety levels of healthcare workers without undergraduate education were significantly higher than those with undergraduate and further education (p <0.011). Similarly, in a study by Ning et al., it was reported that nurses and those with more inferior job titles were more prone to both anxiety and depression (22). In a recent meta-analysis study, it was reported that nurses are more vulnerable to stres (23). Contrary to our study, Lai et al. reported that men had higher levels of depression, anxiety, and stress than women (24).

In our study, it was determined that healthcare workers employed in oral and dental health centers had a mean anxiety score of 17.5, which was significantly higher than those working in other institutions (p <0.028). This case is strongly believed to be linked with the deployment of dentists, nurses, and auxiliary staff of dental health centers in contact tracing teams since the beginning of the outbreak in Turkey. Furthermore, healthcare workers deployed in such teams in Turkey were found to have more anxiety than others.

The participating dentists and auxiliary staff reported using surgical masks at least, and 157 (66%) used N95 masks during the pandemic. In the study of Cagetti et al., the rate of using FFPP2 or FPP3 masks was reported as 55% (25). In their study, Ahmed et al. reported that N95 mask use was 90% among the dentists during patient treatment (14). However, the participating healthcare workers stated that they did not feel safe, although the rate of using protective equipment in dental practices was high. Anxiety levels were found to be significantly higher in such staff (p <001). Anxiety development despite the use of protective equipment can be explained by the healthcare workers' lack of knowledge. Educational brochures or online training can be prepared on this subject.

Anxiety levels of healthcare workers with a pre-pandemic psychiatric diagnosis were found to be significantly higher than the others (p <001). In a study investigating the effect of the

COVID-19 pandemic and its measures on psychiatric patients, it was found that psychiatric patients got higher scores on anxiety, depression, and stress subscales (26).

It was determined that the anxiety levels of healthcare workers who were reluctant to go to work and needed psychiatric support during the pandemic were significantly higher (p <001). In their research, During the pandemic, it was determined that oral and dental health workers had high levels of anxiety due to the reluctance to go to work and the need for psychiatric support (p <001). In the literature, it was recommended to provide mental health support and regular clinical screening for depression, anxiety and suicide tendency to patients and healthcare professionals during the Covid-19 epidemic (27).

Conclusion:

Overall, dentists, dental assistants, and nurses, who are among the high-risk professional groups in the pandemic, had varying anxiety levels. Psychosocial support and training could be provided to reduce the mental health burden of healthcare professionals working during emergencies in institutions providing dentistry services. The results of this study could be taken into consideration by public health policy planners.

Limitations

Although the questionnaire was sent to a large number of healthcare professionals across the country, the number of participants remained lower than expected; thus, homogeneous participation to cover the whole country could not be achieved. The sample size can be increased in further studies. The study was carried out in a short period at the time of the pandemic on the rise again.

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Survey: Table1

Sociodemographic Characteristics

1) Your age is ………

2) What is your gender?

  a) Female

  b) Male

3) What is your profession?

  a) Dentist

b) Nurse

c) Dental Assistant

4) What is your educational attainment?

  a) Undergraduate and further

  b) Less than undergraduate

5) Which institution do you work in?

a) University Hospital

b) Oral and Dental Health Center

c) Private Polyclinic / Examination

6) What is your marital status?

a) Married b) Single

7) Do you have children?

a) Yes b) No

8) Are there any older adults in yourhouse?

a) Yes b) No

Questions About Your Work Order During the Covid-19 Pandemic

1. How has been your work order during the pandemic?

a) I have continued my routine work (including processes involving aerosol)

b) I have only responded to emergency cases

c) I have not worked

2. Have you been deployed in contact tracing teams?

a) Yes b) No

3. Do you feel safe when you use protective equipment in dental practices?

a) Yes b) No

4. What protective equipment have you used during dental practices? (You can choose more than one option)

a) Surgical Mask b) N95 Mask c) Overalls d) Visor e) Glasses f) Disposable Apron g) Glove h)Bonnet

5. Have you had a psychiatric diagnosis before the pandemic?

a) Yes b) No

6. Are you reluctant to go to work?

a) Yes b) No

7. Have you felt the need for psychiatric support during the pandemic?

a) Yes b) No

Table 2. Descriptives of demographic characteristics and questions related to the pandemic (n=236)

Demographic Characteristics and Responses to the Questions Related to the Pandemic	n	%
Age		
20-30	106	44.9
30-40	110	46.6
40-50	20	8.5
Gender		
Male	50	21.2
Female	186	78.8
Profession		
Dentist	182	77.1
Dental Assistant	34	14.4
Nurse	20	8.5
Education		
Undergraduate and further	202	85.6
Less than undergraduate	34	14.4
Workplace		
Private Clinic	68	28.8
University Hospital	128	54.2
Oral and Dental Health Center	40	16.9
Marital Status		
Single	114	48.3
Married	122	51.7
Children		
Yes	74	31.4
No	162	68.6
Any older adults in the participant's house		
Yes	90	38.1
No	146	61.9
Work order during the pandemic		

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I have not worked	58	24.6
Ihave continued my routine work	94	39.8
I have only responded to emergency cases	84	35.6
Deployment in contact tracing team		
Yes	20	8.5
No	216	91.5
Do you feel safe when you use protective equipment in dental practices?		
Yes	96	40.7
No	140	59.3
Have you had a psychiatric diagnosis before the pandemic?		
Yes	22	9.3
No	214	90.7
Are you reluctant to go to work?		
Yes	160	67.8
No	76	32.2
Have you felt the need for psychiatric support during the pandemic?		
Yes	76	32.2
No	160	67.8

Table 3. Group comparisons by the mean scores on the scale (Kruskal-WallisTest)

Factors	Mean Score on the Beck Anxiety Inventory (M ± SD)
Age	
20-30	9.09±7.67 [a]
30-40	15.1±12.5 [b]
40-50	16.4±18.9 [b]
Gender	
Female	14.3±12.2 [a]
Male	6.00±6.13 [b]

Profession	
Dentist	12.5±12.7 [a]
Dental Assistant	14.6±6.34 [a]
Nurse	6.33±7.88 [b]

Educational attainment	
Undergraduate and further	12.3±12.3 [a]
Less than undergraduate	14.1±6.79 [b]
Workplace	
Private Clinic	9.74±7.83 [a]
University Hospital	12.5±12.0 [ab]
Oral and Dental Health Center	17.5±14.6 [b]
Marital Status	
Single	9.61±6.61 [a]
Married	15.3±14.5 [a]
Children	
Yes	16.9±16.9 [a]
No	10.5±7.61 [a]
Any older adults in the participant's house	
Yes	8.84±8.01 [a]
No	14.8±13.0 [b]
Work order during the pandemic	
I have not worked	9.21±6.93 [a]
Ihave continued my routine work	9.96±7.45 [a]
I have only responded to emergency cases	17.7±15.8 [b]
Deployment in contact tracing team	
Yes	27.8±12.8 [a]
No	11.1±10.6 [b]
Do you feel safe when you use protective equipment in dental practices?	
Yes	6.40±6.71 [a]
No	16.7±12.5 [b]

Have you had a psychiatric diagnosis before the pandemic?	
Yes	31.5±21.8 [a]
No	10.6±7.94 [b]
Are you reluctant to go to work?	
Yes	15.7±12.6 [a]
No	5.87±4.93 [b]
Have you felt the need for psychiatric support during the pandemic?	
Yes	17.3±13.0 [a]
No	7.44±7.27 [b]
Deployment in contact tracing team	
Yes	21.2±15.0 [a]
No	8.41±6.55 [b]

*Different letters mean within-group significance (p<0.05)

Comparison of Face-to-Face and Online Education Results in Department of Physical Therapy and Rehabilitation Students' Approach to Patient with Pain

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Abstract

Purpose: To compare the attitudes of senior students of physiotherapy and rehabilitation department, who receive face-to-face(FFE) and online education(OE),to the patient with pain.

Methods: The study was conducted between September 2019-December 2020. A total of 118 students studying in the last year of Pamukkale University,School of Physical Therapy and Rehabilitation School in the fall semesters of the 2019-2020 and 2020-2021 academic years were included. While students in the fall semester of the 2019-2020 academic year(n=60;35females,25males) receive FFE in clinical education, students in the fall semester of the 2020-2021 academic year(n=58;40females,18males) took these lessons through OE. The approaches of students to the patient with pain were evaluated with Pain Attitudes and Beliefs Scale for Physiotherapists(PABS-PT-TR). PABS-PT-TR consists of two sub-

parameters:biomedical and biopsychosocial orientation for pain. Treatment orientation is in favor of the higher scored sub parameter.

Results:FFE and OE groups were similar in terms of age and gender(p>0.05). Mean PABS-PT-TR biomedical orientation score was30.51±5.83 and the biopsychosocial orientation score was23.38±4.95 in the group receiving FFE. In OE group,mean PABS-PT-TR biomedical score was33.18±4.36 and the biopsychosocial score was 22.53±4.23. While there was no statistically significant difference between the PABS-PT-TR biopsychosocial scores of the groups(p=0.320), biomedical scores of OE group were higher(p=0.006).

Conclusion:A patient with pain should be evaluated and treated multidimensionally not only from a biological but also from a biopsychosocial perspective.Due to the COVID-19pandemic in the field of Physiotherapy, education continues online.The point of view of the students with lack of practice as a result of OE is biomedical rather than holistic approach.

Keywords: Physical therapy and rehabilitation, COVID-19, online education

INTRODUCTION

COVID-19 infection from the novel Coronavirus (SARS-CoV-2) appeared in Wuhan, China, in late December 2019. The highly transmitted virus soon spread all over the world, especially in Europe (1). COVID-19, which has started to affect the whole world quickly, has started to appear in Turkey since 11 March 2020.

As soon as the first case was detected in Turkey, measures covering many sectors were taken very quickly by the relevant institutions of the state to combat the epidemic (2).

After the health sector, the education sector was one of the sectors most affected by this situation. According to data obtained from the United Nations, the world's 770 million-strong student body (students, etc.) was affected by the closure of schools and universities (3). In this sense, the distance education approach, which has created many debates about feasibleness, has been commissioned as the easiest and most feasible solution in order to ensure the sustainability of education due to the effects of the virus spreading all over the world.

In order to prevent the spread of thevirus, education in all universities was suspended for a short time, and then it was decided by the Council of Higher Education (YÖK) that distance education would continue with digital facilities in universities on March 23, 2020 (4,5).

Until the latest changes brought about by the COVID-19 pandemic, physiotherapy and rehabilitation undergraduate education has traditionally been structured in the form of face-to-

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face learning. Students receive theoretical and practical trainings throughout their undergraduate education regarding "pain and treatment", which is one of the most common health problems faced by physiotherapists in professional terms. After completing the theoretical and practical courses of the basic sciences and professional practice areas for the first 3 years, the candidates of physiotherapists in the last year practice professionally in the clinical environment.

The aim of the study was to compare the approaches of senior students in the department of physiotherapy and rehabilitation who received yüzface and online education to the painful patient.

METHODS

The study was conducted between September 2019 and December 2020. A total of 118 students who studied at Pamukkale University, School of Physical Therapy and Rehabilitation senior year were included in the fall semesters of 2019-2020 and 2020-2021 academic years.

Inclusion criteria: : A total of 118 students studying at Pamukkale University, School of Physical Therapy and Rehabilitation senior year and studying clinical practice were included in the study.

While students in the fall semester of the 2019-2020 academic year (n=60; 35 females, 25 males) receive face-to-face education (FFE) in clinical education, students in the fall semester of the 2020-2021 academic year (n=58; 40 females, 18 males) took these lessons through Online education (OE).

Demographic characteristics of participants including such as age and gender were recorded in the data registration form.

The approaches of students to the patient with pain were evaluated with Pain Attitudes and Beliefs Scale for Physiotherapists(PABS-PT-TR). PABS-PT-TR was used to students who agreed to participate in the study (6, 7). The Turkish version of this survey consists of 13 items. In the scale, participants are asked to value expressions between "1= I absolutely disagree" and "6= completely agree". The seven items contain statements measuring the "biomedical orientation" of physiotherapists, while six items contain expressions that measure their "biopsychosocial orientation". In biomedical orientation, the view is adopted that pain and ability is caused by specific pathology or tissue damage. Therefore, the treatment targets the signs and symptoms of pathology. In biopsychosocial orientation, pain and ability is not

necessary to be symptoms of tissue damage, but it can be affected by psychological and social factors. Treatment orientation is in favor of the higher scored sub parameter.

Statistical Analysis

Data were analyzed using SPSS Statistics 22.0 for Windows® (IBM SPSS Statistics 25 software (Armonk, NY: IBM Corp.)) and the statistical level of significance was set at α=0.05. Categorical variables were presented as proportions, whereas continuous variables were described as mean and standard deviation. All measurements were checked for normality with the Kolmogorov-Smirnov test. The independent sample-t test was used in comparing independent group differences when parametric test assumptions were provided. Differences between categorical variables were examined by Chi square analysis.

RESULTS

FFE and OE groups were similar in terms of age and gender($p>0.05$) (Table 1). Biomedical orientation scores of OE group were higher than FFE. Mean PABS-PT-TR biomedical orientation score was 30.51±5.83 and the biopsychosocial orientation score was 23.38±4.95 in the group receiving FFE. In OE group, mean PABS-PT-TR biomedical score was 33.18±4.36 and the biopsychosocial score was 22.53±4.23 (Table 2).

While there was no statistically significant difference between the PABS-PT-TR biopsychosocial scores of the groups ($p=0.320$), statistically significant difference was found in biomedical scores in favor of OE group ($p=0.006$) (Table 2).

DISCUSSION

In our study, where we investigated the results of face-to-face and online education on the approach of the senior students in the department of physiotherapy and rehabilitation about the treatment of a patient with pain, we found that the treatment orientation of the students was not biopsychosocial but biomedical.

The developers of the PABS-PT survey indicated a contrasting relationship between sub-orientations. From this point of view, biopsychosocial orientation scores should increase when students' biomedical scores decrease (6).

In the study of Houben et al. investigated whether fourth-year physiotherapy students' attitudes about low back pain had their treatment recommendations predicted; they reported

that their biomedical orientation score in the PABS-PT survey was 29.8 and their biopsychosocial orientation score was 37.5. They found biopsychosocial orientation scores higher (8).

Mackey et al. used the revised survey of Houben et al. in their study, in which senior physiotherapy students and newly graduated physiotherapists compared their attitudes and beliefs about chronic low back pain. Contrary to the results of Hauben et al., they found that senior physiotherapy students had higher biomedical scores. According to their studies, biomedical orientation scores were reported to be 35.0 and biopsychosocial orientation scores were 32.0 (9). In our study, biomedical scores in both FFE group and OE group were found to be higher than biopsychosocial orientation score. However, the biomedical score in the OE group was found to be higher than in the FFE group.

A patient with pain should be evaluated and treated in a multidimensional way, not only from a biological point of view, but also from a biopsychosocial point of view. Physiotherapists in pain management are an actively involved professional group.

In studies, physiotherapists with high biopsychosocial orientation scores tend to follow the guides more in the treatment of their patients (10,11).

As in all other areas due to the pandemic, online trainings continue instead of practical trainings in the field of physiotherapy and rehabilitation. In order to increase biopsychosocial orientation and plan treatment for a patient with pain with a holistic approach, we think that it is important to eliminate the practical deficiency of students, not only theoretical and online training virtual applications.

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TABLES

Table 1. Demographic characterics of groups

Variables	FFE group (n=60) Mean±SD	OE group (n=58) Mean±SD	*p*-value
Age (year)	23.00±2.09	22.79±2.04	0.589[a]
	n (%)	**n (%)**	
Gender Female Male	35 (58.3) 25 (41.7)	40 (69.0) 18 (31.0)	0.256[b]

FFE: Face-to-face education, OE: Online education, SD: Standard deviation,

[a] Independent sample-t test, [b] Chi square analysis

Table 2. Comparison of groups' beliefs and attitudes about pain

PABS-PT-TR sub-parameters	FFE group (n=60) Mean±SD	OE group (n=58) Mean±SD	*p*-value[a]
Biomedical orientation	30.51± 5.83	33.18± 4.36	**0.006**
Biopsychosocial orientation	23.38± 4.95	22.53± 4.23	0.320

PABS-PT-TR: Pain Attitudes and Beliefs Scale for Physiotherapists, FFE: Face-to-face education, OE: Online education, SD: Standard deviation, [a] Independent sample-t test

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INVESTIGATION OF THE SATISFACTION OF PROSTHETIC USE IN COVID -19 PANDEMIC PROCESS OF AMPUTEE INDIVIDUALS USING PROSTHETICS

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Abstract

Objective: The aim of this study is to examine the satisfaction of amputated individuals who have been using lower and / or upper extremity prostheses before and during the Covid-19 pandemic.

Method: 59 amputees between the ages of 18-65 using lower and / or upper limb prosthesis participated in the study. The Trinity Amputation and Prosthetic Experience Scale (TAPES) was shared with individuals via Google Forms to be filled out.

Results: A statistically significant difference was found between before and during the pandemic in terms of the functional satisfaction, athletic activity and social restriction total score (p <0.05), whereas no statistical significance was observed before and during the pandemic in the functional restraint scale, aesthetic and weight satisfaction total score (p> 0.05).

Conclusion: Amputees using lower and / or upper extremity prostheses were observed to be affected in terms of functional satisfaction, athletic activity and social restriction in the quarantine periods during the pandemic. The effects of the pandemic on prosthesis users should be taken into consideration by prosthesis practitioners.

Keywords: Amputee, Prosthesis Satisfaction, Covid-19, Pandemic

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Introduction

Amputation is a condition that changes a person's body image, lifestyle, physical function and in turn might lead to psychosocial difficulties (1,2). The level of satisfaction gained by an artificial limb following an amputation, which creates major physical, psychological and social problems on the person's life, is also directly related to the health-related quality of life. (3,4).

Providing these individuals, a rapid come back to daily life activities after amputation is considered as the primary goal of prosthesis use and rehabilitation process (5,6). Considering that the prosthesis is a tool to replace the natural limb of the wearer, satisfaction with the prosthesis is of great importance (7). It is well-known that the compatibility of the prosthesis to the patient and the elevated prosthesis satisfaction represent a positive effect on the quality of life (8). Scales and questionnaires are used to determine the satisfaction and functional levels of prostheses applied to individuals after amputation, whereas surveys allow investigating and evaluating the functional status, functional competencies, satisfaction of the prosthesis through the patient perspective (9).

The coronavirus, which was initially reported as pneumonia cases of unknown etiology in Wuhan, Hubei province of China and spread rapidly across the countries, was declared as pandemic by the World Health Organization (WHO) on March 11, 2020. Based on the data obtained from China, the older individuals were reported to be at higher risk than younger individuals, and people with additional diseases were found to be relatively disadvantaged (10, 11, 12). The first case in our country was reported on March 11, 2020. (8). Regarding WHO recommendations about physical distance, all citizens of Turkey were informed to stay at home except for force majeure. Additionally, most companies and organizations have begun to work remotely (10).

The purpose of our study is to examine the changes in prosthesis satisfaction of individuals using prosthesis during the Covid-19 pandemic.

Methods

This study was evaluated at Istanbul Medipol University Non-Invasive Ethics Committee meeting on 10.06.2020 and approved with the decision number 487. The study was conducted

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in accordance with the "Declaration of Helsinki". Individuals who volunteered to participate and approved the consent form were asked to fill out a Google questionnaire.

Participants

The data of the research were collected through a Google form. 59 amputees who had lower and / or upper extremity amputation for various reasons and levels, aged between 18-65, had no neurological diseases that could prevent the prosthesis usage, had no cognitive deficiency that might unable answering the questions, not functionally bed-dependent and underwent amputation surgery without orthopedic prosthesis application were enrolled to the study. Data were collected between June and August 2020.

Evaluations

The participants were asked to fill out the questionnaire created by us, which included demographic information about age, gender, height, weight, education level, job status, smoking status, chronic illness, amputation level and the cause of amputation, along with the Trinity Amputation and Prosthetic Experience Scale (TAPES).

The participants filled out the online Google form which included The Turkish version of the Trinity Amputation and Prosthesis Experience Scale (TAPES) that was developed to determine and evaluate the level of prosthesis compliance, along with the factors related to prosthesis use in amputees (13). TAPES is a scale consisting of two sections. The 1st chapter of TAPES includes psychosocial adjustment, activity restriction and prosthesis satisfaction. Psychosocial adjustment subdivision is scored by a 5-level Likert scale. The total score that can be obtained from this section ranges between 5-75 and the higher the score indicates the elevated compliance level. The activity restriction subsection is scored by a 3-level Likert scale. The score that can be obtained from this area ranges from 12 to 36, from which an increase in score indicates high activity restriction. Prosthesis satisfaction subdivision is scored by a 5-level Likert scale. The score that can be obtained from this area varies between 10 and 50 and a high score indicates high satisfaction with the prosthesis. The 2nd chapter of TAPES represents that there are departments examining phantom limb pain (FEA), stump pain (GA), and other medical problems that are not related to amputation (14). In this study, 1st chapter of TAPES includes activity limitation and prosthesis satisfaction scores were evaluated to question the prosthesis satisfaction of the participants who used prosthesis before and during the COVİD-19 pandemic.

Statistical Analysis

The data analysis of the study was performed using the Statistical Package for Social Sciences (SPSS version 22.0, SPSS Inc., Chicago, IL USA) statistical program. The data indicated in numbers are n (%), and the data indicated by the measurement are the arithmetic mean ± standard deviation (X±SD). The significance value of p was considered as 0.05. Wilcoxon Signed Ranks test was performed for data comparison and the Spearman Rho test was used for correlation analysis.

Results

59 participants (43 men and 16 women) between the ages of 18-65 who met the inclusion criteria of the study were enrolled to the study. Demographic and clinical information of the participants are shown in Table 1. Among the participants, n = 11 upper limb amputations and n = 48 lower limb amputations were detected.

Athletic Restriction of Activity Total Score, Functional Restriction Total Score, Social Restriction Total Score, Aesthetic Satisfaction Total Score, Weight Satisfaction Total Score and Functional Satisfaction Total Score before and after COVID-19 pandemic restrictions were summarized in Table 2. In the study, a statistically significant difference was observed between Athletic Restriction of Activity and Social Restriction total scores before and after the restriction (p <0.05).

According to our findings, no difference was observed Trinity Amputation and Prosthesis Experience Scale: TAPES scores, along with the amputation level and gender. before and after restrictions (p> 0.05)

Conclusion

The Covid-19 pandemic has affected the whole world in many aspects such as physical, spiritual and social, leading to dramatic lifestyle changes. The aim of this study was to investigate the changes in prosthesis satisfaction of amputees using lower and / or upper extremity prostheses during the pandemic.

In a previous study conducted with 88 participants, 54 males and 34 females the pain, prosthesis satisfaction and functionality of the test socket in participants with transfemoral and transtibial amputation were investigated and prosthesis satisfactions were recorded using TAPES (15). In another research where psychosocial adjustment to diabetes-related lower extremity amputation was investigated, 38 patients (29 males and 9 females) were enrolled, who underwent transtibial and transfemoral level amputation (16). A total of 59 participants, 43 males and 16 females, were included in our study. Due to the higher rate of amputation in men, the number of male participants was higher in our study, as in other studies.

Considering the average age of the 59 participants enrolled in the study, young adults were found to be in vast majority since the age restriction was between 18-65 years old and young adults were more familiar with filling out the online questionnaire, which was required in our study. Raichle et al. determined that using a lower extremity prosthesis was more common as a conclusion of their research conducted with lower and upper extremity amputation patients (17). The number of lower extremity amputees is dramatically higher than the upper extremity amputees worldwide. Similarly, it was observed in our study that the participants with lower extremity amputations were in majority. Following a lower extremity amputation, the use of prostheses is of great importance in order to maintain their daily life activities and functionalities. TAPES (Trinity Amputation and Prosthesis Experience Scale) is a multidimensional scale specific to amputees representing the factors related to prosthesis use and the level of prosthesis compliance in using prosthesis and it was used as the primary assessment scale in our study (18).

Akshay et al. stated in their study conducted with lower extremity prosthesis users and investigated the changes of physical activity levels during the Covid-19 pandemic that step count during the day decreased and there had been an 8% loss in general muscle strength by the end of the 14-day isolation period (19). According to TAPES measurement in our study, the reason of the variation in athletic activity restriction and social restriction before and during the COVID-19 pandemic might have occurred due to the limited activity.

Prosthesis function and satisfaction were measured using TAPES in a study investigating prosthesis wearing, usage and satisfaction following lower extremity amputation. It was

observed that participants who were designated as smokers according to the TAPES measurements represented significant limitations in athletic activities (20). In our study, no influence of smoking has been detected in TAPES scores. We believe that the reason for this finding might be due to enrolling participants who were long-term prosthesis users.

In a study investigating the psychosocial and physical status of amputees based on their gender differences, no significant difference was found in psychosocial adjustment and physical outcomes (21). In our study, no significant relationship was detected between genders and TAPES scores. Since the pandemic affects all individuals negatively in physical, mental and social aspects, no difference between the genders was observed which suggests that both women and men are negatively influenced.

The Covid-19 pandemic has influenced the lower and upper extremity prosthesis users in varying levels in terms of prosthesis use and satisfaction, considering athletic activity, social restriction and functional satisfaction We strongly believe that prosthetic users should be supported socially and physically and provided with extra care during the pandemic.

In conclusion the present study showed that it was determined that the COVID-19 pandemic periyod was negatively affected by athletic activity and social restriction in prosthesis users. Clinically, there was a decrease in the prosthesis satisfaction of the participants, but there was no statistically significant difference.In addition, the number of amputations of lower limbs in men in Turkey were found to be more.

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Table 1. Demographic and clinical information of the participants

Baseline values	Participants (n=59) Mean±SD	Percentage (%)
Age (Years)	38.06 ±9.96	
Gender		
Female	16	27.1 %
Male	43	72.8 %
Height (cm)	169,94 ±8,02	
Smoking Status		
Current smoker	17	28.8 %
Non-smoker	42	71.1 %
Comorbidity		
Non- comorbidity	56	90.3 %
Current comorbidity	6	9.7 %
Hypertension	*4*	*66.6 %*
Diabetes Mellitus	*1*	*16.7 %*
Asthma	*1*	*16.7 %*
Amputation Levels		
Lower Extremity Level	48	81.3 %
Upper Extremity Level	11	18.6 %

SD: Standard Deviation

Table 2. Comparison of TAPES sub-parameters results of the participants before and after COVİD-19 pandemic

	Before Pandemic Mean±SD	After Pandemic Mean±SD	z	p
TAPES				
Activity Restriction				
Athletic Restriction	7.37±1.87	7.91±2.10	-2.96	***0.003***
Occupational Restriction	8.81±2.10	9.30±2.02	-1.92	*0.054*
Social Restriction	9.76±2.09	10.44±1.78	-3.05	***0.002***
Prosthesis Satisfaction				
Aesthetic Satisfaction	14.71±4.15	14.52±4.32	-0.64	*0.52*
Weight Satisfaction	4.47±0.70	4.35±0.90	-1.20	*0.23*
Functional Satisfaction	19.50±3.98	18.35±5.32	-2.001	*0.45*

TAPES: Trinity Amputation and Prosthesis Experience Scale; z: standard score; SD: Standard Deviation

*: indicated a statistically significant value, p<0.05.

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Definition of the Effects of the COVID-19 Pandemic on the Clinical Studies of Postgraduate Students and Academicians

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Abstract

Purpose: In our study, it is aimed to determine the effects of the pandemic on graduate students, researchers and research.

Methods: In this descriptive study, the data collection form was applied on the internet after the ethics committee approval was obtained. The data were analyzed in computer environment.

Results: 60 researchers participated in the study. It was determined that half of the participants were between the ages of 26-30 and most of them were nurses, while the majority of them were in doctorate course (38.3%) and thesis period (30%), and 58.3% were working remotely. In the pandemic, 31.7% of them stated that their education was interrupted and they found the distance education method useful, but not sufficient (55%). Research rates were 91.7% before Covid-19 and 75% in the pandemic. It was observed that researches were carried out in both periods, but research designs changed. In their research, it was determined that there were difficulties in finding cases in both periods. It was determined that those who had studies coinciding with the pandemic period continued their studies (40%) and telephoned the study teams the most.

Conclusion: In our study, it was concluded that researchers had difficulties in their research before the pandemic, but the pandemic made the situation even more difficult. During the Covid-19 period, it was determined that they had difficulties in conducting research activities at various stages, and it is recommended that institutions develop new strategies specific to the pandemic period, and these strategies are thought to facilitate researchers.

Keywords: Research; Covid-19, clinical trial

INTRODUCTION

Covid-19 is an important public health problem that emerged in Wuhan, China on December 31, 2019. With the increasing number of cases and mortality rates, World Health Organization (WHO) declared a Public Health Emergency worldwide on January 30, 2020 and made a notification to take measures against the Covid-19 disease. Despite the measures taken, the disease continued to progress and spread and became an international problem. On March 11, 2020 WHO declared Covid-19 as a pandemic (WHO, 2020; Kurnaz and Serçemeli, 2020).

The pandemic has impacted education and training systems around the world, causing schools and universities to close almost completely (UNESCO, 2020). However, studies on how Covid-19 affects the education system are limited (Bao, 2020; Bal et al., 2020). The rapid development of informatics, science, health, economy and society in our age cannot be separated from the contribution of postgraduate students. (Tian et al., 2019). Postgraduate programs are among the education systems affected by the pandemic. Researchers who continue their lectures, theses and/or experimental researches may have problems in continuing their research and education during the pandemic-induced distance education period (Bal et al., 2020).

The effects of the pandemic on postgraduate education and clinical research are not known enough. While distance education makes postgraduate courses more accessible to some students, the lack of online learning resources for education and training can disrupt education and disadvantage groups with limited access to resources. Increased domestic responsibilities associated with the closure of schools and childcare facilities, and reduced access to the laboratory area, problems in procuring equipment lead to loss of workforce, causing clinical trials to be paused or permanently terminated (Vilela, 2020). The global economic impacts of the COVID-19 pandemic also affect researches funding sources. Travel restrictions can make international collaboration more difficult for researchers, and lead to the development of more environmentally sustainable and inclusive research practices (Vilela, 2020; Nabhan et al., 2020).

Determining the effects of the restrictions applied during the pandemic process and the distance education processes on postgraduate education and clinical research will enable the development of sustainable methods and appropriate policies in the long-term education and research processes. This study aimed to determine the effects of the pandemic on graduate students, researchers and their researches.

METHODS

Design: It was used a descriptive study design.

Setting and Sample: The study was conducted online from December 2020 to January 2021. Participants in the study were reached using the snowball sampling method. The universe of the research was formed by all graduate students and academicians who could be reached on the internet (WhatsApp application) during the research. The sample of the study consisted of those who meet the criteria for inclusion in the study, who can be reached at the planned date, and who accept the study after being informed about the study. The sample of the study consisted of 60 people from graduate students and academicians who accepted the study after informing about the study. The STROBE checklist was used to report the research.

Inclusion criteria of the study:

• Having or have received postgraduate education

• Accepting to participate in the study

• To be able to read and understand Turkish

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Exclusion criteria of the study:

• Not having a postgraduate education

• Not knowing Turkish

Data Collection

The data collection step of the study was conducted online in the internet environment due to the Covid-19 pandemic. Participants were asked to fill in the data collection form prepared by the researchers online by scanning the literature. A data collection form consisting of 42 questions consisting of 3 parts was used to evaluate the impact of the Covid-19 pandemic on researchers' education and research processes. In the first part, 6 questions questioning the introductory characteristics (age, gender, title, field of expertise, etc.), in the second part, 19 multiple-choice questions questioning the participants 'graduate education status and the effects of the distance education system on their graduate education, and in the third part, there are 17 multiple choice questions asked about the status of the researchers' research in the period before and after the pandemic.

The questions in the data collection form were prepared via Google forms and sent to the participants using the internet environment and via social media messaging application (whatsapp). Before the study data was collected, the participants were shown the "informed consent form on the internet" on the screen before the study, and the participants who read the form and accepted the study, ticked the "I approve" option and filled in the questions. Participants who completed the form online were deemed to have accepted to participate in the study.

Statistical Analysis: Statistical Package for the Social Sciences (SPSS for Windows, 22.0, IBM Company, Turkey) was used for data analysis. In the first stage, descriptive statistics such as frequency and percentage of the responses were calculated. When parametric tests were used to compare continuous variables by looking at distributions of normality, the data were expressed as mean ± standard deviation. When nonparametric tests were used, data were expressed as medians (minimum-maximum) and percentiles (25th and 75th percentiles). Chi-Square, Mann Whitney U and Kruskal Wallis tests were used for comparison of variables and for further analysis. A significance value of $p < 0.05$ was accepted for all interpretations.

Ethical Procedures: The study was conducted after obtaining approval from the Human Research Ethics Committee of Istinye University and Ministry of Health General Directorate of Health Services Scientific Research Platform. Consent was obtained from each participant, who stated that they were volunteers when starting the survey. Since the study was conducted online, it did not require an institutional permit.

RESULTS

As a result of this study the data of 60 patients were evaluated. The inductor characteristics of the participants were given in Table 1 and their characteristics regarding their research were given in Table 2. It was found that most of the participants in the study consisted of health sciences (88.4%) and Female researchers (90%). When the rates of those who received education were evaluated, it was determined that most of them were in the course (38.3%) and thesis (30%) periods of the doctorate.

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During the Covid-19 pandemic period, it was found that 75% of the participants did research while working remotely (58%). It was determined that the rate of conducting research was 91.7% before the pandemic. Although it was found that the rate of work decreased during the pandemic period, there was no statistical difference between them before and after (p<0.005). Before Covid-19, it was seen that descriptive research (39.8%) and review/systematic reviews (22.3%) were the most; It was found that descriptive (32.5%) and review/systematic review (13.8%) were also performed during the Covid 19 period. In addition, there was an increase in the rate of qualitative research (11.3%) and retrospective research (6.3%) during the pandemic period. When looking at the areas where the participants had difficulty in doing research, it was found that they had difficulty finding the most cases (36.7%) and hospital permit (18.3%) before the Covid-19 period.

When people who continue their education process score the effects of the Covid-19 pandemic, on postgraduate education, their average score was 5.5±2.88 (min 2; max 10) and their average score for distance education experiences was 5.5±2.76 (min 2; max 10).

It was stated that 53.3% of the participants stated that the education process was disrupted due to Covid-19 and the reasons for the disruption were respectively 26.7% thesis extension, 3.3% term prolongation and 1.7% failure enrol. 53.3% of the participants stated that there is no problem in their education. It was determined that the vast majority of those who received training continued their education regularly (56,7%) during the pandemic period and 56.7% of their training was made interactive. 3.3% of the participants stated that they did not find distance education enough for their field, they did not want this situation to continue after the pandemic, and 71.7% did not think that ideal measurement and evaluation was made in distance education. Participants reported that the distance education process negatively affected the quality of education (65%) and 64.8% of the participants stated that it did not create a change in their success.

When the characteristics of the participants regarding doing research were evaluated 58.6% of them stated that they did clinical research before Covid-19 and 41.7% had difficulties in this period. 66.7% of the participants reported that their research initiated before Covid-19 coincided with the pandemic period. While 40% of these participants continued working, 16.7% stopped working and 8.3% had to make a change in the method.

Most of the participants in the study reported that they collected their data mostly using questionnaires/surveys (40.6%) and internet-based messaging (30.9%) in their studies during the Covid-19 period. Participants reported that the research team communicated with each other mostly through video conferencing, e-mail and messaging.

DISCUSSION

The continuity of research activities is a way that graduate students and all academics should be in and help their development. Although the distance education method is actively used, the Covid-19 pandemic that emerged in 2020 and affects all over the world has further spread its use. In our study, it was determined that the participants who received face-to-face training before the pandemic continued their education in the pandemic with the distance education method (n = 34, 56.7%). Similarly, it is known that in many education and training units around the world, education is carried out by distance education method. This suggests that in extraordinary situations such as the Covid-19

pandemic, the distance education method can be an effective process, and it is necessary to develop different additions to this method.

Distance education methods are an education method offered on a platform such as the internet that can be used in all areas of education (Kurnaz and Serçemeli, 2020; Kaya et al, 2017; Özgöl et al, 2017; Tuncer and Tanaş 2011). However, while its effectiveness is more in some areas, it is not considered enough in some areas alone. Especially in applied units such as science and health, it is not enough alone. It was determined that most of the participants in our study were in the field of health sciences (88.4%) and those who were in the doctoral period. While the participants stated that they found the distance education method useful, but it was an incomplete method for their field; They gave an average of 5.5 points (out of 10) to the effect of Covid-19 on their training. Rajab et al. (2020) reported that while graduate and medical students stated that distance education was beneficial in the Covid-19 period, some students stated that the distance education method was not suitable for the field of medicine. In a study conducted on 46 academicians, postgraduate students and academicians' views on distance education were questioned and similarly, it was reported that they did not find it very effective (Yıldızhan and Güçlü, 2019). Looking at other studies, it is seen that distance education and its effects are mostly examined on secondary education and undergraduate students and teachers, and it has been observed that the studies on graduate students and academicians are insufficient (Kaya et al, 2017; Horzum, Özkaya, Demirci, & Alpaslan, 2013). However, he reported that the distance education process negatively evaluated the quality of education (65%) and 64.8% did not create a change in their achievements. This information suggests that the distance education method is a necessary method for not interrupting the education in the conditions it is in, but it is not sufficient for some areas, and it is necessary to develop new methods for applied fields in addition to this method.

Although the trainings continue with the distance education method, which is a part of education, due to the pandemic, there are disruptions especially in graduate education trying to continue research activities (Kurnaz and Serçemeli, 2020; Kaya et al, 2017). In our study, 53.3% of the researchers stated that the education process was disrupted due to Covid-19, and that the disruption reflected on them in the form of period prolongation or thesis prolongation due to the difficulties they experienced in research activities. For this reason, they reported that they had to continue the benefits of postgraduate activities in an integrated manner with half distance and face to face education. In addition to the problems arising from the nature of the distance education method, it is thought that the Covid-19 pandemic has turned into a forcedly preferred method, although it also increases existing problems or creates new problems.

All academic disciplines must conduct research to explain and define the information on which they are based (Tortumluoğlu and Özyazıcıoğlu, 2004; Karadakovan 1996). However, research has become difficult due to the Covid-19 pandemic. These difficulties may arise from the individual characteristics of the researchers, the institution they work in and the characteristics of the society, as well as the effects of the pandemic. In our study, the rate of doing research was determined to be 91.7% before the pandemic and 75% in the pandemic. In a study conducted on 46 academicians, it was reported that they worked for their career or professional development (Tortumluoğlu and Özyazıcıoğlu, 2004). Researchers are required to continue their individual and scientific contribution in all cases. In case their work cannot be continued as before the pandemic, it is recommended to develop new methods.

According to the results of the research in the literature, it is reported that academicians have difficulties while doing research (Tortumluoğlu and Özyazıcıoğlu, 2004). Although the researches continued in the Covid 19 period, the researchers adapted themselves to the situation by making

changes in the research methods. In our study, the most descriptive studies and reviews in the pandemic were performed, as well as an increase in the number of retrospective and qualitative studies compared to the pre-pandemic. While the research was conducted, it was determined that before the pandemic and, in the pandemic, there were problems regarding leave, and the problem of finding cases was added to this in the pandemic. Similarly, it was reported in a study that there were difficulties in finding cases (Tortumluoğlu and Özyazıcıoğlu, 2004). In the light of this information, it is thought that the regulation and development of support systems for researchers will be useful not only in the Covid-19 period but also in dealing with the difficulties in conducting research afterwards.

CONCLUSION

A limited study examining the effects of Covid-19 on the research of graduate students and academicians has been found in the literature. This situation is thought to be since the pandemic is a new situation and its effects have not yet been clearly proven. In our study, it was concluded that researchers had difficulties in their education and research before the pandemic, but the pandemic made these difficulties more difficult. During the Covid-19 period, it was determined that they had difficulties in conducting research activities at various stages, and it is recommended that institutions develop new strategies specific to the pandemic period, and these strategies are thought to facilitate researchers. Determining the effects of the restrictions applied during the pandemic process and the distance education processes on postgraduate education and clinical research will enable the development of sustainable methods and appropriate policies in the long-term education and research processes.

Limitations

The fact that the study is in a pandemic period and the necessity of having an internet connection for reaching the researchers are among the limitations of the study.

Research Strengths

The strength of the study is that such a study has not been conducted before with the participants who constitute the sample of the study.

Compliance with Ethical Standards: The study was conducted after obtaining approval from the Human Research Ethics Committee of Istinye University and Ministry of Health General Directorate of Health Services Scientific Research Platform

Peer-review: Externally peer-reviewed.

Conflict of Interest: No conflict of interest was declared by the authors.

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TABLES

Table 1. Introductory characteristics of the participants

Introductory Features		n	%
Age	20-25 years	8	13,3
	26-30 years	30	50
	31-35 years	13	21,7
	36 years and older	9	15
Gender	Female	54	90
	Male	6	10
Profession	Health sciences	53	88,4
	Social sciences	5	8,3
	Medicine and pharmacy	2	3,3
Education status	Graduate course period	1	1,8
	Master thesis period	9	15
	Graduate	2	3,3
	Doctoral course period	23	38,3
	Doctoral dissertation period	18	30
	PhD graduate	7	11,6
Working method in Covid-19 period	Remote work	35	58,3
	Working face to face	8	13,3
	Working remotely and together face to face	11	18,3
	Not working	6	10
TOTAL		60	100

Table 2. Characteristics for Research

Features		Before Covid-19		After Covid-19	
		n	%	n	%
Researching status	Yes	55	91.7	45	75
	No	5	8.3	15	25
Research design made*	Descriptive	41	39.8	26	32.5
	Experimental/quasi experimental	18	17.5	14	17.5
	Qualitative	10	9.7	9	11.3
	Retrospective	6	5.8	5	6.3
	Prospective	5	4.9	1	1.3
	Review / systematic review	23	22.3	11	13.8
Difficulty with your research*	Institution permit	17	15.6	16	15.1
	Hospital permit	20	18.3	17	16
	Problems with the teacher / counselor	10	9.2	4	3.8
	Finding a case	40	36.7	49	46.2
	Problems with consent form	2	1.8	3	2.8
	Ethics committee	18	16.5	15	14.2
	Teammate issues	2	1.8	2	1.9
* Participants have marked more than one option.					

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Table 3. Participants' characteristics regarding their education

Distribution of the characteristics of their education			
How many points would you give when you were asked to score your graduate education between 0-10 in Covid 19?	*Mean±Sd* *min-max (median)*	5,5 ± 2.88 2-10 (5.5)	
How many points would you give when you were asked to score your distance education experience between 0-10 in your graduate education during Covid 19?	*Mean±Sd* *min-max (median)*	5,5 ± 2.76 2-10 (5)	
		n	**%**
Has your own education been disrupted due to the Covid 19 pandemic?	Yes	19	31.7
	No	32	53.3
How has your education been disrupted?	Period extension	2	3.3
	Thesis extension	16	26.7
	Inability to register	1	1.7
	Did not hesitate	32	53.3
Have you received distance education method in your own education?	Yes	34	56.7
	No	17	28.3
Have you attended the classes regularly in the distance education system in your own education?	Yes	32	53.3
	No	9	15
Have you had an interactive education experience in the distance education course?	Yes	34	56.7
	No	15	25
	Partially	2	3.3
Have you had difficulty using the distance education system?	Yes	13	21.7
	No	38	63.3
Did you find the distance education method useful in your own education?	Yes	24	40
	No	27	45
Was the distance education method sufficient in your own education?	Yes	18	30
	No	33	55
Is the distance education method a suitable method for your area of expertise?	Yes	19	31.7
	No	32	53.3
Would you like to continue distance education after Covid-19?	Yes	22	36.7
	No	29	48.3
Do you think an ideal assessment is done in distance education?	Yes	8	13.3
	No	43	71.7
How did the distance education method affect the quality of education?	Positively affected	5	8.3
	Did not affect	7	11.7
	Negatively affected	39	65.0
What kind of change has you experienced in your own success with distance education?	I succeeded	8	13.3
	There was no change	39	64.8
	I failed	4	6.7
Was your motivation as an academic / graduate student affected in the Covid-19 pandemic?	Increased	5	8.3
	Not changed	19	31.7
	Decreased	27	45
What is your difficulty with distance education?	Use of the distance education system	6	10
	Internet quota	3	5
	Connection problem	8	13.2
	Courses hours	2	3.3
	I had no difficulty	32	53.5
* Those who did not receive education or graduates did not answer this section (n=9;15%)			

Table 4. Features of research in the Covid-19 period

Features		n	%
Conducting clinical research before Covid 19	Yes	35	58.3
	No	25	41.7
Difficulty in clinical trials before Covid 19	Yes	25	41.7
	No	35	58.3
The situation of the research initiated before Covid 19 coinciding with the pandemic	Yes	40	66.7
	No	20	33.3
The path followed for your work during the pandemic period	I continued working	24	40
	I canceled the study	1	1.7
	Stopped studying	10	16.7
	I made a change of method	5	8.3
Way to reach cases in Covid-19 *	E-mail	9	9.3
	Telephone	16	16.5
	Internet-based messaging	30	30.9
	Through friends	10	10.3
	Online video conference	9	9.3
	Face to face	3	3.1
Data collection tool you use in Covid-19 *	Questionnaire	39	40.6
	Scale / inventory	29	30.2
	Practice / experiment	8	8.3
Meeting method with the working team in Covid-19 *	Face to face	11	9.8
	By phone	24	21.4
	Online video conference	22	19.6
	Messaging	16	14.3
	E-mail	18	16.1
	I only worked	1	0.9
* Participants have marked more than one option.			

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The Effect of Urban Space Limitations on Children's Physical Activity Levels in the Combating Covid-19 Pandemic

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ABSTRACT

Purpose: This study is aimed to investigate the effect of urban space limitations on children's moderate-to-vigorous physical activity and inactivity periods during the day in combating COVID-19 pandemic.
Methods: In August to September 2020, an online survey was conducted with the parents of 1559 children who were educated in 27 public primary schools in Karşıyaka County during the pandemic. Parents were asked to define children's moderate-to-vigorous physical activity, sleeping, screen and inactive times (days a week/hours in a day) in 3 different time intervals (before limitations; quarantine period for children; the last 7days). Data were analyzed by descriptive and inferential statically tests.
Results: It was found statistically significant that the physical activity levels of the children decreased before urban space limitations and the time spent inactive increased.
Conclusion: In order to meet the physical activity needs of children, precautions should be taken to increase their interaction with urban spaces.
Keywords: children' physical activity, COVD-19, urban space limitations.

INTRODUCTION

The fact that the new coronavirus, which was declared as a pandemic by the World Health Organization (WHO) on March 11, 2020, is transmitted by droplets (1) has revealed the necessity of reducing contact between people. With the pandemic announcement, the concept of social/physical distance has been settled in social life, and the necessity of isolating communities by avoiding contact has emerged to reduce the transmission rate (2). For this, in countries where the epidemic is seen, governments have developed rules to close schools and universities. In cases where these rules are not sufficient, curfews and limited quarantine processes have been declared. As well as other countries, in Turkey one of the first regulations made was related to education. Accordingly, schools and universities were closed as of March 16, 2020, and a curfew was imposed between April 3 and June 1, 2020 for individual aged 20 and under.

Undoubtedly, these limitations provide the necessary regulations in combating the pandemic, but it is discussed that people staying indoors and especially children in developmental age may encounter sociological (3, 4) and psychological (5, 6, 7, 8) problems further. It has been suggested that also physiological problems (9, 10, 11, 12, 13) that may create similar conditions may occur with these problems. One of the physiological problems is increasing levels of physical inactivity. Particularly in children, physical inactivity during the time they stay

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at home will cause weight gain and obesity (14) and will increase the rate of getting obesity-related diseases (15, 16).

Before the pandemic, it's been argued that children must meet at least 60 minutes in a day moderate-to-vigorous physical activity (MVPA) in reducing child overweight and obesity prevalence (17). While indoor activities are recommended to increase the physical activity (PA) levels of children who stay at home during the pandemic process (18), previous studies suggest that children should interact with the urban space in order to meet MVPA requirements (19, 20). In this context, it should be kept in mind that the urban space limitations that are emerging today may be a counter factor in meeting MVPA requirements and may increase physical inactivity. Thus in this study, it's aimed to investigate the effect of urban space limitations on children's MVPA and inactivity periods during the day in combating COVID-19 pandemic. Within the scope of the study, the PA and inactivity times of the child were compared in between the urban space limitations before, in and after.

METHODS

The method of the study was based on an online survey that conducted with parents of public primary school children. Within the scope of the method, an approval was obtained from DEU Science and Engineering Sciences Research and Publication Ethics Board at 11 June 2020, and at the same time, permission letters were obtained from İzmir Provincial Directorate of National Education, Karşıyaka County National Education Directorate and related schools in order to apply the questionnaire in schools. In accordance with the Ethics Committee approval, participation in the survey was voluntary.

Study Design Procedure

In order to determine the children's MVPA and inactive periods, an online survey named "Children's Physical Activity Levels and Health Safety Perception during the COVID-19 Pandemic Questionnaire" was implemented. Although there are wide-ranging questions in the aforementioned questionnaire, this study shares the child's PA and inactive periods and the child's developmental characteristics via 3 different time intervals: (1) before urban space limitations, (2) quarantine period, (3) last 7 days. In Turkey, a curfew was imposed between April 3 and June 1, 2020 for individual aged 20 and under. This date range was described as the quarantine period, and pre-quarantine period was called as before urban space limitations period. To determine the child's current PA or inactivity times, the last 7 days from the moment the questionnaire was filled by the parent was described as another time interval. The survey questions were asked according to these 3 different time intervals and the differences were examined.

The developmental characteristics of the child were obtained via questionnaire. For this, the parents were asked to identify the birth year and gender of the child, and to measure the height and weight of the child in order to continue the questionnaire. While children's Body Mass Index (BMI) calculated via current height and weight measurements (kg/m^2), it was not possible to collect such information retrospectively. So as to obtain retrospective data, parents were asked to remark the differences on the children's height and weight status compared to before urban space limitations.

Children's activity periods were classified as (1) physically active and (2) physically inactive times. For PA times, two measurements were selected as moderate (MPA) and vigorous (VPA) physical activity. Since an online questionnaire was used in the study, a question was not asked to the parents on the MET value. Instead, activity types are described in terms of

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physical strength, difficulty in breathing, sweating, and fatigue. Accordingly, VPA is defined as activities that require intense physical strength, force normal breathing, cause excessive sweating and fatigue, and last at least 15 minutes at a time. MPA is defined as activities that require moderate physical strength, strain normal breathing, cause mild sweating and fatigue, and last at least 15 minutes at a time. Parents were asked to answer how many days a week and how many minutes a day their children do these activities. For physical inactivity times, three measurements were selected as mean sleep times, frequency of using electronic devices and inactivity (sitting, studying, reading, playing with toys in a fixed position, etc). Parents were asked to answer how many days a week and how many minutes a day their children spent time as inactive through multiple choice questions (Table 1).

Table 1. The Question Groups and Measurement Values

Question Group	Time Interval	Value		
Child Developmental Variables	When the questionnaire is filled out	Height		*cm*
		Weight		*kg*
	Before urban space limitations	Height		*"I think my child's height has changed."* *"I think my child's height hasn't changed"*
		Weight		*"I think my child's weight hasn't changed"* *"I think my child's gained in weight"* *"I think my child's lost weight"*
Child's Physical Activity Times	(1) Before urban space limitations (2) Quarantine period (3) Last 7 days	Vigorous Physical Activity	Day/Week	None, 1-7 days
		Moderate Physical Activity	Minute/Day	None, 1-15, 16-30, 31-45, 46-60, 61-75, 76-90, 90+
Child's Physical Inactivity Times	(1) Before urban space limitations (2) Quarantine period (3) Last 7 days	Sleep period		Lower than 7h, 7-8 h, 8-9 h, 10h+
		Electronic Device Usage	Hour/Day	None, lower than 1h, 1-2h, 3h+
		Inactive period (sitting, studying, reading, playing with toys in a fixed position)		None, lower than 1h, 1-2h, 3h+

Data Collection and Analysis

Previous studies on children's PA levels were suggested that the age of ten is a threshold value and causes visible changes in activity (for literature review, see 21). Because this age limit corresponds to the primary school age in Turkish elementary school system, in this study 1st, 2nd, 3rd and 4th grade students were focused on. For the study area Karşıyaka which is currently a member of the WHO European Healthy Cities Network and Turkish Healthy Cities Association was chosen for the survey application. In the county, there were 27 primary

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schools, and were 12366 students studying in these schools during the pandemic (2019-2020 Academic Year).

An online survey portal was used to create the survey form. With this portal, an automatic link is created in order to enter the questionnaire form, and it can be filled in via mobile devices and / or computer. Before the questionnaire was distributed, the form was prepared so that the participant who will fill out the questionnaire can enter the form through a single device, exit the questionnaire when requested, and then continue the questionnaire where left off. In this way, duplicate entries could also be controlled.

In August 2020, the administrations of the primary schools were interviewed and the questionnaire link was sent to the classroom teachers through the school principal and vice principals. Class teachers sent the link to their classes' communication channels and encouraged parents to fill out the questionnaire. Survey responses have been recorded by the study members since the survey link was started to be distributed, and survey entry numbers and survey completion rates were tracked daily. The periods of stagnation in questionnaire entries and completion numbers were regularly checked, and both the school administrators and teachers were interviewed again, and the participants who left the questionnaire and whose contact number could be reached were contacted to complete the survey. The process started in the first week of August and was completed in the last week of September, when there was a decrease in data entry and significant increases in the number of patients due to the pandemic.

The IBM-SPSS 24.0 package is used for data analysis. For descriptive statistics, frequency and percentage of PA and inactivity times were calculated via 3 different time intervals. To evaluate the differences between developmental characteristics of children and PA and inactivity times via time intervals, Pearson chi-square test, Levene's test for equality of variances (t-test), and ANOVA tests were applied.

Participants

The data of a total of 3225 people who entered the online questionnaire form were analyzed and for statistical analysis, 1559 parents whose children were educated in the schools that in the study area during the pandemic period, and who completed all the questions of the questionnaire, formed the data set. Therefore, the study has a wide representation since it reaches 12.6% of the number of students studying in public primary schools in Karşıyaka County. 28.1% of the children completed their 1st grade, 26% of them completed their 2nd grade, 31.9% of them completed their 3rd grade and 14% of them completed their 4th grade. The reason for the low rate of children completing the 4th grade is that the students graduated from primary school and their communication opportunities with classroom teachers decreased due to the closure of the schools during the period of the survey (August-September).

Children's developmental characteristics are as in Table 2. According to this, the average ages of boys and girls are similar, and there was no statistically significant difference between the gender and age ratios that could affect the results (t=-0,054; df=1557; p=0,957). As seen, girls height (t=0,929; df=1557; p=0,353) and weight (t=1,457, df=1557; p=0,145) were higher than boys, however, there were also no statistically significant difference found. Compared to the pre-quarantine period, parents were mostly declared that the child put on weight (%64.1) and some of them declared that the child's weight was not changed (%34.5). Most parents were also remarked that the child's height was changed (%64.1). There were no statistically significant differences by gender on retrospective data of weight (X^2=0,680; p=0,712) and

height (X^2=0,274; p=0,627). In addition, it is seen that boys have a higher BMI than girls. However, this difference is not a statistically significant difference that may affect the results (t=1,613; df=1557; p=0,107).

Table 2. Children's developmental variables

		Total (n=1559)	**Boys** (n=812)	**Girls** (n=747)
Current Situation	Mean Age	**8,39** (SD=1,09)	**8,39** (SD=1,07)	**8,40** (SD=1,11)
	Mean Height	**132,91 cm** (SD=10,37)	**133,14 cm** (SD=10,58)	**132,65 cm** (SD=10,13)
	Mean Weight	**32,06 kg** (SD=8,35)	**32,35 kg** (SD=8,35)	**31,74kg** (SD=8,35)
	Mean BMI	**18,10** (SD=4,34)	**18,26** (SD=4,86)	**17,91** (SD=3,68)

RESULTS

Since there is no statistically significant difference via age, gender and BMI, the results will be explained over the whole sample. Results showed that, the time spent by children for VPA decreased during the quarantine period, as expected. Before urban space limitation, only 19.0% of children were not spending time for VPA, in quarantine period this value increased to 71.8% of children. When the urban space limitations were removed (the last 7 days), an increase in ratio of children who spent time on VPA were expected, but this increase did not improve compared to the period before the limitations. According to this, the rate of children who were not spending time for VPA within the last 7-day time interval was 29.1%. This difference on the basis of time intervals was found significant (F=356,75; df=2; p=0,000).

A similar situation is observed for MPA. By that of, 14% of children were not spend time for MPA before urban space limitations. In quarantine period this ratio was increased to 64,9% of children. As with VPA, the time spent for MPA did not show the expected increase when urban space limitations were removed, and the ratio of children who did not spend time for MPA increased to 25.9%. This difference on the basis of time intervals was also found significant (F=131,47; df=2; p=0,000).

Within the scope of the study, times of physical inactivity are grouped as sleep period, electronic device usage and inactive time spending. Results showed that, before urban space limitations children were mostly slept between 9-10 hours (47.3%), used electronic devises for 1 or 2 hours (49.9%) and only 1 or 2 hours inactive (49.1%). In the time of quarantine, these values were highly variable. The rate of children who sleep 9-10 hours a day has increased (48.8%). During the quarantine period, usage of electronic devise increased and a large proportion of children (67.8%) spent more than 3 hours a day with these devices. The same situation was observed during the time spent inactive (43.4%). In the period when limitations were removed, these values were partially approximates to before urban space limitations period. Results showed that more children spent 9-10 hours of sleep (51.0%). Although there is a decrease compared to the quarantine period, the electronic devise usage, which was spent over 3 hours in the last 7 days period (%39,9), that increased compared to the previous period.

Times spent inactive are also less than during the quarantine period, but experienced an increase in the number of children who were inactive for more than 3 hours (%23.1).

Table 3 shows the statistical test results regarding the differences between activity and inactivity and time spent by 3 time intervals. All of the above mentioned differences were found to be statistically significant. This shows that the time children spend for PA was affected on the basis of urban space limitations. On the other hand, it has been observed that the time children spend on PA was far from the requirements of at least 60 minutes a day moderate-to-vigorous physical activity that recommended by WHO (17).

Table 3. Differences between children's active and inactive times

	Before Urban Space Limitations	Quarantine Period	Last 7 Days	Test-P Value
Vigorous Physical Activity (Mean)	Mean=21,75 min/day (SD=22,89)	Mean=3,37 min/day (SD=9,98)	Mean=17,80 min/day (SD=23,94)	F=356,75; df=2; p=0,000
Moderate Physical Activity (Mean)	Mean=21,11 min/day (SD=22,90)	Mean=5,39 min/day (SD=14,04)	Mean=19,03 min/day (SD=24,58)	F=131,47; df=2; p=0,000
Sleep period (%)	5,0% / - 7h 42,0% / 7-8 h 47,4% / 8-9 h 5,6% /10h+	5,5% / - 7h 25,3% / 7-8 h 48,9% / 8-9 h 20,3% /10h+	4,7% / - 7h 33,2% / 7-8 h 51,0% / 9-10 h 11,1% /10h+	$X2$=2483,89; df=4; p=0,000
Electronic Device Usage (%)	5,6% / None 38,9% / -1h 49,9% / 1-2h 5,6% / 3h+	1,5% / None 5,5% / -1h 25,2% / 1-2h 67,8% / 3h+	2,8% / None 16,8% / -1h 40,5% / 1-2h 39,9% / 3h+	$X2$=1331,07; df=4; p=0,000
Inactive period (%)	3,6% / None 35,6% / -1h 49,1% / 1-2h 11,7% / 3h+	4,2% / None 18,4% / -1h 34,0% / 1-2h 43,4% / 3h+	6,4% / None 31,8% / -1h 38,7% / 1-2h 23,1% / 3h+	$X2$=956,15; df=4; p=0,000

According to Table 3, both VPA and MPA times are quite low before the urban space limitations and in the period when the limitations are removed (last 7 days period). A decreasing was expected in activity times during the quarantine period. Nevertheless, even when urban space limitations are removed, children's MPA and VPA times (albeit lower than requirements) were less than the before limitations. As can be seen, in the last 7 days period, children's VPA time had an average of 17.8 minutes per day and MPA time had an average of 19.03 minutes per day. The declines of activities via time intervals were found statistically significant. This challenging difference is as in Figure 1.
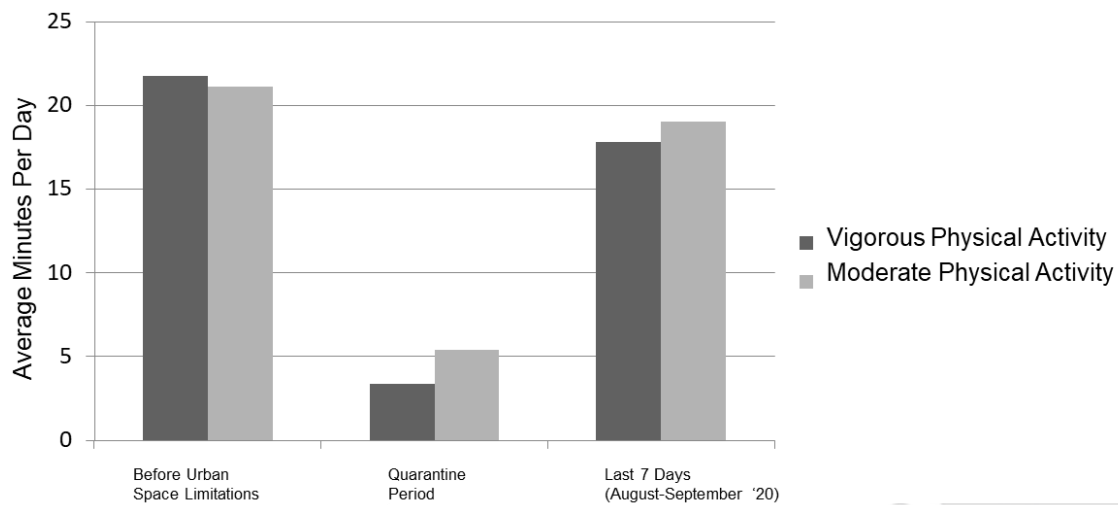
Figure 1. Children's VPA and MPA changes via time intervals

CONCLUSION

In line with epidemiological data, it is argued that the PA levels of children should be increased as an important tool against the rapidly increasing prevalence of obesity in children worldwide. WHO (22) suggests increasing children's PA levels for the development of both musculoskeletal system and basic mental, motor and social skills. For this, it is emphasized that regulations such as supporting urban spaces with active modes of transport, providing safe active play and recreation opportunities are required. In parallel with this, in the 7th Phase of the Healthy Cities Project (23) initiated by WHO to implement the principle of "Health for All" at the local level, it is prioritized to design and plan healthy urban spaces that will increase the level of PA. Considering the recommendations on at least 60 minutes a day of MVPA, it's been emphasized on the importance of time spent outdoors in achieving this requirement. However, in the process that we live in, the urban space limitations taken within the scope of combating the COVID-19 epidemic are reducing the interaction with the urban space.

This situation mostly affects children. The results of the study show that the time spent by children on PA decreases, even when the limitations are removed, they do less activity than in the previous periods. In addition, the time spent physically inactive has also increased. In a study (24), sleep times of children were found to be 9.65 hours for boys and 9.67 hours for girls. In our study, it was observed that the sleep times of the children varied between 7-8 hours and 8-9 hours. In addition, the same study (24) revealed that screen times that cause the child to spend physically inactive time were 2.89 for boys and 1.55 for girls. However, in our study, a significant increase was observed in the screen times associated with using electronic devices. These results show that urban space limitations increase the child's inactive time during the day.

Undoubtedly, since the quarantine period keeps the child indoors, it reduces the time allocated for PA. However, when urban space limitations are removed, it is an important indicator that activity times do not increase at the expected rate. This may be due to a lack of safety in the urban space in terms of health. This situation creates a new study area: when the COVID-19 epidemic is over, it should be known what will be the urban space's health safety perception of people, especially children. Thus, it should be investigated whether this perception will affect

the person's preference to spend time in the urban space. Considering that MVPA is mostly met in urban open spaces, it will be important for both public health and urban planning experts to focus on this subject and to identify opportunities that will bring children together with urban spaces.

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Effects of Covid-19 Pandemic Process on Children's Mental Health and Solutions

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Abstract

Since the Covid-19 pandemic is a major threat to health, isolation measures have begun to be taken all over the world. Children's education and training processes and psychosocial needs have been ignored. As the period of closure of schools extends, children will fall behind in education. Life skills that will support their transition to adulthood. Life-long problems are inevitable as the psychological development of .Children face severe deprivation in terms of nutrition, protection and stimuli in a critical period of childhood development. They are exposed to toxic stress for a long time that will cause life long problems. Children who are out of school will have higher risks of child marriage, child labor and adolescent pregnancy, and their lifetime acquisition potential may decrease. They lose their sense of support, security, and increase in domestic violence and abuse cases. Child poverty due to socioeconomic problems will increase. Direct and indirect psychosocial effects of the pandemic will affect the mental health of children, who are the most important building blocks of society today and in the future. It is possible to identify these problems and to produce solutions with the cooperation of the family and the state. The aim of this article is to determine the mental problems in children due to the Covid-19 pandemic within the current literature; to identify approaches to the solution of these problems.

Keywords: Covid-19, psychosocial, pandemic, mental problems, children

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Introduction

Since the Covid-19 pandemic is a major threat to health, isolation measures have started to be taken all over the world and children's education and training processes and psychosocial requirements have had to be ignored. With the direct and indirect psychological and social effects of the pandemic, it will affect social mental health now and in the future. In this article, our aim is to determine the psychosocial problems in children related to the Covid-19 pandemic within the current literature; proposals for the solutions of these problems are to be put forward. Psychosocial well-being generally expresses the situation in which the material, cognitive, emotional and spiritual power of the individual, family or a community is combined with positive sociocultural relationships and a positive economic and political environment (1). Pandemics accepted within the scope of biological disasters negatively affect children due to loss of relatives, having to give up their routines and moving away from social support, causing children to feel more fragile and need clarity and predictability (2).

In the isolation and quarantine process; fear of becoming infected, feelings of frustration and boredom, insufficient economic support, insufficient information and labeling can cause psychological stress. (3) In many studies; psychological stress; anxiety, depression, letargia, impaired social interaction and decreased appetite have been reported to lead to symptoms(4) Long-term stress; memory difficulties and hippocamppal disorders(5). Post-traumatic stress scores of children remaining in quarantine were found to be 4 times higher compared to their peers who had not remained in quarantine; post-traumatic stress disorder can be observed in 30% of children (6). Studies conducted in past years with survivors of life-threatening situations caused by viruses such as SARS (Severe Acute Respiratory Syndrome) and MERS (Middle-East Respiratory Syndrome) have found that highly depressive disorders and post-traumatic stress disorders have been observed in adults and children later, including health workers (7) These interventions regarding the ongoing course of life affect the daily behavior of individuals, sometimes feeling panic and anxiety , sometimes it can cause an increase in the tendency to depression. Reluctance in preschool children, difficulty focusing on the game, bottle use, finger sucking, behaviors that do not match chronological age and level of development, separation from parents may be observed (8). Increased fear and anxiety in school-age children, problems with siblings, restlessness, aggression, psychosomatic complaints, avoidance of fulfilling their responsibilities, difficulty focusing, sleep problems and social withdrawal can be observed.

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Adolescents may also have that rebellion, risk-taking behaviors, lack of concentration, blurred consciousness and fusion(9.) At the beginning of the pandemic process (February 2020) in a Chinese study; psychological and behavioral problems were evaluated in children between the ages of 3 to 18. It has found that children commonly avoid distraction and irritability, as well as hugging and asking questions about the epidemic . In a study conducted with children aged 12 to 18; it was determined that depressive symptoms were 43%, anxiety symptoms were 37%, and the incidence of anxiety symptoms accompanying depressive symptoms was 31%, and a negative relationship was shown between covid-19 awareness level and the presence of these symptoms (10). It has been stated that 40% of adolescents tend to experience psychological problems during the pandemic process (11). For health workers and their children directly involved in COVID-19 clinical care, it is emphasized that the risk is higher, and health workers are expected to deal with the fear of their children being separation, infected and/or losing their parents (12). The results of a study conducted with health workers and their children involved in COVID-19 clinical care in Italy also show that nearly a third of children are at high risk for post-traumatic stress disorder, with their parents and children's notifications in line (13)

The coronavirus disease 2019 (COVID-19) pandemic and social distancing measures implemented by many countries have caused disruptions to daily routines. According to UNESCO data, on 8 April 2020 in 188 countries; distance education has been started in schools since 16 March 2020 in our country (14). The closure of schools all over the world is unprecedented in history. Most social activities for children and adolescents have been cancelled. More than 90% of registered students worldwide (1 · 5 billion young people) are currently uneducated. For children and adolescents, school closures mean a lack of access to the resources they have through schools. Schools offer distance education opportunities to their students; only some people have access to this option. Girls, children in refugee camps, children living in socioeconomically poor countries have less access to digital technology. Especially children with disabilities and special needs are difficult to access with distance education programs. The quality and accessibility of distance education can vary widely both between countries and within countries. The longer schools remain closed and the greater the economic contraction due to the epidemic, the more children who leave school will increase. Children who lose their parents will also be less likely to return to school. When schools are closed and economic hardships are met, some children are having to drop out. In high-risk countries, this is expected to push children into child labour, child soldiers and child marriage. Children who

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are not under parental care are particularly disadvantaged against exploitation and other negative coping methods. In countries where there are wars, children will be abused in wars as soldiers, girls will be faced with the problem of pre-pregnancy by not being taught. If schools remain closed and this causes girls to drop out, an increase in adolescent pregnancies is expected within the next year (15). Many countries postpone or cancel university entrance exams; loss of appetite and sleep problems can lead to an increase in the level of anxiety. Digitally continuing education with the closure of schools has improved the learning gap between children from low-income and high-income families (16). It is indicated that one of the most protective factors for maintaining physical, social and psychological well-being in children is having a structured and pre-planned day at school time. Decreased physical activity and increased sedentary behavior can adversely affect the physical and mental health of children and adolescents (17).

While your parents' stress levels are increasing; cases of domestic violence and child abuse are on the rise in the first phase of the pandemic due to reduced resources (18,19) Children are often not in a position to report such horrific acts. Especially at such a time when needs are increasing, children no longer have the opportunity to report incidents at home to their teachers. In addition, social studies for children and related legal and protective services have been suspended or their scope has been narrowed. The need for children to use online platforms for distance education increases the risk of exposure to inappropriate content and paedophilia. Social distancing measures can cause social isolation in an abused home, and abuse is probably exacerbated during this period of economic uncertainty and stress. While the risk factors of child sexual abuse increased during the pandemic period, it was found that the rates of reported during the same period increased (20).

School routines are also important coping mechanisms for young people with mental health problems. Children with special educational needs are also at risk, such as those with depression, autism spectrum disorders. When speech therapy sessions and social skills groups are suspended, stopping therapy can stop progression, and children with special needs may miss their chance to develop basic skills (21).

Disrupted health care and disorders in the nutrition chain deeply affect children's physical health as well as their mental health. The progress achieved in the last 2-3 years in reducing infant mortality as a result of health services directly interrupted by the epidemic . Access to basic

reproductive health, medent, neonatal and child health services, including prenatal care services, the availability of qualified staff at birth, and pneumonia treatment, is also reduced. In addition, there is a cessation of polio vaccination campaigns. Measles vaccination programs have also been discontinued in 23 countries. Children and adolescents with chronic illnesses, including children with HIV virus, may also have reduced access to the drug and health care. Feeding children is a vital issue. 368.5 million children in 143 countries supplying daily food sources through school meals now have to look for other sources economic shock further increases this difficulty. Hastily imposed curfew restrictions risk disrupting food supply chains and local food markets. If these effects are not resolved quickly, they can have serious consequences for food safety (22).

Discussion

Spiritual health in adulthood is associated with experiences in the first years of life. It is necessary to avoid long-term negative effects on children's psychosocial development in situations such as the epidemic that affects the whole world. The socioeconomic difficulties that develop during the pandemic process make it more difficult for children to continue their education in the home environment through distance education. The cysosocial well-being of children affects the lives of domestic violence, neglect and abuse negatively and permanently. We cannot allow the loss of progress made worldwide. To prevent this, it is important what the state and families must do (14,22).

Responsibilities of the state and public institutions;

- It is important to protect children from violence, abuse and exploitation and classify basic child protection services as essential services
- It is needed to transform inadequate service presentation approaches, including services for people living in slum settlements and children on the move.
- It is necessary to ensure children's privacy on the internet, the protection and security of their data.
- It is important to take certain protection measures for vulnerable children, including migrants, displaced, refugees, minorities, residents of slum settlements, children with disabilities, children living in refugee settlements, and children in institution care.

- Hands-on support should be provided to parents and caring.
- As curfews are stretched, it is important to prioritize the reinstatee of children's services.

Responsibilities of families;

- Those caring for children should pay attention to being together and spending time rebuilding the sense of trust that has been shaken in children during COVID-19.
- Family members need to encourage children to express their feelings and thoughts and be willing to listen to their sharing.
- In the home environment, children should not be exposed to more than 10 visual and audio stimuli (media, social media, etc.) related to the COVID-19 pandemic process.
- Sleep and feeding patterns in their daily routines before the pandemic process should be ensured.
- Families must be flexible and be accepting

As a result; the long struggle to limit the virus will not only prolong the suffering it causes, but will also bring about the possibility of permanent or long-lasting effects on children. As school downtime lengthens, children will have back to their education and life skills help them make a healthy transition to adult life. Children who experience severe deprivation in terms of nutrition, protection and stimuli at a critical time of early childhood development or who are exposed to toxic stress for a long time are likely to develop lifelong problems, as their neurological development will suffer. Children out of school will have a higher risk of both child marriage, child labour and adolescent pregnancy, and their lifelong recovery potential will show a dramatic decline. There is a risk that children who witness the disintegration of families during this period of more intense stress lose their sense of support and safety, which determines their well-being. It is important to identify mental problems that will affect the past and future in the children's age group due to psychosocial problems that arise during the pandemic period and to develop solution approaches for them. In addition to the effects of the pandemic on physical health, as well as its effects on the mental health of our children, the less reflection is provided to future generations, the healthier we can step into the future.

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Covid-19 publications in PubMed from Turkey at last 6 months

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Abstract

Aim: PubMed within the NCBI, medicine etc. It is an international database in which scientific research in its fields is published. Between 01.06.2020-01.01.2021, in Pubmed in Turkey which are intended to be made from the reporting of research.

Methods: The total number of publications was reported in the search made in PubMed on January 4, 2020 with the keyword "Covid-19".Between 01.06.2020-01.01.2021 research was reported from Turkey.The summary, keywords, author names and institutions of all publications were examined.
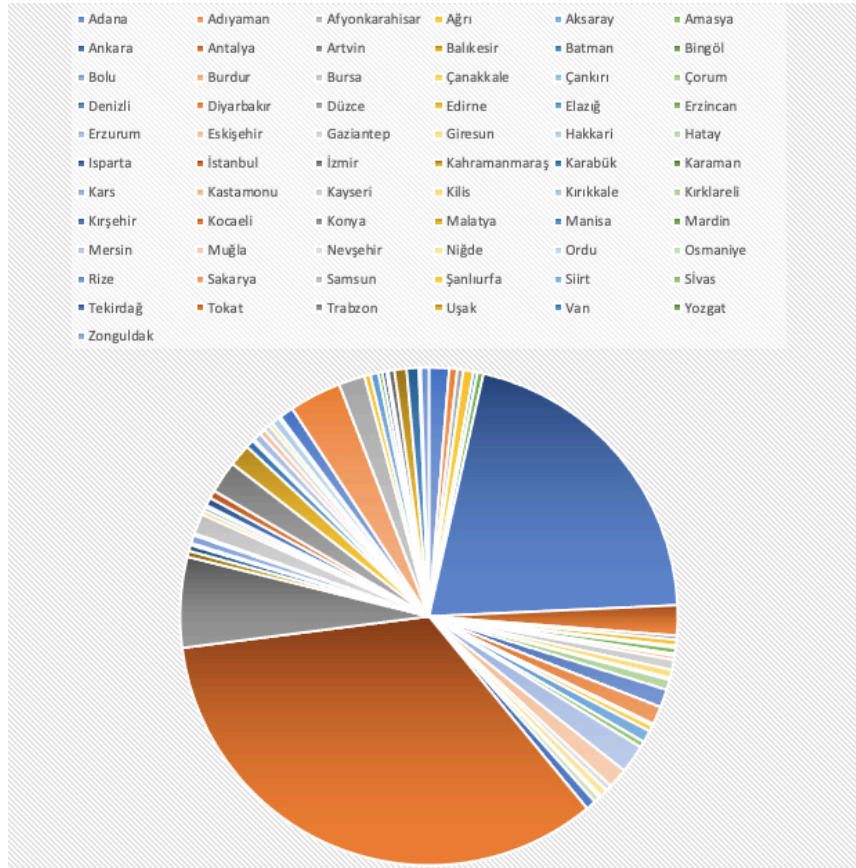
Findings: The total number of publications for the last 1 year was 86.007 in the search made in PubMed on January 4, 2020 with the keyword "Covid-19" for the last year. 75,415 studies were between 01.06.2020-01.01.2021. When a search is made with the keywords "Covid-19" and "Turkey" in the name of the author institution between 01.06.2020-01.01.2021, 1,404 studies are listed. The percentage of publications from Turkey is 1.86%. The summary of all the publications, keywords, author names and institutions were examined. There were 1240 studies original research, 151 reviews, 13 systematic reviews. According to the responsible author institutions, there were publications from 67 cities in total(Figure 1). The 10 cities with the highest number of publications were as follows:Istanbul(34%),Ankara(21%),Izmir(6%), Sakarya(3%),Konya(2%),Antalya(2%), Erzurum (2%), Samsun (2%), Malatya (1%), Eskişehir (1%) (Figure 1).Considering the responsible author institutions, the first 15 institutions were as follows:Istanbul University (49), Hacettepe University (39), Ankara City Hospital(29), Health Sciences University (25), Sakarya University (25), Marmara University. (18), Ege University (18), Ankara University (17), Acıbadem Institutions (15),Istanbul Medeniyet University (14), Dr. Sadi Konuk Training and Research Hospital (14),Gazi University (14), Atatürk University (12), Koç University (12), Dokuz Eylül University (10). Although most of the publications are in the field of health, there are also researches on the economic effects of the pandemic.

Result: Considering the studies conducted in Pubmed in the last 6 months, although the percentage of publications from our country seems to be low, there is a high quality research.

Keywords: Covid-19, Turkish COVID 19 literature, publications

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Introduction

Coronavirus-2019 Disease (COVID-19) is caused by severe acute respiratory syndrome coronavirus 2 (SARS CoV-2) and is a rapidly spreading pandemic and puts extraordinary stress on health systems worldwide (For simplicity, COVID to refer to both virus and disease Use -19). As everyone awaits the breakthrough of a particular COVID-19 therapy and an effective vaccine, scientists are directing their efforts to research on COVID-19 to improve our knowledge of this new disease [1]. COVID-19 case has been observed in Turkey on March 11th , 2020 [2]. PubMed comprises citations for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to full-text content from PubMed Central and publisher web sites.

The aim of this paper is to outline Turkish COVID-19 research indexed in PubMed between 01.06.2020-01.01.2021.

Methods

The total number of publications was reported in the search made in PubMed on January 4, 2020 with the keyword "Covid-19".Between 01.06.2020-01.01.2021 research was reported from Turkey.The summary, keywords, author names and institutions of all publications were examined.

Results

The total number of publications for the last 1 year was 86.007 in the search made in PubMed on January 4, 2020 with the keyword "Covid-19" for the last year.

75,415 studies were between 01.06.2020-01.01.2021. When a search is made with the keywords "Covid-19" and "Turkey" in the name of the author institution between 01.06.2020-01.01.2021, 1,404 studies are listed. The percentage of publications from Turkey is 1.86%. The summary of all the publications, keywords, author names and institutions were examined. There were 1240 studies original research, 151 reviews, 13 systematic reviews. According to the responsible author institutions, there were publications from 67 cities in total (Figure 1).

The 10 cities with the highest number of publications were as follows:Istanbul(34%),Ankara(21%),Izmir(6%), Sakarya(3%),Konya(2%),Antalya(2%), Erzurum (2%), Samsun (2%), Malatya (1%), Eskişehir (1%) (Figure 1).Considering the responsible author institutions, the first 15 institutions were as follows:Istanbul University (49), Hacettepe University (39), Ankara City Hospital(29), Health Sciences University (25), Sakarya University (25), Marmara University. (18), Ege University (18), Ankara University (17), Acıbadem Institutions (15),Istanbul Medeniyet University (14), Dr. Sadi Konuk Training and Research Hospital (14),Gazi University (14), Atatürk University (12), Koç University (12), Dokuz Eylül University (10).

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Although most of the publications are in the field of health, there are also researches on the economic effects of the pandemic.

Figure 1. COVID-19 publications from 67 cities

Discussion:

The Covid-19 and pandemic took a toll on all aspects of our life. Clearly, time is very restricted and hard times of time for all researchers. Also, we can say that there is significant contribution of researchers from Turkey to current scientific knowledge on COVID-19, transmission, disease chracter, diagnosis, medical treatment approaches, imaging, prevention which constitutes initial, characterization step for a disease of COVID-19.Also, there is economical researches are made by Turkish researchers.

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Covid 19 and Anosmia

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Abstract:

The sense of smell allows us to perceive thousands of different smells and directs our lives. In the Covid-19 pandemic, which affects the whole world, smell disorders are common symptoms. In some studies, anosmia and hyposmia rates have been reported up to 60% in Covid-19 patients. Anosmia has been reported to be the first symptom to appear in some patients and sometimes to be the only finding seen in patients. Therefore, anosmia is very important in terms of early diagnosis and preventing the disease from spreading. The purpose of this paper is to draw attention to this issue. Although various drugs have been used in the treatment of postinfectious olfactory disfunctions so far, the most effective treatment method is olfactory training. This treatment is thought to have an effect on the regenerative capacity of the olfactory mucosa and cognitive processing with olfactory stimulation as a result of repeated sniffing. This treatment has a higher success rate than spontaneous recovery. It should be kept in mind that anosmia is a symptom that alerts the clinician to the possibility of Covid-19 infection. This dysfunction should be cared for and treated as it impairs the quality of life.

Keywords: Covid 19, anosmia, olfactory training

Introduction :

The sense of smell allows us to perceive thousands of different smells and directs our lives. It is important for sheltering, survival and mate selection in nature. The physiology of smell has not been fully clarified and consists of a complex mechanism. It is a topic that has been discussed and researched for centuries.

During the Covid 19 pandemic, which affected the whole world, anosmia was common and attracted attention, and reports were made from many countries. The Centers for Disease Control and Prevention (CDC) added "loss of smell or taste" to the list of most common symptoms of Covid 19. (1)

In meta-analysis studies, rates of loss of smell and taste in covid 19 patients were reported in 41-64% and 38-60%, respectively. It was more common in those with milder illness (home quarantine). Its frequency decreases with increasing age, and some studies have reported that it is more common in female gender. Loss of smell and taste occur as the first symptom in approximately 10% of the cases; In the remaining cases, it has been reported to occur on average 5 days after the first symptom.(2,3)

Anosmia has been reported to be the first symptom to appear in some patients and sometimes to be the only finding seen in patients. Therefore, anosmia is very important in terms of early

diagnosis and preventing the disease from spreading. The purpose of this paper is to draw attention to this issue.

Although the pathogenesis of anosmia is not clear in Covid 19, it is reported that the virus affects the sense of smell as a result of olfactory epithelial damage or local inflammation in the nasal cavity. In addition, there are studies reporting that the virus damages the central nervous system by retrograde neuronal pathway or hematogenous spread.(4)

Spontaneous recovery rates of olfactory dysfunction caused by Covid 19; symptoms improved in 55% of cases (mean duration: 10 days) and the highest improvement rate was reported at 87% (within 30 days).(5,6)

Olfactory disfunction caused by Covid 19 mostly recover spontaneously, however, patients whose symptoms do not improve should be treated. Until now, there is no standard treatment method with proven efficacy in the treatment of postinfectious olfactory disorders. Although various drugs have been shown to be effective in studies, the most effective treatment method with shown effectiveness is olfactory training.(7)

In this training, based on the "smell prism" model developed by Henning, 4 different scents are selected;"floral" (Rose) -phenyl ethyl alcohol, "fruity" (Lemon) – citronelal, "resinous" (Eucalyptus) – eucalyptilol, "spicy" (Clove) –ogenol. Patients are recommended to sniff each scent twice a day for 10 seconds for 12 weeks. It was first described in 2009 by Hummel et al.(8) In 2013, Konstantinidis et al found an improvement of 67% with olfactory training.(9)

In 2014, Damm et al developed standard olfactory training and it was emphasized that early treatment affects success.(10) This treatment is thought to have an effect on the regenerative capacity of the olfactory mucosa and cognitive processing with olfactory stimulation as a result of repeated sniffing. It is reported that the success rate with these exercises is significantly higher than spontaneous recovery. (11)

Conclusion:
It should be kept in mind that anosmia is a symptom that alerts the clinician to the possibility of Covid-19 infection. This dysfunction should be cared for and treated as it impairs the quality of life.

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Correlation of Human Life Periods with Mouse / Rat

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Abstract

Experimental animal models have a special place in translational medicine research. Rodent animal models are most preferred as the animal model. Almost 80% of rodent animal models are laboratory mice and rats. The two main features of preclinical animal studies are; that the research results can be repeated under the same conditions regardless of time, place and person, and that the research results are valid and applicable. Repeating the research results will increase the reliability of the results.

When researchers design experimental animal research, they should choose the animal of the best imitation age for the human life period that the research question arises. It will prevent criticism about the validity and applicability of the test results. However, the life span and periods of mice / rat show a great variety-compared to humans. This situation should be taken into account when designing the experiment and the duration of the experiment should be decided. Considering the entire life cycle of humans, mice and rats, approximately one year of humans corresponds to 16.5 days for a mouse and 18 days for rats. It is a logical approach for the researchers planning an experimental animal study; considering the life period of the animal and the corresponding periods in the human; while determining the duration of the experiment. However, some lifetimes of mice are shorter compared to rats, and this must be considered in determining the duration of the experiment. In this article, the life cycles of mice / rats and human life cycles were compared and although it is not defined, the correlation between life cycles defined.

Keywords: Correlation of Life Cycles, Human, Mouse, Rat,

Introduction

Preclinical animal experiments have a special place in the development of modern medicine. Animal trials must be done before human use, in the development of surgical techniques, drugs, vaccines and biomaterials in medicine. The most important expectation from researchers is to trust their research results. The most basic principle in increasing the confidence in the experimental animal researches should be that the research results can be repeated regardless of the time, place and persons. To achieve this, the entire experimental procedure needs to be standardized and controlled. The more standard and definable the research procedure meens, the more repeatable results of the trial. In order to repeat the results in experimental animal research, it is necessary to use high quality experimental animals with defined genetic and microbiological characteristics. For more than a century, laboratory animal science has been working to raise laboratory animal standards. Laboratory animal science aims

to increase the repeatability and reliability of experiments by carrying out studies on the production, housing, use and welfare of animals used in the laboratory. Therefore, it serves to increase the confidence in the results of experimental animal studies and to prevent unnecessary animal use.

Laboratory animals are animals born, grown, cared for and fed under standard laboratory conditions. All conditions such as ambient temperature, humidity, ventilation and lighting in animal rooms in laboratory animal facilities are under control. Laboratory mice and rats are species that adapt best to laboratory conditions. These two types are used in about 80% of experimental animal researches. The facts like; mice and rats are mammals, their gestation period is short, they can give birth to many babies in one litter,- easy to care and feeding, easy to transport and adapt to every laboratory conditions have provided important advantages. However, these two species have over 400 genetically and microbiologically defined subspecies. Also hamsters, guinea pigs and rabbits are used rarely as laboratory animals.

Researchers should choose an animal at the appropriate age for a subject. They should consider when choosing the animal that best suits to their research question. In the selection of the subject, besides the selection of the model species, it is necessary to select the animal of the most appropriate age that mimics the human life period in which the research question arises. One of the most difficult issues for preclinical animal researchers when designing an experiment is that it is difficult to select animals at the appropriate age for the purpose and objectives of the study. This is particularly important for the validity and applicability of the research results. One of the most criticisms made to the research results is that they do not choose animals suitable for human life periods. And when the experimental results are not valid and applicable, the ethical rule of animals is violated by using unappropriate animals.

Experimental animal research is the problem experienced by the designers in determining the experimental application time. The correlation between human and mouse / rat lifespan should be considered. The experimental animal should be choosed by looking at the correlation between the experimental application period and the human life period. There are very wide limits (50 times) when comparing life expectancy among mammalian species. For example, considering the life expectancy of mice / rats and humans, the longest life expectancy in mice and rats is 3-4 years, while this period is 80-120 years in humans. Despite such wide variation (30-fold) in the lifespan of mouse, rat and human species, mouse / rat models are the most preferred experimental animal models. Mice and rats are widely used to explain the mechanism of age-related diseases and to analyze the aging rate. By describing the molecular process of aging in detail, the similarities and differences in various metabolic processes have been revealed (1,2).

In the field of health sciences, the mouse (*Mus musculus*) model is the most preferred mammal in biomedical research since the 18th century. Laboratory mice and rats have over 400 genetically and microbiologically defined subspecies for many years. The short gestation period of the laboratory mice and rats, the ability to have a large number of offspring at one birth, being a mammal, small anatomical structures, easy to manufacture, low cost, easy transport and most importantly, very easy adaptation to every laboratory provide very important advantages. Almost 99% of the mouse genes are similar to the human genome, so the murine model is an ideal model animal for investigating the functions of human genes in medicine as well as multifactorial diseases such as cancer, cardiovascular diseases, diabetes. Despite the similarities, mice have a shorter lifespan compared to humans. Comparing mouse life cycles,

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one human year is equal to nine mouse days. Determining the age relationship between mice and humans is important in interpreting research results (3). Age correlation between laboratory rats and humans (2), human age correlation with hamster (4) correlation between rabbit and human age (5) life times and periods were compared. This correlation should not be taken as a definitive conclusion. Many researchers have used various methods to correlate ages with human age in laboratory animals. By determining the weight of the eyepiece (6-11) as the most common age determination methods, epiphyseal closure (12,13), tooth erosion (TW) pattern [14] and body weight correlation [14] are widely is used.

Table 1. Comparison of Human and Mouse / Rat Life Periods [2-5]

life periods	mouse	rat	human
Life span	2.5 years	3 years	80 years
Lactation Period	21 days	21 days	180 days
Prepubertal Period	42 days	50 days	11.5 years
Adulthood Period	70 days	100 days	20 years
Menopause Period	450 days	600 days	51 years
Post Senescence Period	372 days	495 days	30 years
Duration of oestrus	4.5 days	4.5 days	28 days
Gestation Period	21 days	21 days	280 days

Correlation calculation method of human and mouse / rat life period: A simple formula used to compare human lifespan and periods with mouse / rat lifetimes and lifetimes: Human life cycle duration is calculated and correlated by dividing the animal life cycle.

$$Correlation\ Formule = \frac{Human\ Life\ Period\ (days)}{Animal\ Life\ \ Period\ (days)}$$

Correlation of human and mouse / rat life span; If the life expectancy of the laboratory mouse is assumed to be 2,5 years and 3 years in the rat, this period is 80 years in humans. Mouse life span = 365 x 2.5 years = 912 days. Life span in rats = 365 x 3 = 1095 days. Human life span = 365x 80 years = 29 200 days. When we compare the human life span to the mouse life span, it corresponds to 29200 ÷ 912 = 32 human days = 1 mouse day. In rats, 29200 ÷ 1095 = 26.7 human days = 1 rat day. The question of how many days a year of human life corresponds to in the lifetime of a mouse can be found by a simple calculation when researchers design experiments. It can be calculated to be equal to 365 ÷ 32 = 11.4 mouse days = 1 human year. In rats, it can be calculated that 365 ÷ 26.7 = 13.7 rat days = 1 human year.

Correlation of human and mouse / rat pregnancy periods: The average gestation period of laboratory mouse / rat is 21 days, for humans 280 days. When the researchers designed the experiment, the question of how many days the mice / rat's gestation period corresponds to one day of the human gestation period can be found by making a calculation. 280 days ÷ 21 days = 13.3 days. One day of mouse / rat pregnancy corresponds to 13.3 days of human pregnancy.

Correlation of human and mouse / rat lactation periods; Mice and rat pups are hairless, have closed eyes and ears, and are born premature like human premature babies. In the first 12-13 days, human beings have newborn characteristics. The lactation period in mice / rats is 21 days and in humans 180 days (2). It can be calculated how many days the mice / rats are breastfed for a day. $180 ÷ 21 = 6.43$ human breastfeeding day corresponds to 1 day in mice and rats. $365 ÷ 6.43 = 56.77$ mouse / rat days = 1 human year. Therefore, at this developmental stage, one human year equals 56.77 mouse / rat days.

Correlation of human and mouse / rat pubertal stages; The most common markers of onset of puberty in mice / rats are the onset of the oestrous cycle in females and balanopreputial separation in males (15). It reaches sexual maturity at 42 days in mice, approximately 50 days in rats (16,17), and at 11.5 years old, although there are individual differences in humans (18). So, if it is accepted that humans reach sexual maturity at the age of 11.5 years, people reach sexual maturity in $365 \times 11.5 = 4198$ days. To find out how many days a human being is in the period of reaching sexual maturity in mice; $4198/42 = 99.95$ human days = 1 mouse day. $365 ÷ 99.95 = 3.65$ mouse days = 1 human year. One human year in this lifetime is equal to 3.65 mouse days. In order to find out how many days a day is in the period of reaching sexual maturity in rats; $4198 ÷ 50 = 83.96$ human days = 1 rat day. $365 ÷ 83.96 = 4.3$ rat days = 1 human year. One human year in this pubertal lifespan equals 4.3 mouse / rat days.

Correlation of human and mouse / rat adult stages; Mouse adulthood is defined as biologically at 70 days of sexual maturity. In rats, the work is completed in 110 days. In humans, this development is considered to be completed in approximately 7300 days (20 years). In mice to calculate how many days a human during adult development is equivalent to $7300 ÷ 70 = 104.2$ human days = 1 mouse day, $365 ÷ 104.2 = 3.5$ mouse day= 1 human days. In order to calculate how many days of a human being during this period of adult development in rats, 7300 days $÷ 110$ days $= 66$ human days = 1 rat day. $365 ÷ 66 = 5.5$ rat days = 1 human year.

Correlation of human and mouse / rat menopause period; The duration of use of laboratory mice in production reaches 450 days (15 months), and in rats 600 days (20 months). Active reproduction ends at the end of this period after birth (2,20). In humans, menopause in women is a marker of reproductive aging associated with the end of the reproductive cycle (21,22). According to the American Medical Association, the average age of menopause in women is 51, $51 \times 365 = 18,615$ days (2). In mice reproductive termination period, it is equal to $18.615 ÷ 450 = 41.37$ human days = 1 mouse day, and $365 ÷ 41.37 = 8.82$ mouse days = 1 human year to calculate how many days the human falls during this period. Therefore, 8.82 mouse days during the termination period equals one human year. In the rat reproductive termination period, $18.615 ÷ 600 = 31$ human days = 1 rat day and $365 ÷ 31 = 11.7$ rat days = 1 human year to calculate how many days the human falls during this period. Therefore, 11.7 rat days during the termination period equals one human year.

Correlation between human and mouse / rat senescence; In general, the period after the end of the reproductive period is defined as the old age period. The mice arrives to the end of the reproductive period in 540 days, and the rats in 600 days. The total life span of the mouse is considered to be 912 days (2.5 years). If reproductive termination is subtracted from the total lifespan, we find the mouse senescence,$912-540 = 372$ days is the senescence in mice. The total life span of rats is accepted as 1095 days (3 years). If reproductive termination is subtracted from the total lifespan to find the rat senescence period, $1095-600 = 495$ days is the senescence

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period of the rats. Life expectancy in humans is 29 200 days (80 years). If it is assumed that human have entered menopause at the age of 51. 51 x 365 = 18 250 days. 29 200 - 18 615 = 10 950 days can be calculated as the aging period in humans. To calculate how many days of a human being in the same period (similar to) the old age of mice is 10 950 ÷ 372 = 29.4 human days = 1 mouse day. Equals 365 ÷ 29.4 = 12.4 mouse days = 1 human year. During the old age of the mice, 12.4 mouse days is equal to one human year. To calculate the number of days of a human being in the same period a day in the old age of rats is 10 950 ÷ 495 = 22.12 human days = 1 rat day. Equal to 365 ÷ 22.12 = 16.5 rat days = 1 human year. Therefore, 16.5 rat days are equal to one human year during old age.

In the light of the above calculations, the days of the rat / rat life cycle that correspond to one year of humans are given in Table 2.

Table 2. Correlation of Human and Mouse/Rat Life Stages

Life Periods	Mouse	Rat	Human
Life span	11.4 mouse days	13.7 rat days	= 1 human year
Lactation Period	56.7 mouse days	56.7 rat days	= 1 human year
Prepubertal period	3.65 mouse days	4.3 rat days	= 1 human year
Adulthood Period	3.5 mouse days	5.5 rat days	= 1 human year
Gestation Period	13.3 mouse days	13.3 rat days	= 1 human year
Menopause Period	8.82 mouse days	11.7 rat days	= 1 human year
Post Senescence Period	12.4 mouse days	16.5 rat days	= 1 human year
Average	15.6 mouse days	18 rat days	= 1 human year

Figure 3. Correlation of Human and Mouse Life Period

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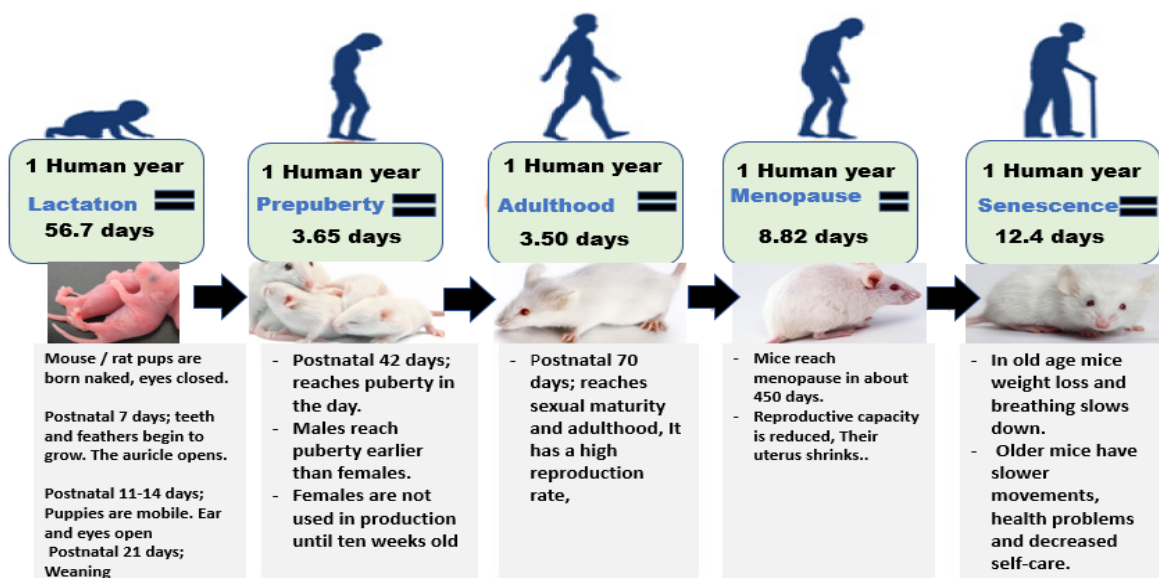
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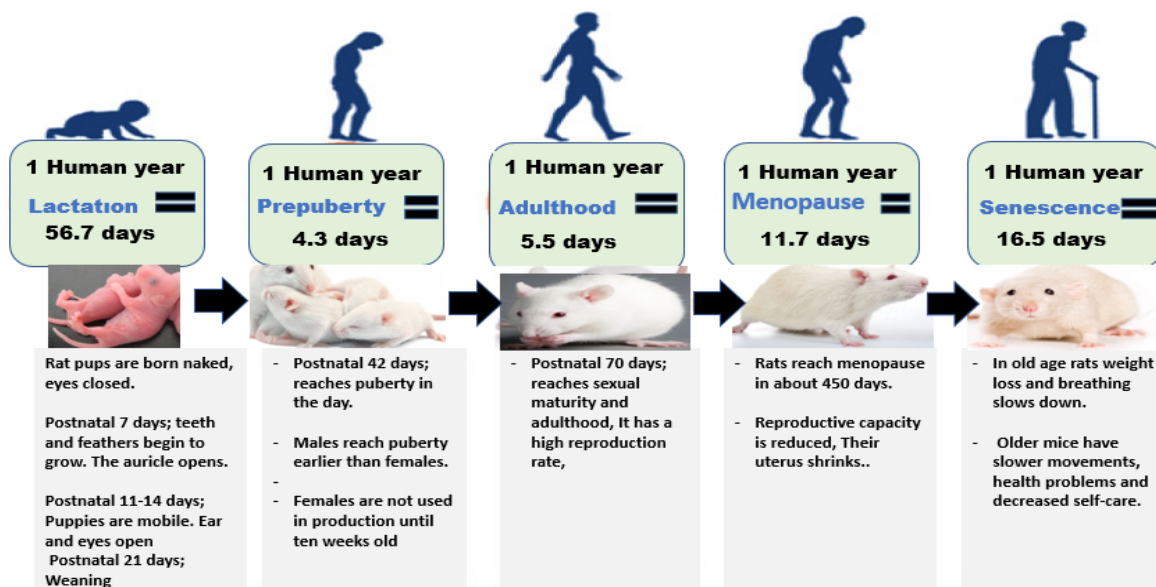
Result

As a conclusion, when researchers design an experimental animal research, they should choose the animal of the best imitative age for the human life period that the research question arises. So by doing this, No mistake is made in interpreting the results obtained in preclinical experimental animal researches. It will prevent criticism about the validity and applicability of the test results. However, the life span and periods of mice / rat show a great breadth when compared to humans. This situation should be taken into account in designing the experiment and the duration of the experiment (induction time) should be decided. Considering the entire life cycle of humans, mice and rats, approximately one year of humans corresponds to 16.5 days for a mouse and 18 days for rats. It is a logical approach for the researchers in planning an experimental animal study to decide by considering the life period of the animal and the corresponding periods in the human while determining the duration of the experiment. However, some lifetimes of mice are shorter compared to rats and this should be taken into account in determining the duration of the experiment.

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People fighting against cancer patients need extra precautions during COVID-19 pandemic

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Abstract

COVID-19 pandemic has become the major health problem since at the beginning of 2020 and numbers of infected people and deaths by COVID-19 are increasing every day worldwide. The elderly population and people with chronic diseases such as diabetes, cancer, and cardiovascular diseases have been reported as risk groups. Among them, people fighting against cancer can be considered as the major risk group against COVID-19 infection, since cancer itself and treatments weaken the immune system of the patients. Thus, millions of people with cancer are in danger, thus both doctors and governments should be aware of the risk groups to take extra precautions during the COVID-19 pandemic. Otherwise people at the risk groups may be infected easily which leads to the healthcare systems may collapse in the countries fighting against COVID-19 soon.

Keywords: COVID-19, cancer, pandemic, risk group, healthcare system, precaution

Introduction

COVID-19 pandemic has become a public health emergency worldwide, since the virus currently threatens millions of lives and caused thousands of deaths across the world since at the beginning of 2020. All countries have adopted different approaches to combat COVID-19, for instance restrictions on the social life have been applied, self-isolation, and protection have been strongly recommended to protect people and stop the spread of the virus between humans. On the other hand, researchers across the world have conducted projects and clinical trials to develop a treatment or vaccine against COVID-19, however no approved treatment has been found until now. Despite various precautions are taken in many countries, no one can estimate numbers of infected people and deaths by COVID-19 in the next days (1-7).

The elderly population and people with chronic diseases including diabetes, cancer, chronic respiratory disease, hypertension, Alzheimer's disease, cardiovascular diseases, and cancer have been reported as major risk groups against COVID-19 infection due to impaired immune systems leading to failure of the respiratory system. 5.6 % of deaths caused by COVID-19 have been reported in the cancer patients that is two times more than overall COVID-19 mortality. Therefore, people belonging to the risk groups especially cancer patients need extra precautions to protect themselves (8-13).

Cancer is the second leading cause of death worldwide and only in 2018, 18 million new cancer cases have arisen, and 9.6 million people died due to different types of cancer worldwide (14). Cancer itself and cancer treatments result in the weakening of the immune systems of cancer patients. For instance, surgery, chemotherapy, radiotherapy, hormonal therapy, and targeted therapy approaches or combining therapies against cancer impair the immune system of cancer

patients because of adverse effects of treatment approaches. Thus, millions of cancer patients have higher risk due to COVID-19 pandemic and they need extra care to protect themselves from this deadly virus (15).

Patients with cancer can be more vulnerable and become target against COVID-19 infection compared to the other risk groups including people with diabetes or cardiovascular diseases. Because cancer patients need to visit the hospitals frequently for chemotherapy, radiotherapy, surgery, or routine controls. For instance, lung cancer is the most common type of cancer and pulmonary tract infection are frequently occurred in the patients with lung cancer. Those patients are more vulnerable against COVID-19 infection since this virus targets lung and causes pneumonia (1-7, 14,15). Additionally, patients fighting against cancer are frequently in need of emergency intervention at the hospital because of the adverse effects of cancer itself and treatments against cancer. Therefore, hospitals and health care systems of government should be aware that cancer patients are the major risk group during the COVID-19 pandemic and they should be treated at the different buildings or floors than COVID-19 patients at the hospitals (16).

Another problem during the COVID-19 pandemic can be the overload of hospitals which may cause limitations for the care and treatment of cancer patients worldwide. On the other hand, surgeries, chemotherapies, and immunosuppressant treatments should be revised or postponed if it is possible in the endemic areas. Cancer patients and they are relevant should be informed for the protection and risk of infection against COVID-19 during this sensitive period. Most important, doctors and governments need to apply intensive surveillance or treatment for patients who have cancer (17-19).

In conclusion, if required precautions are not taken for the risk groups especially for cancer patients, numbers of infected people and deaths will increase, and they will need urgent medical intervention at the hospitals. This may result in the collapse of the health care system of countries that fight against COVID-19 soon.

Acknowledgment

Conflict of Interests

Authors declare that there is no conflict of interest.

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The possible risk of long-term corticosteroids treatment during COVID-19 pandemic: A parameter should be considered

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Abstract

World has been currently encountered with COVID-19 pandemic and numbers of infected people and deaths are increasing every day. There is an increasing concern against this pandemic, since no one can estimate about the future aspect of COVID-19. Currently, there are no vaccines or anti-viral treatment found until now. Elderly population and people with chronic diseases including cardiovascular diseases, diabetes, cancer and have been reported as risk groups. People taking systematic or long-term corticosteroids should be evaluated as a risk group against COVID-19 infection, since corticosteroids especially glucocorticoids which weakening immune system in the long-term treatments. Rapid diagnosis and isolation of people infected play vital role to fight against COVID-19 and to reduce the number of patients required intensive care units and medical support. Therefore risk groups should be revised and informed in the epidemic regions.

Key words: COVID-19, glucocorticoids, immune system, infection, pandemic

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Introduction

World has been currently confronted by a pandemic named as COVID-19 raised in the December 2019 in Wuhan, China (Wang et.2020). COVID-19 belongs to the coronavirus family consisting of single, large, and plus stranded RNA viruses. This virus is transmitted human to human via contaminated surfaces, hand and aerosolized droplets. COVID-19 shares with 75-80% genetic similarity with the Severe Acute Respiratory Syndrome (SARS-CoV) coronavirus and 50% genetic similarity with Middle Eastern Respiratory Syndrome (MERS-CoV) coronavirus. Moreover, COVID-19 uses the angiotensin-converting enzyme II (ACE2) receptor to enter the host cell same as SARS-CoV (1-10).

There is an increasing concern about the numbers of infected people and deaths by this virus worldwide and no one can estimate about the future aspect of this pandemic. According to WHO reports, disease affects people over 60 years old and mainly cause impairment in the respiratory system like pneumonia and another symptoms can be categorized as fever, cough, myalgia and pneumonia (WHO 2020). There are no antiviral treatments or vaccines have been developed against this virus until now. Elderly population and people with chronic diseases including cardiovascular diseases, Alzheimer's disease, diabetes, cancer and have been reported as risk groups (8, 9, 11-17).

Since oxygen therapy and lung protective ventilation are required to handle people infected with COVID-19 and showing symptoms, need for intensive care units and medical workers are increasing worldwide. However, there are limited opportunities in terms of intensive care units, nurses, doctors and hospital stuffs. Thus, diagnosis and isolation of infected people play vital role to stop spreading virus human to human (18, 19). People at the risk groups should be determined carefully and people belonging risk groups should take care extra precautions to

avoid COVID-19, since they may need for intensive care as a result of hospitalization. Besides elderly population and people with chronic diseases, patients taking some drugs weakening immune system can be categorized as risk group. For instance, people taking corticosteroids may be more vulnerable against COVID-19 infection since long-term usage of these drugs results in the weakened immune system (20).

Effects of the corticosteroids on the immune system

Corticosteroids term cover all steroid hormones and was approved in 1950 by Food and Drug Administration after discovered in 1930's. They are easily absorbed, then detoxified in the liver and excreted renal way. Corticosteroids are used for variety of diseases including endocrine disorders, musculoskeletal disorders, rheumatic diseases, allergic reactions, asthma, immunosuppressive after organ transplantations and cancer patients. One of the major adverse health effects of corticosteroids can be categorized as impairment in the immune system and increased risk of infection which both make patients more vulnerable against pathogens including viruses (21-23).

Corticosteroids are mainly categorized as glucocorticoids and mineralocorticoids. Glucocorticoids affects lipid, protein, carbohydrate and inflammation metabolisms and have immunosuppressive effects, where mineralocorticoids mainly regulate ion and water balance in the organisms (22-24). Glucocorticoids mainly have effects both on the gene expression and post-translational modifications of the inflammation metabolism. They inhibit expression of pro-inflammatory genes (IL-1, IL-2) and almost all types of inflammatory cytokines (25,26). Moreover, administration of glucocorticoids may cause reducing circulating eosinophils and dendritic cells, changing in the leukocyte trafficking, acute lymphopenia and promote eosinophil apoptosis. Thus, systemic or long-term glucocorticoid treatment increases infection

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risk to pathogens including viruses as a result of impairment in the immune response as represented Figure 1 (27).
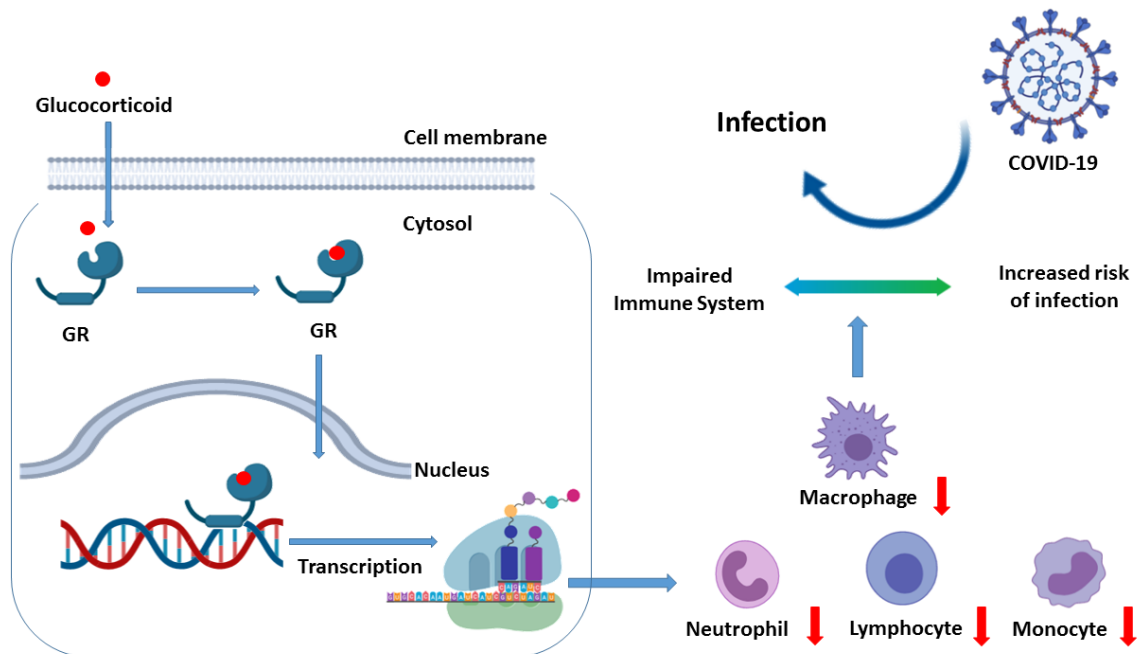

Figure.1. Representative illustration of impaired immune system and increased risk of infection upon long-term glucocorticoid treatment.

People taking systematic or long-term glucocorticoids may be more vulnerable against COVID-19 infection during this pandemic. Treatments should be revised if it is possible in the endemic areas and people using glucocorticoids or other immunosuppressant drugs should be informed for the protection and risk of infection against COVID-19 during this sensitive period (28).

Glucocorticoids and cancer

Glucocorticoids are widely used for cancer patients for anti-cancer treatment, inhibition of tumor-driven edema in the brain cancers and improving refractory symptoms. They are used for childhood leukemia, adult acute lymphoblastic leukemia, multiple myeloma, Hodgkin's disease, chronic lymphocytic leukemia, Non-Hodgkin's Lymphomas, prostate cancer and

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Kaposi sarcoma. Additionally, these drugs administered to cancer patients to reduce tumor-derived edema and adverse effects of radiotherapy (29-31).

On the other hand, systematic or long-term treatments with glucocorticoids result in the impairment in the function of immune systems and patients become more vulnerable increased risk of various infections (27). There are millions of people fighting against cancer currently worldwide, unfortunately 9.6 million of people died because of different types of cancer only in 2018. Cancer itself and cancer treatments lead to the weakening of the immune system. Treatments including surgery, chemotherapy, radiotherapy and hormonal therapy can impair immune system of patients when they fight against cancer. Drugs like glucocorticoids can enhance risk of infection of the cancer patients against pathogens including viruses. Therefore, millions of cancer patients are in danger because of COVID-19 pandemic and doctors should revise treatments of cancer patients at the epidemic regions all over the world (32).

Conclusion

World has been currently encountered a novel epidemic named as COVID-19 and numbers of infected people and deaths are increasing day by day. Concerns against this epidemic has been expanded almost every country in the world, since problem of possible collapse in health systems has arisen worldwide. During this pandemic, rapid diagnosis and isolation of people has become vital to reduce the number of patients required intensive care units and medical support. Therefore people belonging to the risk groups and taking immunosuppressant such as glucocorticoids should be informed and treatments are in need of revisions to protect these people from COVID-19.

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Conflict of interest

The authors declare that they have no conflict of interest.

Animal and Human Rights Statement

This article does not contain any studies with human or animal subjects performed by any of the authors.

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Possible future design for the medical education during COVID-19 pandemic with Z generation

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Dear Editor,

COVID-19 pandemic is the most important problem for all countries worldwide (1-4). During quarantine days universities have carried their educational and administrative missions to the online platforms. Lectures are given from teams or zoom, and various videos sent to medical students for better learning. All the discussion hours are done from zoom and teams and the education is become to internet dependent. The best chance is 'Z' generation also known as Zoomers or internet generation, in the universities and this generation quickly adapted online learning. And, baby boomers whom loves lifelong learning generation the professor are in the universities. It is better to look at the properties of generations in the pandemic. The Z generation and baby boomers have many important roles in adapting and transforming all the

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changes in the COVID-19. Baby-boomers generation is at age of 50-64 and the they are in professor position and on the other hand Z generation is students and this generation is incorporating technology very easily and adaptive learning activities (3,5). The X (1966 - 1980) and Y (1981 - 1995) generations are most internet and technology dependent generations and they are the position of Associate professor, Assistant professor, PhD, master's degree (5). The internet has key role in our lives and the impact of internet on education is very important because internet on education opens the doors of libraries, lectures, discussions, laboratories enormous range of information resources and services, is free of charge. There are many scientific academic platforms and they are open access and students and teacher finds many opportunities for education purposes and most of the medical journals also becoming open access. These open access medical journals are very important especially for developing countries (6). On the other hand, during the COVID-19 pandemic we may use augmented reality (AR) and virtual reality (VR) in education virtual reality glasses, videos to expand and consolidate medical students' knowledge of medical education as supportive tools. Simulation laboratories may be much more better and feasible than the virtual reality glasses for biochemistry, histology, physiology, and surgical skills such as evolving orthopedic surgical techniques etc. laboratories for medical and dental education (7).

Conclusion

COVID-19 pandemic resulted in change academic life including lectures and laboratory in all departments. Lectures are given by using zoom or teams however the laboratories are the main problem and some of the universities solved this problem by buying simulation programs. Simulations laboratory programs are cheaper than the real laboratories for example laboratory instruments are very expensive and we don't need to use chemicals. All the students can perform the experiments by themselves and we must remember that they are z generation and

they love novel technology and computers. On the other hand, we cannot replace simulation laboratories to the real hands-on education, but we must protect against coronavirus our students. Simulation laboratory programs are not so cheap we have to develop our simulation laboratories for our country and sent them to our all medical and dentistry universities.

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Anti-Cytokine Treatment in COVID-19 Disease: Tocilizumab

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Abstract

Objective: COVID-19 pandemic is still active around the world. Cytokine storm in COVID-19 patients is considered as one of the main causes of ARDS and multi-organ failure and is one of the factors that play an important role in the increase of the disease. Anti-cytokines such as Tocilizumab are used to improve the clinical picture of COVID-19 patients. In this study, we aimed to discuss the response created by the treatment used as an anti-cytokine against the cytokine storm that occurs in COVID-19 patients.

Methods: In this study, 55 patients diagnosed with COVID-19 in Siirt Training and Research Hospital were included in the study, and it is planned to retrospectively investigate and evaluate demographic, treatment, laboratory parameters and clinical results before and after Tocilizumab treatment.

Results and Conclusion: Tocilizumab was started on an average of 5.40 ± 3.63 days after hospitalization of the patients who received COVID-19 treatment, and their fever returned to normal values (36.5-37.5°C) within 48-72 hours following drug use in 94.5%, It was observed that 74.5% of the patients were discharged with an average of 12.39 days. It was confirmed that the use of anti-cytokines was effective in terms of laboratory parameters with improvements in CRP, Ferritin, Saturation, Respiratory rate and Procalcitonin values of 55 hospitalized patients before and after Tocilizumab.

Keywords: Anti-cytokines, COVID-19, Cytokine storms, Tocilizumab

INTRODUCTION

Several cases of pneumonia of unknown etiology were reported for the first time in December 2019 in Wuhan, China's Hubei province and a novel coronavirus disease (COVID-19) emerged from the SARS-CoV-2 infection, a novel coronavirus discovered and rapidly spreading across continents (1-3).

The most common clinical findings in the disease; fever, cough, weakness and shortness of breath. Lymphocytopenia and thrombocytopenia are the most common findings in laboratory findings (4). High D-Dimer, serum ferritin, troponin I, LDH and IL-6 levels, and hypoxia (02 hrs<90%) were defined as 'poor prognostic factors' associated with severe disease and morbidity(4,5). In more severe cases, shortness of breath may cause a clinical picture leading to acute respiratory distress syndrome (ARDS) with respiratory failure(6).

In the pathogenesis of Covid-19, systemic damage due to the cytokine storm that occurs with the overreaction of the immune system has an important place(7,8). Cytokine storm is a general term applied to incompatible cytokine release in response to infection and other stimuli (9). The pathogenesis is complex but involves the loss of regulatory control of proinflammatory cytokine production at both local and systemic levels. The disease progresses rapidly and mortality is high. Patients with cytokine storms progress to cardiovascular collapse, multiple organ dysfunction, and rapid death (7,8). Therefore, early detection, treatment and prevention of cytokine storms are very important for patients (10). Macrophage Activation Syndrome (MAS) develops with persistent

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fever, cytopenia, high ferritin and lung involvement together with cytokine storm. (11,12). MAS develops in the course of COVID-19 infection regardless of sepsis and ARDS findings, and these patients may benefit from anti-cytokine therapy.

Tocilizumab(TCZ) is an IL-6 receptor-specific monoclonal antibody. In the treatment of cyto-kin storm due to SARS-CoV-2, tocilizumab has been shown to stabilize patients by lowering acute phase reactants and is effective in the treatment of cytokine storm in COVID-19 patients. (13-15). In this retrospective observational study, we aimed to evaluate the anti-cytokine treatment responses used on cytokine storm in COVID-19 patients.

METHODS

Fifty-five patients diagnosed with COVID-19 who were treated at Siirt Training and Research Hospital were included in the study group. The study was approved by Siirt University Non-Invasive Clinical Research Ethics Committee with the decision number 2020 / 09.06. For the study, following the treatment prescribed by the Ministry of these patients, TCZ was started with the diagnosis of persistent fever, elevated or increased C-reactive protein (CRP) and ferritin values, increased D-dimer levels, lymphopenia and thrombocytopenia, and MAS as a result of deterioration in liver function tests. Gender, age, intensive care and death, duration of stay in intensive care, mean age and lymphocytes, D-dimer, CRP and ferritin parameters of these patients were compared before and 48-72 hours after TCZ. All statistical data were paired student t± SD analyzed with PRISM 6.0, GraphPad Software.

RESULTS

Fifty-five patients (36 men and 19 women) with COVID-19 were included in the study. The dose of TCZ used in patients ranged from 40 mg to 800 mg per time.. The demographic characteristics, comorbidities and treatments of the patients are summarized in Table 1. The median age (min-max) of the patients was 64.54 (34-93) years. Fourteen patients (66.7%), 25.5% of the patients did not have any chronic disease, most of them had complicated diseases. They had one or more concomitant diseases, including cadiocerebrovascular diseases and endocrine system diseases (Table 1).

Tocilizumab was started on an average of 5.40 ± 3.63 days after hospitalization of the patients who received COVID-19 treatment, and their fever returned to normal values (36.5-37.5°C) within 48-72 hours following drug use in 94.5%, It was observed that 74.5% of the patients were discharged with an average of 12.39 days. Laboratory findings within the first 48-72 hours before and after TCZ treatment are summarized in Table 2. Before starting TCZ treatment, mean CRP levels were observed (123.06 mg/L), while the mean after TCZ treatment was (16.09 mg/L) (p <0.0001). When it was ng/mL, it was very close to the normal limits of 0.18 ng/mL following TCZ use (Table 2). The hospital discharge rate of these patients after TCZ use was 41/55 (74.5%). Respiratory rate and pulse values were on average in order of 84.90 (%SpO2), 27.29 (m), 86.92 (m), respectively, while these values were 90.07 %SpO2, 23.18 m and 81.76 m following TCZ use (Table 2). And these changes were found to be statistically significant.

CONCLUSION

COVID-19 disease is a newly contagious respiratory disease with mild symptoms at the onset of infection (16**).** However, in a significant number of patients, symptoms worsen rapidly and manifest as shortness of breath or even respiratory failure. Vaccine-drug studies for the prevention of the disease are ongoing and a definitive treatment has not been found yet. Clinical data showed that most patients had improved symptoms and infectious signs immediately after treatment with tocilizumab (14,15). In this study, we retrospectively observed tocilizumab, which was used as an anti Cytokine the treatment of 55 patients with severe and critical COVID-19. In conclusion, although tocilizumab gives effective results in patients with severe COVID-19, dosing and duration should be considered when considering the damage to liver enzymes in its use.

Conflict of interest: None of the authors declare any competing interests in the matters related to this paper. All authors contributed to the study conception and design.

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Table 1. Demographic characteristics of the patients on presentation

Characteristic	Patients (N=55)n/N
Age (range), y	65.54 ± 12.96 (34-93)[*]
Gender	
Male	36/55 (65.5%)
Female	19/55 (34.5%)
Chronic medical illness	
Diabetes	16/55 (29.1%)
Hypertension	21/55 (38.2%)
CHD	16/55 (29.1%)
COPD	12/55 (21.8%)
CKD	2/55 (3.6%)
Cancer	3/55 (5.5%)
Nonchronic medical illness	14/55 (25.5%)
Time to progression, d	5.40 ± 3.63 (1-14)[*]
State of illness	
Severe (service)	29/55 (52.7%)
Critical (intensive care)	26/55 (47.3%)
Hospitalization days (range), d[†]	11.49 ± 7.58 (4-37)
≤14	41/55 (74.5%)
14-21	8/55 (14.5%)
≥21	6/55 (11.0%)
Oxygen therapy	
Nasal cannula with reservoir	55/55 (100%)
CPAP	20/55 (36.4%)
High-flow oxygen	16/55 (29.1%)
Mechanical ventilation	12/55 (21.9%)
Clinical outcome	
Discharge from hospital	41/55 (74.5%)
Death	14/55 (25.5%)

CHD, coronary heart disease; COPD, chronic obstructive pulmonary disease; CKD, chronic kidney disease, CPAP (Continuous Positive Airway Pressure).

*Plus-minus values are means ± SD.

† Hospitalization days after the treatment with tocilizumab.

Table 2. Laboratory test before and after tocilizumab

	Normal range	Before tocilizumab	After tocilizumab	P<
Blood routine				
White cells count, x10^9/L	4.8 - 10.8	8.76 ± 3.16	10.59 ± 5.23[**]	0.040
Neutrophils, x10^9/L	1.8 - 8.0	8.40 ± 2.71	6.64 ± 2.12[*]	0.0162
Lymphocytes, x10^9/L	1.0 -4.8	0.58 ± 0.25	1.18 ± 0.62[****]	0.0001
Platelets, x10^9/L	130 - 400	262.70 ± 93.64	338.25 ± 129.25[****]	0.0001
Haemoglobin, g/dL	14 - 18	12.46 ±1.49	12.79 ± 1.50	ns
Hematocrit, %	42 - 52	39.77 ± 4.66	41.33 ± 4.50[**]	0.0045
Coagulation function				
Prothrombin time, s	12 - 16	15.72 ± 3.00	15.59 ± 3.09	ns
Fibrinogen, mg/dL	200 - 400	543.39 ± 144.27	372.35 ± 92.00[****]	0.0001
D-dimer, µg/L	80 - 500	3322 ± 11737	4172 ± 8376	ns
0-2000		46/55 (83.6%)	36/55 (65.5%)	
2000-6000		5/55 (9.1%)	10/55 (18.2%)	
>6000		4/55 (7.3%)	9/55 (16.3%)	
Infection-related biomarkers				
Procalcitonin, ng/mL	0 - 0.12	0.47 ± 0.90	0.18 ± 0.12[*]	0.0328
Serum ferritin, µg/L	10 - 291	891.94 ± 532.38	591.36 ± 432.44[*]	0.0279
C-reactive protein, mg/L	0 - 10	123.06 ± 72.33	16.09 ± 14.39[****]	0.0001
Blood biochemistry				
Alanine aminotransferase, U/L	10 - 49	31.67 ± 14.70	48.30 ± 25.51[****]	0.0001
Aspartate aminotransferase, U/L	0 - 34	43.94 ± 17.72	45.45 ± 18.12	ns
Lactate dehydrogenase, U/L	120 - 246	399.57 ± 99.89	385.36 ± 109.36	ns
Serum creatinine, mg/dL	0.7 - 1.3	1.05 ± 0.34	1.01 ± 0.27	ns
Blood urea nitrogen, mg/dL	14 - 50	49.78 ± 19.91	54.53 ± 25.68	ns
Vital sign				
%SpO2,		84.90 ± 6.71	90.07 ± 5.78[****]	0.0001
Respiratory rate, m		27.29 ± 5.76	23.18 ± 4.15[****]	0.0001
Pulse, m		86.92 ± 12.35	81.76 ± 11.40[**]	0.0052
Body temperature, ℃				
36.5 - 37.5		37/55 (67.3%)	52/55 (94.5%)	
37.5 - 38.5		10/55 (18.2%)	3/55 (5.5%)	
38.5 - 39.5		8/55 (14.5%)	---	
39.5 - 40.5		---	---	

*p<0.001, ** p<0.001-0.05, p<0.005

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The Effects Of Cisplatin And Oleuropein in Neuroblastoma

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ABSTRACT

Objectives: Neuroblastoma(NB) is the second most common solid tumor in the childhood. Cisplatin (cis-diaminedichloroplatinumII; CDDP) is the main chemotherapeutic agent for neuroblastoma. Oleuropein (OLE), found in an olive leaf, has been shown to reduce cancer cell viability. The aim of this study was to investigate the possible anti-proliferative and apoptotic effects of OLE and combination with CDDP in good prognostic SH-SY5Y N-MYC(-) and poor prognostic KELLY N-MYC(+) neuroblastoma and PSI- fibroblast cells.

Methods: SH-SY5Y and KELLY neuroblastoma and also fibroblast cells of PSI were used in this study. OLE (50-800 uM), CDDP (5-200 μM) and combinations were applied for 24, 48 and 72 hours. LD50 doses were determined by cell viability analysis using WST-1 test. Apoptotic cell death was determined by flow-cytometry using Annexin-V/PI assay.

Results: In SH-SY5Y and KELLY neuroblastoma cells, OLE(500 uM) decreased the viability and showed apoptotic effect. However, the combination of OLE (500 μM) -CDDP (50 μM) induced apoptosis in SH-SY5Y cells but not in KELLY cells. Inhibition of cells viability and apoptotic effects of OLE (500 uM) were determined especially at 72 hours in also PSI-fibroblast cells.

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Conclusions: This study showed that OLE, CDDP and combinations induced cell death in neuroblastoma cells through apoptotic cell death mechanism. OLE was also caused apoptosis in healthy fibroblast cells. Furthermore, OLE-CDDP did not induced cell death in bad prognostic KELLY cells. The mechanisms of anti-proliferative effect of OLE in neuroblastoma should be studied in further studies *in-vitro* and *in-vivo*.

Key words: apoptosis, neuroblastoma, oleuropein, cisplatin

INTRODUCTION

Neuroblastoma is the second most common solid tumor of childhood and the survival rate in advanced stage disease is around 40% (Olgun vd., 2003; Aksoylar vd. 2017). However, side effects such as nephrotoxicity, ototoxicity and neurotoxicity due to cisplatin use may cause dose limitation during cisplatin use. Therefore, new agents are needed for neuroblastoma treatment.

Oleuropein is the active ingredient of olive leaf and belongs to polyphenol group. Oleuropein has antioxidant, anti-microbial, anti-inflammatory, anti-hypertensive and anti-carcinogenic effects (Seçme vd., 2016). Oleuropein has been showed protective effects in various models such as osteoporosis, neurodegenerative diseases, cardiovascular diseases, viral or microbial infection, hypoglycemia, skin diseases (Capo vd., 2017; Boss vd,2016). The anticancer properties of oleuropein were found to have anti-proliferative and pro-apoptotic effects in leukemia tumor cells, colorectal carcinoma cells and breast cancer cell lines as well as in-vivo cancer models (Grawish vd.; 2011; Boss vd.; 2016). Oleuropein has been shown to induce apoptosis by inhibiting Bcl-2 in SH-SY5Y neuroblastoma cells and activating Bax, caspase-9 and caspase-3 gene expressions (**Seçme vd 2016**) .

The aim of this study was to investigate the possible anti-proliferative and apoptotic effects of OLE and combination with CDDP in neuroblastoma and healthy fibroblast cells.

Methods

Cell Culture

In this study, human neuroblastoma cell lines which are KELLY (with N-Myc amplification) (DSMZ), SH-SY5Y with N-Myc nonamplification) (DSMZ) were used. KELLY cells were maintained in RPMI- 1640 (RPMI-1640 Cell Culture Medium, GibcoTM Life Technologies, Waltham, MA, USA) containing 10% FBS (Fetal Bovine Serum, GibcoTM Life Technologies,

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Waltham, MA, USA), 1% penicillin/streptomycin (GibcoTM Life Technologies, Waltham, MA, USA), and 1% L-glutamine (GibcoTM Life Technologies, California, USA) (Altun ZS, 2010). SH-SY5Y cells were maintained in DMEM with high glucose (GibcoTM Life Technologies, Waltham, MA, USA) containing 10% FBS (Fetal Bovine Serum, GibcoTM Life Technologies, Waltham, MA, USA), 1% penicillin/streptomycin (GibcoTM Life Technologies, Waltham, MA, USA), and 1% L-glutamine (GibcoTM Life Technologies, California, USA). The cells were incubated at 37°C and 5% CO_2 humidified conditions. The medium of the cells was freshened 3 times weekly. When cultures reach 80-90% congfluency, they were passaged with using trypsin/EDTA (Capricorn Scientific GmbH, TRY-1R10, Ebsdorfergrund, Germany) solution in 1:3 ratios. All reagents were freshly prepared with mediums before all experiments.

Detection of Cell Viability

The cells were treated with different concentrations of OLE (Oleuropein, Sigma-Aldrich, Germany) (50-800 uM) and CDDP (Cisplatin, Koçak Farma, Turkey) (50– 1000 µM) for 24, 48, and 72 hours [4,5]. Following the incubation periods, WST-1 assay was performed by adding 10 µL of WST reagent (Sigma-Aldrich, Germany) to each well. Then cells were incubated at 37 °C for 1 hour. After incubation periods, the absorbances of the cells was measured by ELISA reader (450nm-630nm wavelengths). The half-maximal inhibitory or lethal concentrations (IC50 or LD50) of the agents were calculated according to control cells viability.

Detection of Apoptotic Cells

Apoptotic cell death was determined using annexin-V-fluorescein isothiocyanate (FITC)/Propidium Iodide kit (FITC Annexin V Apoptosis Detection Kit, BD Pharmingen, U.S.A.). The principle of the method is based on of the extent apoptosis determination using flow cytometry of cells stained with annexin-V-FITC and PI, a non-vital dye. Neuroblastoma cells were incubated for 24 hours in the presence of OLE, CDDP and OLE-CDDP combinations. OLE was used at 500 µM, CDDP was used at 50 µM and combination of 500 µM OLE and 50 µM CDDP from cell viability experiments. Analyses were carried out using a flow cytometer (BD Accuri, C6, U.S.A) at 488 nm excitation and 530 nm emission wavelengths for annexin-V and 488 nm excitation and 647 nm emission wavelengths for PI. The results evaluated with using the BD Accuri C6 Software (BD Biosciences).

Statistical Analysis

All statistical analyses were performed using "IBM SPSS Statistics Version 22.00 program, and a p value of <0.05 was considered as significant. Non-parametric Kruskal Wallis test followed by Mann Whitney U test for comparing two groups was performed.

Results

In KELLY MYC-N amplified human neuroblastoma cells, the cell viability decreased at a rate of 77%, 65% and 67% with the treatment of 500μM OLE, 50μM CDDP and OLE-CDDP combinations (50μM CDDP-500uM OLE) respectively, after 24 hours of incubation. Cisplatin inhibited 50% cell viability at 50μM doses, while 500μM OLE inhibited 70% cell viability in KELLY cells after 48 hours of incubation. Also, at the 48 hours incubation, cell viability decreased to a rate of 60% with the treatment of combination (50μM CDDP-500μMOLE) in the KELLY cells. At the 72 hours the cell viability decreased at a rate of 55%, 39% and %40 with the treatment of 500 μM OLE, 50μM CDDP and combinations (50μM CDDP-500uM OLE) respectively, (p<0.05).

In SH-SY5Y MYC-N non-amplified human neuroblastoma cells, the cell viability decreased at a rate of 80%, 65% and 78% with the treatment of 500μM OLE, 50μM CDDP and combinations (50μM CDDP-500uM OLE) respectively, after 24 hours of incubation. At 24 h incubation, no statistically significant cell death was observed in SH-SY5Y cells by treatment of 500μM OLE. At the 48 hours the cell viability decreased at a rate of 74%, 59% and %69 with the treatment of 500μM OLE, 50μM CDDP and combinations (50μM CDDP-500uM OLE), respectively. The cell viability decreased at a rate of 63%, 48% and 57% with the treatment of 500μM OLE, 50μM CDDP and combinations (50μM CDDP-500uM OLE) respectively, after 72 hours of incubation in SH-SY5Y cells (p<0.05)

In PSI cells, the cell viability decreased at a rate of 88%, 60% and 65% with the treatment of 500μM OLE, 50μM CDDP and combinations (50μM CDDP-500uM OLE) respectively, after 24 hours of incubation. At the 48 hours the cell viability decreased at a rate of 83%, 53% and 69% with the treatment of 500μM OLE, 50μM CDDP and combinations (50μM CDDP-500uM OLE), respectively. In PSI cells, 72 hours OLE incubations showed statistically significant cell death, but not at 24- and 48-hours incubations. At the 72 hours incubation the cell viability

decreased at a rate of 57% and %43 with the treatment of 50μM CDDP and combination of OLE and CDDP (50μM CDDP-500uM OLE) respectively, ($p<0.05$).

As a result of WST-1 experiments, LD50 doses were determined as 50uM for CDDP, 500uM for OLE and 50uM CDDP-500uM OLE for combination, with 72 hours incubations.

In KELLY cells, apoptotic cell death was induced 30% especially with CDDP, while 9% with OLE and 16% with OLE-CDDP, at 24 hours incubations. At 48 hours incubations, CDDP treatment increased 35% apoptosis. OLE-CDDP treatment was only 18% increased apoptotic cell death in KELLY cells at 48 hours. At the 72 hours incubation the apoptosis induced at a rate of 44% with the treatment of 50μM CDDP. Combination of OLE and CDDP (50μM CDDP-500uM OLE) was not showed prominent apoptosis induction in KELLY cells. ($p<0.05$).

In SH-SY5Y cells, CDDP induced apoptotic cell death 49%, 58% and 64% at 24-, 48- and 72-hours incubations. OLE also induced apoptosis at rates of 24%, 37% and 45% with time dependent manner. Apoptotic cell death was induced with OLE-CDDP combinations at 32%, 50% and 68% with 24-, 48- and 72 hours incubations. OLE-CDDP combinations induced apoptotic cell death especially in SH-SY5Y neuroblastoma cells at 72 hours.

In PSI cells, apoptotic cell death was not prominent induced with OLE except 72 hours incubations (35%). CDDP induced apoptosis at rates %38, 55% and 60% in PSI fibroblast cells. OLE-CDDP combination treatments induced apoptotic cell death with rates 47%, 58% and 54% at 24-, 48- and 72- hours incubations.

When viability and apoptosis results were evaluated together, OLE application in fibroblast cells did not change cell viability and apoptosis until 72 hours. In SH-SY5Y N-MYC negative neuroblastoma cells, OLE alone inhibited cell proliferation and increased apoptosis rates more than KELLY cells by time dependent manner. 50μM CDDP-500uM OLE combinations significantly induced apoptotic cell death especially in PSI fibroblast and SH-SY5Y neuroblastoma cells but not in KELLY cells.

Discussion

Neuroblastoma is the second most common solid tumor in childhood cancers and neuroblastoma is needed new anti-tumoral agents. Cisplatin which is the main treatment agent

used in neuroblastoma treatment, has many side effects. Different agents has been tested for inhibition cell proliferation potential in neuroblastoma cells (Altun ZS, 2010; Cecen E, 2014).

Oleuropein is active ingredient derived from olive. There is limited to show bioactivities of OLE studies; antioxidant (De la Puerta et al., 2001), anti-microbial (Bisignano et al., 2009), anti-inflammatory (Visioli et al., 1998), anti-hypertensive effects and neurodegenerative effects have been demonstrated especially *in-vitro*. Furthermore, OLE and cancer-related cell culture studies; osteosarcoma (Morana et al., 2016), melanoma (Samara et al., 2017), mesothelioma (Marchetti et al., 2015), glioblastoma (Tunca et al., 2017), prostate (Acquaviva et al., 2012), thyroid (Bulotta et al., 2012). , 2013) and breast (han et al., 2009) cancer cell proliferation and mostly apoptosis-enhancing effects have been identified. In this study, we demonstrated the effect of OLE and its combination with CDDP in both good and bad prognostic neuroblastoma and healthy fibroblast cells.

OLE is a polyphenolic compound and consume and well tolerated diet compound in Mediterranean region. OLE has been shown to have potential protective roles, such as against metabolic syndrome (Ahamad J, 2019) and hepatic disorders (Lepore SM, 2015). Consistent with our results, apoptotic cell death demonstrated in MCF-7 breast cancer cells at 48 hours incubations with increasing doses of oleuropein (Bayat S, 2019). OLE also downregulated Histone deacetylase 2 (HDAC2) and HDAC3 expressions with 600ug/mL OLE treatment in MCF-7 breast cancer cells. This study results suggesting that OLE has epigenetic effects on breast cancer cells with inducing apoptosis. In osteosarcoma cells, OLE inhibited cell proliferation and migration (Przychodzen P, 2019). In that study, chemotherapeutic agent, 2-methoxyestradiol (2-ME), when combined with OLE, showed synergistic anti-cancer effect on metastatic osteosarcoma cells. In another study, Ole and hydroxytyrosol of olive biophenols, mainly inhibited proliferation of pancreatic cancer cells and induced apoptosis (Goldsmith CD, 2018).

Our study results suggested OLE and combination with CDDP has a more prominent effects on cancer cells. In HepG2 hepatocellular cancer cells, OLE and CDDP combinations has been demonstrated that induced antitumor activity.

In HepG2 hepatocellular cancer cells, OLE and CDDP combinations has been induced antitumor activity (Sherif IO, 2018).

Oleuropein potentiates anti-tumor activity of cisplatin against HepG2 through affecting proNGF/NGF balance

One of the derivatives of olive oil, Oleacein, also has been showed the increased apoptosis in SH-SY5Y human neuroblastoma cells like our study results (Cirmi S, 2020). They suggested that Bcl-2 and STAT3 inhibition has been caused apoptotic induction by Oleacein. Moreover, oleacein inhibited migration of neuroblastoma cells.

Seçmen et al. showed that oleuropein caused decrease expression of CylinD1, CylinD2, CyclinD3, CDK4, CDK6 and upregulation of p53 and CDKN2A, CDKN2B, CDKN1A gene expressions with different doss of OLE in SH-SY5Y cell line. Our results are in accordance with this study and we concluded that oleuropein treatment induced apoptotic cell death in neuroblastoma cells.

In the light of the findings of this study, it was found that oleuropein caused apoptotic cell death in especially good prognostic N-MYC negative neuroblastoma cells, when compared to prognostic N-MYC positive KELLY cells. Moreover, healthy fibroblast cells affected with oleuropein when the incubation times extended. Combined of OLE-CDDP showed synergetic effect to induce apoptosis in both in good prognostic and bad prognostic neuroblastoma cells. However, OLE-CDDP combinations also induced apoptosis in heathy cells. CDDP is the still main therapeutic agent for neuroblastoma therapy. Therefore, anti-tumoral effects of oleuropein and cisplatin in neuroblastoma should be evaluated by in-vivo neuroblastoma animal tumor model.

The results of this study showed that OLE did not significantly change cell viability of PSI in a time dependent, compared with control. But it slightly induced apoptosis in 48h so it showed that it might be a minor side effect. Combination applied of OLE and CDDP decreased the cell viability in PSI in time depending on. It has been showed that OLE prevents amyloid deposition and its protective effects in endothelial progenitor cells (Rigacci et al., 2015; Parzonko et al., 2013). Therefore, effect of OLE needs to be assessed its depending on time and dose. We demonstrated that CDDP and combination of CDDP and OLE induced apoptosis in 24 h. In our results are similar with Seçmen et al's results which The effect mechanism of OLE was found to be mediated by inhibition of Bcl2 and increased expression of Bax, caspase 3 and caspase 9, but also by inhibiting cell cycle (Seçme vd., 2016). In another study, it was found that OLE causes autophagic cell death in SH-SY5Y cells by AMPK / mTOR signaling pathway (Rigacci

et al., 2015). In our study, the combination of OLE-CDDP led to apoptosis in all neuroblastoma cells expect of KELLY, which induced apoptosis just in 72h, more than compared OLE alone applied. We showed that CDDP-OLE combination applied induced apoptosis more than CDDP applied. Thus, this result showed that synergic effect of OLE with CDDP. When we compared CDDP and OLE- CDDP groups for KELLY, there was not any differences. Thus, cisplatin is still the main agent for neuroblastoma clinical treatment. OLE, CDDP and combined of OLE-CDDP are the first to date to study about the cell death mechanisms on CHP-134, LAN-5, Kelly and SHSY5Y cells. When OLE evaluated in healthy cells (PSI), it was observed that OLE induced apoptosis while there is no significantly change in neuroblastoma cells. Due to this feature, it is necessary to pay attention. Combined of OLE-CDDP showed synergetic effect to induce apoptosis on CHP-134 cells but it still needs investigate a new *in vivo* study.

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The Effects of Boric acid and DPD in Prostate Cancer Cells

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Purpose: Boron derived molecules have a potential to prevention or treatment of prostate cancer. In this study, the effects of Boric acid (BA) and Disodium Pentaborate Dechydrate (DPD) were compared in metastatic prostate cancer cells.

Methods: Metastatic human prostate cancer cell lines, PC-3 and DU-145, were used in this study. The cells were treated with BA and DPD for 24 hours. Cell viability determined with using WST-1 test. Apoptotic cell death was evaluated with Annexin-V/PI flow cytometricanalysis and caspase-3 expression by immunohistochemical staining. Wound healing assay is used to measure cancer cell migration with BA and DPD.

Results: BA and DPD was inhibited cell viability in both BA (1mM) and DPD (7mM) at 24h. DPD induced higher levels of apoptosis than BA in both prostate cancer cells. Caspase-3 expressions were also higher than BA with DPD in both metastatic prostate cells. Cell migration was inhibited with BA and DPD in both cells. P value <0.05 was considered as statistically significant.

Conclusion: BA and DPD inhibited viability of prostate cancer cells. Apoptotic cell death was induced by DPP with a higher rate of caspase-3 expression than BA treatment. Moreover, BA and DPD inhibited cell migration in both cells. This study results indicated that boron derivates of BA and DPD inducing apoptosis and inhibiting cell migration in metastatic prostate cancer cells.

Key words: Boric acid, Disodium Dentaborate Dechydrate, metastatic prostat cancer, apoptosis

INTRODUCTION

Prostate cancer is the second most important cause of death in malignant tumors in men [1]. Different treatment options have been developed for the various stages of hormone-dependent and/or independent prostate cancer [2]. However, Prostate cancer treatments can seriously affect a

person's quality of life. The anti-proliferative effect of boron derivatives by reducing cancer cell viability suggests that they are a promising new strategy for the treatment of prostate cancer.

Boron is a trace element for organisms. It has a high affinity for oxygen and is found abundant in nature as borate forms, such as boric acid (BA) and borax [3]. It is involved in many physiological and biochemical processes through its antioxidant or anticancer properties [4,5]. Treatment of nude mice injected with androgen-sensitive LNCaP prostate cancer cells with boric acid resulted in reduced tumor growth and inhibition of the enzymatic activity of the prostate-specific antigen [6]. However, Mehmet et al. showed in his study that Disodium Pentaborate Decahydrate (DPD) has a greater potential than boric acid as an inhibitor of cancer cell viability [7].

In this study, it is aimed to investigate the effects of boron derivatives, BA and DPD, on viability and induction of apoptosis on DU-145 and PC-3 metastatic prostate cancer cell lines. Also, the cell migration inhibition with BA and DPD was also determined.

Material and Methods

This study was carried out in Dokuz Eylul University Oncology Institute Basic Oncology Department Laboratories. The cell lines, DU-145 (ATCC) and PC-3 (ATCC), were kindly obtained from Prof. Dr. Kemal Sami Korkmaz, Ege University Faculty of Engineering Bioengineering Department. Boric acid (BA) and Disodium Pentaborate Decahydrate (DPD) were also kindly provided from Prof. Dr. Mehmet Korkmaz, Celal Bayar University. All conditions were tested at least by three times.

DU-145 and PC-3 Prostate Cancer Cell Culture

Cells were grown with using complete media created by adding 1% L-glutamine and 1% penicillin-streptomycin and 10% fetal bovine serum to RPMI-1640 medium at 37°C 5% CO_2 humidified incubator conditions. BA (250μM-1mM) [9] and DPD (7mM) [7] agents were added to the DU-145 and PC-3 cell lines and the cytotoxic effect of the agents was evaluated.

WST-1 Cell Viability Analysis

Cell viability test was performed in accordance with WST-1 kit (Roche) protocol [8].

Apoptotic Cell Death Analysis by Flow Cytometry

In this study, Annexin-V/PI flow cytometric kit (Biovision) was used for the determination of apoptosis. Annexin-V can be labeled with FITC, a fluorescent substance, which can bind to the phosphatidylserine on the outer surface of the cell [10]. Analyses were carried out using a flow cytometer (Accuri, BD)

then evaluated using the BD Accuri C6 Software (BD Biosciences). Cell suspensions were analyzed by counting 20,000 cells per sample.

Caspase-3 Expression Analysis by Immunohistochemical Analysis (IHC)

The grown cells are removed from the flask and taken into lysine slides and spread on the surface by dripping [11]. First it was incubated at 37°C for overnight. 1:200 Dilution of active-caspase 3 antibody (Bioss), Rabbit Host Antibody (Roche) and Ventana Kits (Roche) were used to examine the immunohistochemical analysis of DU-145 and PC-3 prostate cancer cells. All positive cells counted by using light microscope (Olympus, Germany).

Wound Healing Assay for Cell Migration

For each condition and cell line, 3×10^5 cells were added to each well of the 6-well plate for 24 hours. After the cells were confluent, a wound was created between the cells. Then, the cells washed with medium. The cells were treated with BA and DPD. The area of the initial wound was measured and the gap areas were taken the following hours (0 h, 6 h, and 12 h) were recorded and measured by Image-J.

Statistical Analysis

The data are represented as mean ± SEM. All statistical analyses were performed using the SPSS 22.0 software program. Continuous variables were compared with the Mann-Whitney U test. $p < 0.05$ was considered statistically significant.

RESULTS

WST-1 Viability Results

We evaluated viability with disodium pentaborate decahydrate (7mM) and boric acid (0, 250μM, 500μM, 1mM) for DU-145 and PC-3 cells at 24 h incubation (Figure 1). In PC-3 prostate cancer cells, the cell viability decreased at a rate of 57%, and 61% with treatment with DPD (7mM) and BA (1mM) when compared to the control group after 24 h of incubation, respectively (p<0.05; Figure 1). In DU-145 prostate cancer cells, the cell viability decreased at a rate of 50%, and 58% with treatment of DPD (7mM) and BA (1mM), when compared to the control group after 24 h of incubation, respectively (p<0.05; Figure 1).

Apoptotic Cell Death Analysis by Flow Cytometry

Apoptotic cell death was determined by Annexin-V/PI Flow Cytometry analysis after 24 hours incubations of agents. The results obtained from the analysis are given in figure 2. In PC-3 prostate cancer cells, apoptosis increased at a rate of 52.4%, and 21.5% with treatment with DPD (7mM) and BA (1mM) when compared to the control group after 24 h of incubation, respectively (p<0.05; Figure 2). In DU-145 prostate cancer cells, the apoptosis increased at a rate of 52.4%, and 29.3% with treatment with DPD (7mM) and BA (1mM), when compared to the control group after 24 h of incubation, respectively (p<0.05; Figure 2).

Evaluation the Apoptotic Cell death of Caspase-3 Expression

Caspase-3 protein an expression also was determined IHC after 24 hours of treatment of BA and DPD to assessment of apoptotic cell death. The control group was stained with the Caspase-3 antibody of DU-145 and PC-3 prostate cancer cells. As a result of the examinations, 100 cells were counted and anti-caspase3 positive cells, an apoptosis indicator, were counted and 5% positive cells were observed (Figure 3, 4).

DU-145 cells were stained with Caspase-3 antibody after 24 hours of BA and DPD treatments. As a result of the examinations, 100 cells were counted and anti-caspase 3 positive cells indicating apoptosis were 31% and 50% positive with BA and DPD in DU-145 prostate cancer cells (p<0.05, Figure 3, 4).

PC-3 cells were stained with Caspase-3 antibody after 24 hours of BA and DPD treatments. As a result of the examinations, 100 cells were counted and anti-caspase 3 positive cells indicating apoptosis were 38% and 54% positive with BA and DPD in PC-3 cells (p<0.05, Figure 3, 4).

Wound Healing Assay Results for Cancer Cell Migration

3×10^5 cells were cultivated in 6-well plates and incubated for 24 hours. The next day, agents were applied for control. The images taken at the time of agent application (0h), sixth hours (6h) and twelfth hour (12h) are as seen in Figure 5 and Figure 6.

DISCUSSION

Boron derivates have been associated with both preventive and anti-carcinogenic effects in prostate cancer and others [3,5-7]. Epidemiological studies also have been showed that Boron intake could be reduction of prostate cancer development in men [7, 14]. From this information, in this study we compared the two boron derivatives of BA and DPD especially on metastatic prostate cancer cells. Henderson et al., studied the effect of BA with

different (0-250UM) doses in DU-145 cells. They showed that BA induced apoptosis by inducing ER stress in a dose dependent manner [9]. They further indicated that BA applied in the DU-145 cell line had an aging-like effect and reduced the rate of metastasis by inhibiting F-actin activation [9]. Barranco et al. suggested that BA enhances the anti-proliferative effect of chemo-preventative agents, such as selenomethionine and genistein based on their ecologic study's results. They showed that increasing groundwater boron concentration reduces incidence of prostate cancer and mortality [13]. In our study, the effect of BA and DPD on DU-145 and PC-3 metastatic prostate cancer cell lines examined, and in accordance with the literature, 24-hours administration of BA and DPD significantly reduced cell proliferation in both cells [7, 14]. BA and DPD inhibited cell viability almost same ratios in both DU-145 and PC-3 metastatic prostate cancer cells.

Furthermore, this study also evaluated apoptotic cell death by Annexin-V/PI and caspase-3 expression analysis. Apoptotic cell death increased in DU-145 and PC-3 cell lines by BA and DPD treatments at 24-hour. In accordance with these results, it has found that increment in caspase-3 expression in agent-treated groups compared to the control group in both PC-3 and DU-145 prostate cancer cell lines. Our results are correlated with Henderson et al study, in which boron intake was shown to induce apoptosis and ER stress by activating eIF2 alpha/ATF4 pathways in DU-145 prostate cell line [12]. Yamada et al. investigated the eIF2 alpha/ATF4 pathways and BA relationship. They suggested that this relationship depends on increasing these antioxidant response element (ARE) genes; including heme oxygenase-1 (HMOX-1), NAD(P)H dehydrogenase quione-1 (NQO1), and glutamate-cysteine ligase catalytic subunit (GCLC) [14]. One study reported that dietary supplementation with BA would inhibit PSA level and reduce the development and proliferation of prostate carcinomas in an animal model [6]. However, the model of this study does not reflect the advanced stage of prostate cancer.

Korkmaz et al. examined only the effect of DPD on DU-145 prostate cancer cell line with different time points. In accordance with our study, DPD at 7mM showed induction of apoptosis in DU-145 prostate cancer cells [7].

In this study, the effects of BA and DPD in inhibiting cell proliferation, inducing apoptosis and decreasing cell invasion in metastatic DU-145 and PC-3 prostate cancer cell lines has been focused. In

addition, this study showed the apoptotic effects of BA and DPD in metastatic prostate cancer cells through caspase-3 expression. These results suggested that DPD was more effective boron derivative for metastatic prostate cancer therapy.

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Medical Laboratory Technician Training In The Covid-19 Pandemic

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Abstract

Purpose: In this study, it is aimed to evaluate distance education studies in medical laboratory technician education during COVID-19 pandemic.

Method: Descriptive qualitative research method was used.

Results: The rapid transition to distance education has caused some difficulties for students and lecturers who are not ready for this. The prejudices of students and teachers who are accustomed to traditional methods, their lack of technology use, technical infrastructure problems, and the inadequacy of students' working conditions at home are the first problems encountered. With the ease of use brought by technology and the high inclination of young people to technology, these problems have been overcome in a short time, but while the theoretical courses are provided with distance education, the concern of creating content for applications and providing students with some professional skills has come to the fore. At this point, technology-based skills training has come into play and application training has been started in the presence of video images. However, there is not enough course material ready on this subject. For this, laboratories where professional application videos will be prepared and a manpower with technical knowledge are needed.

Conclusion: Distance education, which can be used easily in some fields, may be inadequate in the education of applied sciences such as health. In this context, all components of distance education should be evaluated with a scientific approach, and its functionality should be increased with the contribution of new technologies and systems.

Keywords: COVID-19, distance education, medical laboratory technician education

COVID-19 Pandemisinde Araştırma-Yayın ve Eğitim Süreçlerine Bakış Kongresi, 15-16 Ocak 2021

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INTRODUCTION

The COVID-19 (Coronavirus Disease-19) outbreak, which started in the city of Wuhan in China in December 2019, spread in a very short time and turned into a pandemic that affected the whole world(1,2).The pandemic has brought about different measures and practices, and the daily flow of life has changed worldwide(3) . The most important of these practices were flight bans, lockdowns, working from home, flexible working, isolation and regulations for the preservation of social distance. In this context, schools and universities were also closed, and face-to-face education was suspended (4) . To continue the education interrupted by the pandemic, distance education has been regarded as a solution, and related practices have been initiated (5).

Health Services Vocational High Schools, which provide education and training in the domain of health depending on universities, are 2-year associate degree schools. In these schools, the primary aim of which is to train people with professions, theoretical knowledge must be completed with practical training (6). Students who graduate from the Medical Laboratory Techniques department of these schools perform various analyses in clinical biochemistry, microbiology, pathology, and genetics laboratories. In the two-year education, especially applied lessons are very important in terms of gaining professional competence.

The first application of distance education in the world started in 1728 (7) . In our country, distance education, which started with the practice of learning foreign languages by correspondence in 1953, has become widespread with Anadolu University Faculty of Open Education (7,8). Over time, distance education, which was transferred to the computer environment with the advancement of technology, has now evolved into mobile education, which can be carried out with technological devices such as tablet computers and phones (6) . Distance education, which removes the constraints such as space and time, provides information sharing by reaching a much wider audience than face-to-face education, and at the same time, enables continuous education (9). Communication between students and educators present in different locations is provided via the internet, and students can attend any lesson whenever they want. Furthermore, it is regarded as an advantage that there is no need for buildings and personnel for education, it is more economical, students can access information from their homes, and employees can access it without leaving their workplaces (10). The ability of educational materials to be structured and updated in the electronic environment and students' access to them whenever they want transform distance education into a contemporary learning

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style (11) . Moreover, the distance education system helps students to develop their individual learning abilities (6) .

However, along with all these, distance education brings some disadvantages. While it can be used easily in some domains, it may be insufficient in the education of applied sciences such as health (6) . The campus experience is one of the most important concepts in the education life of university students. The location of campuses and the facilities they provide are among the criteria that affect the choice of a university (9). The disadvantages of distance education are that students stay away from the campus environment and classroom atmosphere, and their socialization is limited. Moreover, the lack of skill development activities and not being able to benefit from applied lessons sufficiently are among the disadvantages (10) .

This study aims to evaluate the Medical Laboratory Technician training of the Health Services Vocational High School during the pandemic period and to reveal the problems and opportunities brought by this process.

METHOD

Descriptive basic research, one of the qualitative research methods, was used in the study.

RESULTS

To prevent the spread of the virus during the COVID-19 pandemic that has affected the whole world, it has emerged as a necessity for schools to suspend face-to-face education and switch to distance education as part of social isolation (12,13) . COVID-19 has not only affected the health and economy at the global level but has also changed the standard practices adopted for years in education, the education model, and the way students and teachers communicate (11). The rapid transition to distance education has caused some difficulties for students and instructors who have not been ready for this. In addition to the fact that many universities do not have the necessary infrastructure to continue distance education, the lack of teachers' distance education experience and the lack of necessary equipment and internet access for students to follow online programs have emerged as important problems (14) .

In order for students to be successful in distance education, the first condition is to have computer and internet usage competencies. In this process, some students reported that they could not follow lessons due to the absence of computer and internet connections, and many students continued their education and learning activities over the phone. The technological

opportunities of students and teachers and the ability to use them have determined the quality of education.

In the study conducted by Karadağ and Yücel on 17939 students studying in 163 universities in Turkey, it was revealed that one-third of students did not have a computer or tablet computer, one-fourth could not continue their education since they did not have internet access or computer/tablet computer, etc.(15)

The first experience of distance education has become chaotic for many students and teachers. Educational materials and visual aids were not designed for distance education since many universities had to move their education to online platforms in just a few days. It can be said that the curricula and syllabi designed for formal education, which can attract the attention of students with the gestures and facial expressions of instructors, cannot be so effective in distance education settings.

The moving of formal education to online platforms quickly has progressed as a difficult process in terms of the adaptation of students who are accustomed to learning by listening to the teacher in the classroom and who have no experience with distance education. After the transition to distance education, the assessment and evaluation process has also emerged as a separate challenge, and exam security, management, justice and ethics issues have become a topic of discussion among teachers and students who are accustomed to traditional paper exam systems (16,17) .

It was observed that the assignments and projects given to measure the achievement of students, the quizzes and tests made were insufficient in evaluating the knowledge that should be gained within the scope of learning objectives, and many students had to be accepted as successful despite their insufficient achievements.

Medical laboratory technician training is an educational process in which theoretical knowledge transfer is integrated with applied laboratory training. The problems of adaptation to a system that students and teachers who are accustomed to traditional methods are not used to, and most importantly, the inability to provide practical training, which is indispensable for health sciences education, have emerged as the biggest problems. In a study conducted by Terzi et al. with students of Tekirdağ Namık Kemal University, Health Services Vocational High School, the students stated that they were satisfied with the uploading of the course contents to the system and supporting them with videos, but the applied training with a team at the health institution was more useful and permanent (6) .

In a study conducted by Keskin et al. with 652 university students, it was detected that the contribution of web-based distance education to practical skills was less than that to theoretical knowledge level(18) . This is an indication that face-to-face education is an important requirement, especially in departments where practical training is predominant. It is very important for students who listen to the theoretical course content to practice one-to-one for professional skill acquisition. Furthermore, it is thought that not practicing may cause students to forget the theoretical knowledge they have obtained quickly (19) .

DISCUSSION

Determining the advantages and disadvantages of distance education applied during the COVID-19 pandemic will be useful in guiding education in possible similar processes that may be experienced in the future. In this process, the problems in the domain of education should be regarded as an opportunity to review and update the education systems (18) .

Although distance education has generally emerged as an unpleasant experience at first with the very rapid transfer of education to online platforms, insufficient technical infrastructure, the inexperience of instructors in distance education, the preparation of educational materials and assessment-evaluation method according to formal education, it is possible to transform difficulties into convenience with quick, flexible, and rational steps and to increase the motivation of students for distance education (17).

Active educators have to change traditional teaching methods to increase students' participation in lessons and learning levels in the distance education system. It is important to organize teaching materials in a way that appeals to the visual and auditory senses and ensures interactivity. It may be useful for instructors to review the content of courses and the amount of information, to prefer the subjects that are especially necessary in the selection of the subject, and to rearrange the teaching time to make distance education more effective (16).

The use of multimedia, scenarios, digital games have a potential place in laboratory-based education. On the other hand, virtual laboratories, remote control laboratories or video-based laboratories are good choices for practical distance education. Simulation tools and virtual reality are used in virtual laboratories. Remote control laboratories allow experiments to be conducted over the internet, while video-based laboratories provide a step-by-step overview of a real laboratory. Thus, students can visualize the laboratory and the whole experimental process through a video (20). In this context, professional development and application

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strategies can be created in schools to improve the digital competencies of teachers (21). It is emphasized that the use of teaching methods in which the student is also active can increase efficiency, especially in practical lessons (18) . Therefore, providing system and computer training to improve students' ability to use the distance education system can be effective in increasing success and motivation (11) .

Along with distance education, many assessment and evaluation methods used in face-to-face education have been disabled. Until the present day, although online education has been experienced directly or indirectly by universities, not much emphasis has been placed on how to perform assessment and evaluation. Instructors should change the types of assessment to fit the online mode. It is quite difficult to find alternative methods to evaluate laboratory applications (22). Studies should be carried out to include not only result-oriented approaches but also process-oriented assessment and evaluation approaches in assessment and evaluation, and alternative assessment and evaluation tools with technological support should be included in the system (5).

Making distance learning an indispensable part of formal learning in the light of all the experiences we have gained during the pandemic seems to be a significant opportunity for today's universities. If universities manage to continue distance learning even after the pandemic, it will help students who do not have the financial means to support their formal education to participate in higher education at lower costs. Moreover, students' access to distance education materials and lessons whenever they want will enable students to improve self-learning skills, which formal education does not encourage.

CONCLUSION

Considering all of these, we must keep in mind the fact that distance learning cannot completely replace formal learning. The most important reason for this is that applied courses cannot be conducted with the same efficiency and some courses can only be taught with practical applications. Combining traditional education and distance education systems (hybrid education) draws attention as an innovative approach for the coming years. In the post-pandemic period, in addition to face-to-face lessons, teaching some lessons determined through distance education will become a significant opportunity to contribute to the keeping of distance education programs up-to-date, as well as transfer the course materials to the digital environment and develop the skills of teachers and students in using distance education

platforms. In this context, all components of distance education should be evaluated with a scientific approach, and its functionality should be increased with the contribution of new technologies and systems.

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