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The Relationship Between Personal Protection Behaviors and Fear Levels of Healthcare Professionals Who Had Covid-19 Vaccine

Seda Tugba BAYKARA MAT[1], *Çisem BAŞTARCAN*[2], *Okan Anıl AYDIN*[3], *Kadir ÇALIŞKAN*[4]

Corresponding Author

Seda Tugba BAYKARA MAT

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ABSTRACT

It is known that the use of personal protective equipment is effective in preventing the spread of COVID-19. The purpose of this study is to reveal the relationship between personal protection behaviors and fear levels of healthcare professionals who are vaccinated against COVID-19. This descriptive and correlational study was carried out between February and April 2021 using an online questionnaire with 103 healthcare professionals who were actively involved in the COVID-19 pandemic period in a hospital in Istanbul. The data were obtained using a "Participant Information Form" consisting of 19 items and the "Fear of COVID-19 Scale". The mean Fear of COVID-19 Scale score of the participants was 17.82±6.29 (min=7, max=33), and they had a moderate fear of COVID-19. No relationship was found between the use of gloves, masks, and disposable gowns by the participants before they had been vaccinated and their levels of fear of COVID-19. It was demonstrated that the vaccine had no effect on fear of COVID-19 and personal protective behaviors.

[1] PhD, Beykent Universty, School of Health Science, Department of Nursing, Istanbul, TURKEY, e-mail: matsedatugba@gmail.com, ORCID ID: 0000-0002-3253-0597

[2] PhD student, Specialization Area; Gynecology and Diseases Nursing Beykent Universty, School of Health Science, Department of Nursing, Istanbul, TURKEY, cisembastarcan@beykent.edu.tr

[3] PhD student, Specialization Area; Healthcare Management Beykent Universty, School of Health Science, Department of Nursing, Istanbul, TURKEY, E-posta adresi: okananilaydin@gmail.com

[4] Specialization Area; intensive care nurse in Beylikduzu State Hospital, kadircaliskan942@gmail.com

INTRODUCTION

The COVID-19 pandemic has created political, economic, and psychosocial effects all over the world, as well as many unknowns (Cascella et al., 2020). The high transmission potential of the disease, rapid increase in the number of infected people, high mortality rates, lack of knowledge about virus protection methods, and lack of an effective treatment affected the social lives and mental health of individuals adversely and created an atmosphere of fear (Ahorsu et al., 2020). Additionally, often unevidenced information that is easily accessible via the internet increased negative emotional reactions in society. It was reported that there were suicide attempts due to the anxiety experienced, and one person died in Bangladesh (Mamun, 2020).

It is known that measures are taken to reduce the psychological and physiological impact of the pandemic all over the world, including Turkey (Cascella et al., 2020). Accordingly, infection control algorithms for the care of patients diagnosed with COVID-19 were developed and put into practice to protect healthcare professionals, who are the highest-risk group in terms of transmission, and prevent the spread of the virus (Ornell et al., 2020). It is known that these algorithms include procedures related to wearing personal protective equipment, hand hygiene, cleaning the patient's room, patient and posthumous care (Celik et al., 2020). As another protection factor, vaccine studies gained momentum, and due to the pandemic, phase III studies were completed within months, and vaccines that are reliable, have good immunogenicity, and have high efficacy in preventing COVID-19 infection were produced and started to be applied by giving priority to healthcare professionals with emergency use authorization. Nevertheless, studies on how effective vaccines that are approved for usage will be in preventing infection are going on (Kaya, 2021).

The World Health Organization (WHO) continues to warn that the vaccine may not be sufficient to protect against the virus causing COVID-19 (SARS-CoV-2), and the usage of protective equipment is vital (WHO, 2021). It was reported that if the vaccine prompts health workers and society to ease their protective behavior, new waves of infections may emerge as vaccines may become less effective against future variants of the virus (Mahase, 2021). In this context, the post-vaccine protective equipment usage status of healthcare professionals who take an active role in the protection and preservation of public health is seen as an important data source. It is foreseen that a safer work environment can be created by using these data in the warnings and regulations to be made in the hospital environment.

METHODS

In this study, it was aimed to reveal the relationship between personal protection behaviors and fear levels of healthcare professionals vaccinated against COVID-19 who care for patients diagnosed with COVID-19.

The study was carried out between February and April 2021 in a foundation university (non-profit private university in Turkey) hospital operating on the European side of Istanbul in Turkey.

The population of the study consisted of 155 hospital employees, 49 doctors, 77 nurses, 14 patient care personnel, and 15 cleaning staff working in the aforementioned hospital and actively involved in the care of patients diagnosed with COVID-19. Within the scope of the study, it was aimed to reach the entire population without sampling, and data were obtained from 130 participants. Because of missing information in 27 of the collected data forms, 103 forms were deemed suitable for analysis (Coskun et al., 2017).

The "Google Forms" system was used as a data collection tool in the study, and the data were collected online.

In the first stage of the study, 19 questions consisting of statements about the sociodemographic characteristics of the participants and statements about the pandemic period were included. In the second part of the study, the Fear of COVID-19 Scale, which was developed by Ahorsu et al. (2020) and adapted into Turkish by Satici et al. (2020), was used. All 7 items of the scale are collected under one dimension and scored positively, and there is no inversely scored item. The Fear of COVID-19 Scale is a 5-point Likert-type scale in which each item is scored in the range of 1-5 (1- Strongly disagree…5-Strongly agree). The lowest and highest scores in the scale are 7 and 35, and a higher score indicates that a higher level of fear of COVID-19.

In the analysis of the obtained data, the SPSS 25.0 package program was used. The Kolmogorov-Smirnov test results of the data are given in Table 1. According to these results, it was concluded that the data did not show normal distribution. In the analysis of the data, in addition to non-parametric analyses, descriptive statistical methods (mean, standard deviation, frequency, percentage), Spearman's Correlation, Mann-Whitney U (MWU), and Kruskal-Wallis H (KWH) tests were used. The results were evaluated within a 95% confidence interval.

Table 1. Normality Test Results for Variables

Variables	Kolmogorov-Smirnov		
	Statistic	df	p
Before Vaccination			
Gloves	.328	103	.000
Surgical Mask	.324	103	.000
N95/FFP2 Mask	.283	103	.000
Face Shields or Goggles/Safety Goggles	.264	103	.000
Disposable Gowns/Overalls	.290	103	.000
After Vaccination			
Gloves	.290	103	.000
Surgical Mask	.338	103	.000
N95/FFP2 Mask	.260	103	.000
Face Shields or Goggles/Safety Goggles	.242	103	.000
Disposable Gowns/Overalls	.259	103	.000
Fear of COVID-19 Scale	.071	103	.200

Validity and Reliability Analysis

In the study, first, the Cronbach's Alpha internal consistency coefficient was used to test the reliability of the data obtained from 103 healthcare professionals who filled out the "Fear of COVID-19 Scale". This coefficient takes values between 0 and 1 (Karagöz, 2014). The Cronbach's Alpha value of the scale was found to be 0.865, and the scale was found to be reliable for the analyses in this study. Confirmatory factor analysis (CFA) was performed to analyze the validity of the scale.

CFA was used to examine the model fit of the scale. To perform the CFA, the dataset coded in SPSS was transferred to the AMOS 20 program. The goodness-of-fit indices of the prepared model were examined. As a result of the analysis, it was determined that the data set had the desired fit values as shown in Figure 1. Accordingly, the fit indices for the Fear of COVID-19 Fear Scale were determined as Chi-squared= 25.523, Degrees of Freedom (df=6, p=0.000), χ^2/df=4.69, Root Mean Square Error of Approximation (RMSEA)=0.019, Comparative Fit Index (CFI)=0.952, and Goodness of Fit Index (GFI)=0.940. As a result, these fit indices revealed that the model had an acceptable fit (Karagöz, 2016).

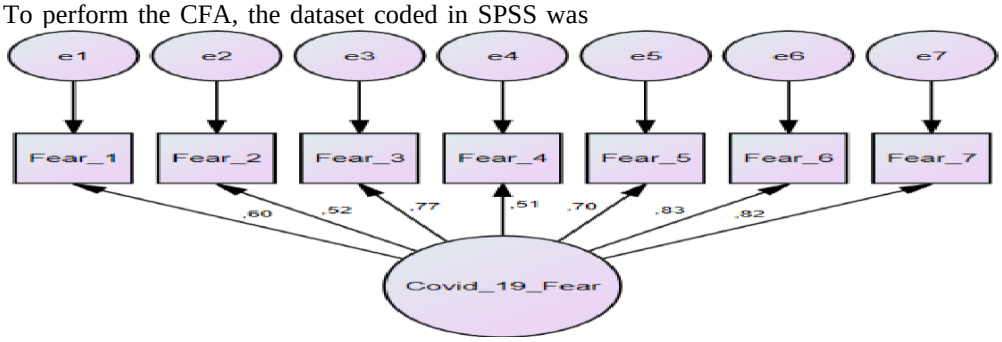

Figure 1. Confirmatory Factor Analysis Output of the Model for the Fear of COVID-19 Scale

Hypothesis

H_1: There is a statistically significant relationship between the personal protection behaviors of healthcare professionals who have been vaccinated against COVID-19 and their COVID-19 fear levels.

H_0: There is no statistically significant relationship between the personal protection behaviors of healthcare professionals who have been vaccinated against COVID-19 and their COVID-19 fear levels.

Ethical Aspect of the Study

Ethics committee approval (11) and necessary permissions from the institution where the research would be conducted were obtained for this study. The informed consent form was included in the first part of the online data collection form, the participants were informed about the study, and their consent was obtained.

Limitations

The results of this study are limited to the statements of the healthcare professionals working in the hospital

affiliated to the foundation university where the study was conducted and the period of data collection.

RESULTS

Table 2 shows the descriptive results regarding the participants. While 79 (76.7%) of the participants were women, 54 (52.4%) were single, 63 (61.2%) were nurses, 55 (55.4%) worked in the service, 62 (60.2%) had no children, 73 (70.9%) had no chronic disease, and 61 (59.2%) had medium economic status. The mean age of the participants was 29.

Table 2. Demographic Characteristics of Participants (n=103)

		N	%
Gender	Female	79	76.7
	Male	24	23.3
Marital Status	Married	49	47.6
	Single	54	52.4
Profession	Doctor	30	29.1
	Nurse	63	61.2
	Other Healthcare Staff	10	9.7
Work Area	Intensive care	48	46.6
	Work in the clinic	55	53.4
Status of Having a Child	Has children	41	39.8
	Has no children	62	60.2
Chronic Disease Status	Has a chronic disease	30	29.1
	Has no chronic disease	73	70.9

Among the factors affecting the participants' decisions to get vaccinated, the expression "Belief in the necessity of the vaccine" had the highest effect as 41.7%, while the expression "Not believing that the vaccine would be protective" had the lowest effect as 6.8%.

According to the results of the analyses on the protective equipment usage of the participants before and after vaccination, after vaccination, the usage rate of surgical masks increased by 0.07 points, the usage rate of N95/FFP2 masks increased by 0.04 points, the usage rate of face shields or goggles/safety goggles decreased by 0.05 points, while there was no significant change in the usage of gloves and disposable gowns/overalls (Table 3).

Table 3. Mean Scores of Usage of Protective Equipment Before and After Vaccination

Equipment	Before Vaccination		After Vaccination	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Glove	3.96	.121	3.99	.123
Surgical Mask	4.02	.105	4.09	.106
N95/FFP2 Mask	3.92	.117	3.96	.123
Face Shields or Goggles/Safety Goggles	3.75	.127	3.70	.139
Disposable Gowns/Overalls	3.86	.124	3.84	.139

As seen in Table 4, the mean Fear of COVID-19 Scale score of the participants was 17.82±6.29 (min=7, max=33), and they had a moderate level of fear of COVID-19.

Table 4. Fear of COVID-19 Scale Scores

	$\bar{X}$±S.D.	Min-Max
Fear of COVID-19	17.82±6.29	7-33

Table 5 presents the usage frequencies of protective equipment among the participants before and after their vaccination against COVID-19 according to the results of the correlation analysis that was conducted to examine whether there was a relationship between the Fear of COVID-19 Scale scores of the participants and their usage of protective equipment.

Table 5. The Relationship between Fear of COVID-19 and Usage of Protective Equipment before and after Vaccination

Equipment	COVID-19 Fear Scale			
	Before Vaccination		After Vaccination	
	r	p	r	p
Glove	0.188	.057	0.190	.054
Surgical Mask	0.191	.053	0.193	.051
N95/FFP2 Mask	0.189	.056	0.105	.289
Face Shields or Goggles/Safety Goggles	0.186	.056	0.094	.347
Disposable Gowns/Overalls	**0.221**	**.025**	0.102	.306

According to the results of the analysis, the vaccination statuses of the participants did not have a significant effect on their levels of fear of COVID-19 or their use of protective equipment. In light of these findings, the H0 hypothesis was not rejected.

Table 6 shows the results of the comparison of the COVID-19 fears of the participants based on their sociodemographic data. Mann-Whitney U (MWU) test was conducted to compare two groups, while Kruskal-Wallis H (KWH) analysis was applied in more than two groups. According to the results of these analyses, statistically significant differences were found in the COVID-19 fear levels of the participants based on their gender (p=0.000) and economic status (p=0.035). It was seen that the female participants had a higher median COVID-19 fear score than the male participants, whereas the participants with a medium level of income had a higher median score than those with low income.

Table 6. Analysis of Differences in COVID-19 Fear Scores Based on Sociodemographical Characteristics of Participants

COVID-19 Fear		N	Median	MWU / KWH	p
Gender	Female	79	57.80	490.000	**0.000**
	Male	24	32.92		
Marital Status	Married	49	51.56	1301.500	0.887
	Single	54	52.40		
Profession	Doctor	30	50.32	1.582	0.453
	Nurse	63	54.37		
	Other Health Staff	10	42.15		
Work Area	Intensive care	48	52.75	1284.000	0.812
	Work in the clinic	55	51.35		
Status of Having a Child	Has children	41	50.94	1227.500	0.769
	Has no children	62	52.70		
Chronic Disease Status	Has a chronic disease	30	49.07	1007.000	0.522
	Has no chronic disease	73	53.21		
Economic Status	Low	29	40.14	6.718	**0.035**
	Medium	61	57.57		
	High	13	52.31		

No statistically significant relationship was found between the Fear of COVID-19 Scale scores of the participants and their marital status, work area, status of having children, chronic disease status, or occupation (p>0.05).

DISCUSSION

The existence vaccine hesitancy is a globally known phenomenon. The recommendations of health professionals on vaccination are expressed as one of the strongest factors affecting the decision-making process of society (Koruk et al., 2014). As a result of a systematic review of studies investigating vaccine-related factors, it was revealed that physicians have a more positive attitude towards vaccines than nurses (Bish et al., 2011). On the other hand, in a study conducted in Malta within the scope of influenza vaccination, the positive attitude rates of nurses were found to be higher than those of physicians (Fournet et al., 2018). In this study it was seen that the nurses had a higher mean Fear of COVID-19 Scale score than the

doctors and other healthcare professionals, while the participants who reported their economic status as medium had a higher mean score than those with low income. It has been emphasized in the literature that increasing age and income level raise the acceptance of COVID-19 vaccination (Yoda & Katsuyama, 2021; Reiter et al., 2020; Lazarus et al., 2020; Zhang et al., 2021).

In this study, which was carried out among healthcare professionals who were vaccinated, considering the factors affecting the participants' decisions to be vaccinated, it could be concluded that healthcare professionals were vaccinated because they believed in the necessity of the vaccine, but they were unsure about its protective efficacy. A study conducted on COVID-19 vaccines showed that healthcare professionals think the vaccine is safe (Kurtulmus & Can, 2021). In a study that was carried out to determine the views of healthcare professionals working in a university hospital on the COVID-19 vaccine, 74.9% of the participants stated their thought that the COVID-19 vaccine would have an effect on reducing the incidence of the disease (Kurtulmus & Can, 2021). The results of this study supported the results of similar studies in the literature (Daly & Robinson, 2020; Dodd et al., 2020).

Healthcare professionals are at high risk in their workplace due to their exposure to the hospital environment or biological samples during patient care. In this context, they are expected to worry about getting infected and infecting their family members. Studies conducted during the pandemic period showed that nurses have more anxiety and depression than doctors (Zhang et al., 2020; Spoorth et al., 2020). In this study, it was seen that the fear of COVID-19 in the participants was moderate. It is seen in the literature that in the COVID-19 pandemic, healthcare professionals are negatively affected not only by the unknowns about the virus and the disease but also by anxiety, burnout, fear, depression, job satisfaction, and relevant factors accompanying uncontrollable situations. In a study conducted in Pakistan, it was revealed that doctors, female doctors, and those in the older age group with severe fear of COVID-19 had significantly higher workplace panic anxiety and workplace avoidance behavior (Malik et al., 2021). In a study conducted in China, it was reported that more than 85% of the healthcare professionals who participated in the survey were afraid of being infected with the virus, and 89.7% of them followed the right practices regarding COVID-19 (Coelho et al., 2020).

In a study that aimed to reveal the knowledge, attitudes, and behaviors of healthcare professionals working at the Ege University Medical Faculty Hospital about COVID-19 and prevention measures, it was found that the protective behaviors of women and older professionals were more positive (Ahmet & Mandıracıoğlu). It was determined that the knowledge, attitude, and behavior scores of the healthcare professionals participating in the study about COVID-19 were related to their gender. As in similar studies in the literature, women were found to have more positive behaviors in our study (Tsiga-Ahmed et al., 2021; Yang et al., 2021). In a study that did not aim to determine the acceptability of the COVID-19 vaccine among healthcare professionals and the factors affecting their willingness to accept the vaccine, it was stated that, unlike this study, men were more willing to be vaccinated than women (Qattan et al., 2021; Nzaji et al., 2020; Wang et al., 2020; Detoc et al., 2020).

According to the information in the literature, the inadequate usage of protective equipment is a risk factor. In various studies conducted during the COVID-19 pandemic period, it was found that the inappropriate usage of PPE increased the probability of infection among healthcare professionals 2.8-fold, while the usage of appropriate PPE was found to be sufficient to prevent infection among healthcare professionals (Jaffe et al., 2020). In a qualitative study conducted to understand the fears and concerns of healthcare professionals about PPE, the authors identified the depletion of personal protective equipment as an important source of concern (Jaffe et al., 2020). Nonetheless, studies have revealed the necessity of continuing to comply with the usage of PPE, social distancing, and hygiene rules after vaccination, and it was stated that since the effectiveness of existing vaccines against new variants may be low, the easing of personal protective behaviors will negatively affect efforts to end the pandemic (Kwon et al., 2021; Mahase, 2021). On the other hand, it is known that in 2021, the Centers for Disease Control and Prevention (CDC) announced that fully vaccinated people do not need to follow mask and distancing rules in indoor meetings (CDC, 2021).

In line with the data obtained in this study, it was concluded that being vaccinated had no effect on the use of N95/FFP2 masks and disposable gowns/overalls. On the other hand, in a study conducted among university students in China, it was stated that students wore masks 22% less frequently in public and indoor environments after vaccination and reduced the frequency of their personal protective behaviors (Zhang et al., 2021).

CONCLUSION

In light of the findings, it may be stated that being vaccinated has no effect on fears of COVID-19 or the use of personal protective equipment. During the COVID-19 pandemic, it is necessary to provide personal protective equipment that is adequate, easily accessible, and suitable for the body structure of the employee, ongoing training on how to use these pieces of equipment and their effectiveness levels, as well as evaluations regarding the level of compliance of employees. In this context, it is of great importance to regulate working conditions in a way that ensures occupational health and safety. It may be recommended to provide psychological support to healthcare professionals in coping with fear and anxiety. Studies can be planned to evaluate potential pandemic fatigue by conducting the physiological and psychological follow-ups of healthcare professionals and families related to the subject.

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REFERENCES

1. Dinç, A, & Mandıracıoğlu, A.(2021). Evaluation of knowledge, attitudes and behaviors of Ege University medical faculty hospital staff about covid-19 and protective measures. Aegean Journal of Medical Sciences, 4(2), 42-51. DOI: 10.33713/egetbd.929984
2. Ahorsu, D. K., Lin, C. Y., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2020). The fear of COVID-19 scale: development and initial validation. *International journal of mental health and addiction*, 1-9. https://doi/10.1007/s11469-020-00270-8
3. Bish A, Yardley L, Nicoll A, Michie S. Factors associated with uptake of vaccination against pandemic influenza: A systematic review. Vaccine. 2011;29(38);6472-84.
4. Cascella M, Rajnik M, Aleem A, Dulebohn SC, Di Napoli R. Features, Evaluation, and Treatment of Coronavirus (COVID-19). 2021 Sep 2. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan–. PMID: 32150360.
5. Celik, S. S., Ozbas, A. A., Celik, B., Karahan, A., Bulut, H., Koc, G., ... & Ozlenen, C. O. (2020). The COVID-19 Pandemic: Turkish Nurses Association/COVID-19 Pandemic Process: Turkish Nurses Association. Journal of Education and Research in Nursing, KARE Publishing, İstanbul, Turkey.
6. Center of Disase and Prevention (CDC) (2021). Interim public health recommendations for fully vaccinated people. Available from: https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated-guidance.html (2021), Accessed 1st Jul 2021 accessed
7. Coelho, C. M., Suttiwan, P., Arato, N., & Zsido, A. N. (2020). On the nature of fear and anxiety triggered by COVID-19. Frontiers in Psychology, 11, 3109. https://doi.org/10.3389/fpsyg.2020.581314
8. Daly, M., & Robinson, E. (2020). Willingness to vaccinate against COVID-19 in the US: Longitudinal evidence from a nationally representative sample of adults from April-October 2020. *medRxiv*.
9. Detoc, M., Bruel, S., Frappe, P., Tardy, B., Botelho-Nevers, E., & Gagneux-Brunon, A. (2020). Intention to participate in a COVID-19 vaccine clinical trial and to get vaccinated against COVID-19 in France during the pandemic. *Vaccine*, *38*(45), 7002-7006. https://doi/10.1016/j.vaccine.2020.09.041
10. Dodd, R. H., Cvejic, E., Bonner, C., Pickles, K., McCaffery, K. J., Ayre, J., ... & Nickel, B. (2021). Willingness to vaccinate against COVID-19 in Australia. *The Lancet Infectious Diseases*, *21*(3), 318-319. https://doi/10.1016/S1473-3099(20)30559-4
11. Fournet, N., Mollema, L., Ruijs, W. L., Harmsen, I. A., Keck, F., Durand, J. Y., ... & van Steenbergen, J. E. (2018). Under-vaccinated groups in Europe and their beliefs, attitudes and reasons for non-vaccination; two systematic reviews. *BMC public health*, *18*(1), 1-17. https://doi/10.1186/s12889-018-5103-8
12. Jaffe, E., Strugo, R., Bin, E., Blustein, O., Rosenblat, I., Alpert, E. A., & Sonkin, R. (2020). The role of emergency medical services in containing COVID-19. *The American journal of emergency medicine*, *38*(7), 1526-1527. https://doi/10.1016/j.ajem.2020.04.023
13. Karagöz, Y. (2016). *SPSS 23 ve AMOS 23 Uygulamalı İstatistiksel Analizler.* Nobel Akademik Yayıncılık.
14. Kaya, O. (2021). Covid19 vaccines. *Med J SDU*, (Special issue-1),31-35. https://doi/10.17343/sdutfd.9050593
15. Koruk, I., Tekin Koruk, S., Tuncer, K., Demir, C., Kara, B., & Seyhanoglu, A. S. (2014). The immunization level of healthcare workers against occupational infectious diseases in Şanlıurfa. *Klimik*, *27*(2), 48-56. https://doi/10.5152/kd.2014.13
16. Kurtuluş, Ş., & Can, R. (2021). What Do Health Care Professionals Think About Covid-19 Vaccine Applications: A University Example. *Harran Üniversitesi Tıp Fakültesi Dergisi*, *18*(1), 29-34. https://doi.org/10.35440/hutfd.908043
17. Kwon, S., Joshi, A. D., Lo, C. H., Drew, D. A., Nguyen, L. H., Guo, C. G., ... & Chan, A. T. (2021). Association of social distancing and face mask use with risk of COVID-19. *Nature Communications*, *12*(1), 1-10. https://doi/10.1101/2020.11.11.20229500
18. Lazarus, J. V., Ratzan, S. C., Palayew, A., Gostin, L. O., Larson, H. J., Rabin, K., ... & El-Mohandes, A. (2021). A global survey of potential acceptance of a COVID-19 vaccine. *Nature medicine*, *27*(2), 225-228. https://doi/10.1038/s41591-020-1124-9
19. Mahase, E. (2021). Delta variant: What is happening with transmission, hospital admissions, and restrictions?. *BMJ (Clinical Research ed.)*, *373*, n1513-n1513. https://doi/10.1136/bmj.n1513.
20. Malik, S., Ullah, I., Irfan, M., Ahorsu, D. K., Lin, C. Y., Pakpour, A. H., ... & Minhas, R. (2021). Fear of COVID-19 and workplace phobia among Pakistani doctors: A survey study. *BMC Public Health*, *21*(1), 1-9. https://doi.org/10.1186/s12889-021-10873-y
21. Mamun, M. A., & Griffiths, M. D. (2020). First COVID-19 suicide case in Bangladesh due to fear of COVID-19 and xenophobia: Possible suicide prevention strategies. Asian

journal of psychiatry, 51, 102073. https://doi/10.1016/j.ajp.2020.102073.

22. Nzaji, M. K., Ngombe, L. K., Mwamba, G. N., Ndala, D. B. B., Miema, J. M., Lungoyo, C. L., ... & Musenga, E. M. (2020). Acceptability of vaccination against COVID-19 among healthcare workers in the Democratic Republic of the Congo. *Pragmatic and observational research*, *11*, 103-109. https://doi/10.2147/POR.S271096
23. Ornell F, Schuch JB, Sordi AO, Kessler FH (2020) "Pandemic fear" and COVID-19: Mental health burden and strategies. Braz J Psychiatry 42: 232-235. https://doi/10.1590/1516-4446-2020-0008.
24. Qattan, A., Alshareef, N., Alsharqi, O., Al Rahahleh, N., Chirwa, G. C., & Al-Hanawi, M. K. (2021). Acceptability of a COVID-19 vaccine among healthcare workers in the Kingdom of Saudi Arabia. Frontiers in Medicine, 8, 83. https://doi.org/10.3389/fmed.2021.644300
25. Reiter, P. L., Pennell, M. L., & Katz, M. L. (2020). Acceptability of a COVID-19 vaccine among adults in the United States: How many people would get vaccinated?. *Vaccine*, *38*(42), 6500-6507. https://doi.org/10.1016/j.vaccine.2020.08.043
26. Satici, B., Gocet-Tekin, E., Deniz, M. E., & Satici, S. A. (2020). Adaptation of the Fear of COVID-19 Scale: Its association with psychological distress and life satisfaction in Turkey. *International Journal of Mental Health and Addiction*, 1-9. https://doi.org/10.1007/s11469-020-00294-0
27. Tsiga-Ahmed, F. I., Amole, T. G., Musa, B. M., Nalado, A. M., Agoyi, O. B., Galadanci, H. S., & Salihu, H. M. (2021). COVID 19: Evaluating the Knowledge, Attitude and Preventive Practices of Healthcare Workers in Northern Nigeria. *International Journal of MCH & AIDS*, 88-97. https://doi/10.21106/ijma.418. 33
28. Wang, J., Jing, R., Lai, X., Zhang, H., Lyu, Y., Knoll, M. D., & Fang, H. (2020). Acceptance of COVID-19 Vaccination during the COVID-19 Pandemic in China. *Vaccines*, *8*(3), 482. DOI: 10.3390/vaccines8030482.
29. World Health Organizaston (2021). COVID-19 advice for the public: Getting vaccinated. Available at https://www.who.int/emergencies/diseases/novel-coronavirus-2019/covid-19-vaccines/advice
30. Yang, K., Liu, H., Ma, L., Wang, S., Tian, Y., Zhang, F., ... & Jiang, X. (2021). Knowledge, attitude and practice of residents in the prevention and control of COVID-19: An online questionnaire survey. *Journal of advanced nursing*, *77*(4), 1839-1855. https://doi/10.1111/jan.14718.
31. Yoda, T., & Katsuyama, H. (2021). Willingness to receive COVID-19 vaccination in Japan. *Vaccines*, *9*(1), 48. https://doi.org/10.3390/vaccines9010048
32. Zhang, N., Liu, X., Jin, T., Zhao, P., Miao, D., Lei, H., ... & Li, Y. (2021). Weakening personal protective behavior by Chinese university students after COVID-19 vaccination. *Building and Environment*, 108367-108367. https://doi.org/10.1016/j.buildenv.2021.108367
33. Zhang, W. R., Wang, K., Yin, L., Zhao, W. F., Xue, Q., Peng, M., ... & Wang, H. X. (2020). Mental health and psychosocial problems of medical health workers during the COVID-19 epidemic in China. *Psychotherapy and psychosomatics*, *89*(4), 242-250. https://doi/10.1111/jan.14718

Determination of Awareness Levels of Health Services Vocational School Students about X-Ray Radiation

Arzu ÇOŞKUN[1], Efdal Oktay GÜLTEKİN[2], Tiince AKSAK[3]

Corresponding Author

Arzu ÇOŞKUN

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ABSTRACT

This study was carried out to evaluate the radiation awareness of the students who receive education in various fields in hospitals in the future and to draw attention to this subject. It is very important for the health of the students who will work in the field of radiation to be aware of radiation as it is their profession. At the same time, even if the students of other departments will not be able to work, they will radiation services for diagnosis or treatment at some point in their lives. For this reason, the study was conducted for health care providers and service recipients in the future. It was applied to all associate degree program students at Toros University Health Service Vocational School between November-December 2021. Thus, the difference between the Medical Imaging While there was a significant difference in terms of X-ray knowledge level (t=7,470; p=0.000), awareness (Z=-3.406; p=0.001), awareness of radiation protection (64; p=0.000), there was a statistically significant difference according to age and gender no difference was detected. Techniques for students who receive training on radiation and the students in other programs that are not given information about radiation in the training content have been revealed.

[1] *Vocational School, Medical Services and Techniques, Toros University, Mersin, Turkey arzu.coskun@toros.edu.tr / Orcid Number: htttps://orcid.org/0000-0003-4771-1558*

[2] *PhD, Vocational School, Medical Services and Techniques, Toros University, Mersin, Turkey efdal.gultekin@toros.edu.tr / Orcid Number: https://orcid.org/0000-0002-0962-152X*

[3] *Vocational School, Medical Services and Techniques, Toros University, Mersin, Turkey tiince.aksak@toros.edu.tr / Orcid Number: https://orcid.org/0000-0001-7841-8456*

INTRODUCTION

X-rays were first discovered by the German physicist W. Conrad Roentgen in 1895, and electromagnetic radiation, of which they are a part, has become more and more a part of our lives every year in parallel with technological developments. Electromagnetic radiation has been used mainly in production, agriculture, commerce, and many sectors for diagnosis and treatment in the years after the 1950s, and there has been no research on its harmful effects on living organisms (Bałturkiewicz.,1999). The shortest wavelength in the electromagnetic spectrum, which includes all types of radiation; cosmic rays, γ-gamma, and X-rays, those with larger wavelengths; covers electromagnetic waves ranging from ultraviolet, visible light, infrared, and radio waves at the other end (Mitchel et al.,1999). Radio waves that are in the electromagnetic spectrum and do not cause ionization are visible light, microwaves, infrared light, ultraviolet light. Radiation can be divided into two groups: ionizing radiation and non-ionizing radiation. X and gamma rays are types of ionizing radiation and have harmful effects on human health. Although it has an atom-wide wavelength and causes harmful effects on living tissue, it is frequently used in the diagnosis of many diseases and the treatment of cancerous tissue. It also allowed the development of the radioscopy method by utilizing the fluorescence properties of X-rays and the production of radiography tools known as ranforsators. Ionizing radiation causes biological effects in two ways: stochastic and deterministic effects. These effects depend on the total dose received by the tissues and organs, the dose rate, the width of the area exposed to radiation, the radiation sensitivity, and the type of radiation (Arıkan .,2007, Çelik .,2013).

Low radiation dose in radiology used for diagnostic purposes in medicine causes stochastic effects. Because of the high X-ray energy applied for treatment, deterministic effects may occur. However, the sensitivity of each tissue to radiation is different.

Table 1. Radiation sensitivity classification (Kurtman, 2018)

Radiation Sensitive	Radiation Resistant
Hematological stem cells, Blood-immune cells, Epithelium stem cells, Stem-gamete cells in the reproductive system, Embryo cells Lens Retina	Muscle tissue Nervous tissue Mature bone tissue

The temperature of the organism, the amount of oxygen in the tissues, and the metabolic activities are directly proportional to the sensitivity to radiation. In other words; as the tissue's ability to divide increases, its sensitivity also increases. Accordingly, as given in the table above, the sensitivity of the tissues in the organism changes. At the same time, the amount of dose taken varies according to the type of tests used for diagnostic purposes. As can be seen in the table below, the difference between the dose received in the direct x-ray and the radiation dose in the CT examination is quite high.

Table 2. Dose amounts in some radiological examinations (accessed: March 08, 2022)

Study	**Dose (mSv)**
Whole-body CT	12
Anteroposterior chest X-ray	0,02
Anteroposterior and lateral chest X-ray	0,1
Lung CT	8
Pelvic CT	6
Abdominal CT	14

Although the radiation used is X-ray, the amount of doses received by the person varies due to the different energy produced. Since the first harmful effects of radiation, the frequency of dermatoses, hematological diseases, cataracts, and cancer are remarkably high due to the high dose exposure in radiology workers, the investigation of radiation protection methods has come to the fore (Kraska et al.,2012).

All studies are carried out within the scope of three rules in radiation protection. These;

1.1. Time rule; It is the easiest method to be applied to protect from radiation. The radiation source and the duration of stay in the area where the radioactive materials are located and the amount of dose taken are proportional to each other. The less time you stay near the device and the radioactive source, the lower the dose will be (Algüneş., 2002). The main purpose of radiological imaging; is to obtain the best quality image (ALARA principle) with the last dose. However, in interventional applications, the dose limits allowed in the international arena can be exceeded. Compared to conventional radiography, in studies such as interventional radiography, the radiation dose received

by both the patient and the employee increases because the duration of the examination is prolonged (Zuguchi.,2008). In applications that require a long time for the diagnosis stage such as interventional radiology, scopic imaging, linear accelerator, gamma camera applications, patient and employee health pose a serious threat. Thus, the permissible dose amount can be exceeded. Due to the damage of radiation, the patient and the personnel who have to be with the patient during the application should be protected from radiation at the highest level (Eder.,2006, Eder.,2009, Ballsieper.,2006).

1.2. Distance rule; The mean free path of alpha and beta particles in the air is very short due to the loss of energy by ionization. Since neutron and gamma radiations have higher energies, the mean free path they take is much longer than alpha and beta particles. Thus, they travel further, causing more ionization. They slow down by releasing energy with the ionization effect. For this reason, to avoid the ionization effect of radiation, the source should be avoided as much as possible. The amount of radiation exposure will decrease inversely with the square of the distance, depending on the distance.

$I_1 / I_2 = (d_1)^2/(d_2)^2$

In the given expression, it is known as I_1: the initial intensity of the radiation, I_2: the final intensity of the radiation, d_1: the first distance, d_2: the final distance. This equation is called the inverse square law (Phillips et al.,2010, Hallenbeck., 1994)

1.3. Shielding rule; It is the most important component in radiation protection if the distance and time limitations cannot be made. Shielding is the feature of eliminating the effects of radiation or reducing it to a permissible level by placing a protective barrier between the radiation source and the person, which can create an absorption effect. There are different shielding materials and material production methods for different radiations (Yülek.,1992). The absorption property of radiation will increase at the same rate as the thickness of the material increases (Yaramış.,1985).

X-rays are used in many diagnostic procedures performed in hospitals. This makes the principles of radiation protection important. Especially IT applications have been a widely used examination in emergency applications. It is responsible for approximately 50-70% of the radiation received from CT imaging methods, which constitute 5% of all radiological examinations (Başekim.,2007, Başar.,2019). Physicians prefer CT instead of roentgenogram because it is cross-sectional in order not to miss any details. Therefore, its use is quite high. Lung CT was applied to each patient in case the PCR test did not yield clear results during the Covid-19 pandemic process. Thus, many people have been exposed to quite a lot of X-rays.

The largest share of diagnostic radiological procedures using ionizing beams is in computed tomography (Brenner et al.,2007, Tuncel.,2008, González et al.,2007). It is preferred because it gives a cross-sectional image compared to X-ray and is easier to shoot compared to MR.

Every examination performed poses risks to the health of both employees and patients. It is estimated that there are about 23 million workers worldwide, of whom about 10 million are exposed to artificial sources of radiation. Three out of every four workers exposed to artificial sources work in the medical field and receive an annual effective dose of 0.5mSv per worker (UNCLEAR., 2016).

The situation can reach much more serious figures if we take into account the health professionals who receive training as well as the working health practitioners. For this reason, ionizing radiation awareness among health practitioners working or training to work should be created and they should receive training on radiation protection. Physicians and allied health workers will minimize the exposure of both patients and those working with ionizing radiation by avoiding unnecessary examinations by taking into account the principle of ALARA (as low as reasonably achievable), which is accepted by the whole world in radiation protection. The dose rate taken will be greatly reduced when an unnecessary examination is prevented from being performed or repeated. In addition, if the time, distance, and, shielding rules are followed, other steps are carried out to be protected from ionizing radiation. Studies have shown that shielding significantly reduces the radiation level and creates a safe environment for employees (Coşkun.,2015).

MATERIALS AND METHODS

The study is on a 5-point Likert scale. Taken from the thesis prepared by Nermin Turan of Kafkas University Graduate School of Sciences Interdisciplinary Occupational Health and Safety Department.

Statistical analyzes were performed using a package program called SPSS (IBM SPSS Statistics 24). Frequency tables and descriptive statistics were used to interpret the findings.

Parametric methods were used for the measurement values suitable for normal distribution. By parametric methods, the "Independent Sample-t" test (t-table value) was used to compare the measurement values of two independent groups, and the "ANOVA" test (F-table value) method was used to compare the measurement values of three or more independent groups.

Non-parametric methods were used for the measurement values that did not conform to the normal distribution. By non-parametric methods, the "Mann-Whitney U" test (Z-table value) was used to compare the measurement values of two independent groups, and the "Kruskal-Wallis H" test (χ2-table value) method was used to compare the measurement values of three or more independent groups.

2.1. Apparatus

Table 3. Distribution of research findings

Variable (N=249)	n	%
Status		
Service provider	101	40,6
Service recipient	148	59,4
Age classes [$\bar{X} \pm$ S.S.→21,11±3,70 (yıl)]		
≤18	24	9,6
19-20	128	51,4
21-22	57	22,9
≥23	40	16,1
Gender		
Woman	199	79,9
Man	50	20,1
Education level		
Associate degree	234	94,0
License	12	4,8
Degree	3	1,2
Vocational School Department		
Mouth and dental health	22	8,9
Operating room services	19	7,7
Biomedical devices	2	0,8
Child development	17	6,9
Dialysis	21	8,5
Physiotherapy	11	4,5
First and emergency aid	14	5,7
Optician	22	8,9
Medical imaging techniques	87	35,4
Medical laboratory techniques	31	12,7

In the study, tartrazine content in selected samples was determined at 425 nm using Shimadzu brand UV–VIS spectrophotometry (UV-1800 PC model, Kyoto, Japan). Ultrapure water with a resistivity of 18.2 MΩ cm was obtained by a Milli-Q water purification system (Millipore Corp., USA).

Table 4. Distribution of findings on scales

Scales (N=249)	Average	S.S.	Median	Min.	Max.	Number of items	Cronbach-α coefficient
X-beam information	49,06	11,28	50,0	16,0	75,0	15	0,942
X-beam awareness	6,80	2,30	7,0	3,0	15,0	3	0,763
Total - GIKKFÖ	55,86	11,69	57,0	19,0	90,0	18	0,914

The distribution of the scores obtained from the scales of awareness of individuals about protection from X-rays and their reliability coefficients are given in the table. It was determined that the answers given by the individuals to the scales were at a reliable level.

Table 5. Comparison of scale scores according to the findings

Variable (N=249)	n	*Gama information*		*Gama awareness*		**Total - GIKKFÖ**	
		$\overline{X} \pm S.S.$	**Median [IQR]**	$\overline{X} \pm S.S.$	**Median [IQR]**	$\overline{X} \pm S.S.$	**Median [IQR]**
Status							
Service provider	101	54,91±10,09	57,0 [11,0]	6,38±2,69	6,0 [4,0]	61,29±10,76	61,0 [12,5]
Servicerecipient	148	45,06±10,29	45,0 [15,8]	7,09±1,95	7,0 [3,0]	52,16±10,86	53,5 [16,8]
Statistical analysis *		t=7,470		Z=-3,406		Z=-6,464	
Possibility		**p=0,000**		**p=0,001**		**p=0,000**	
Age classes							
≤18	24	46,83±11,20	48,0 [23,5]	6,67±2,59	7,0 [4,0]	53,50±11,64	54,5 [24,5]
19-20	128	49,13±10,13	49,5 [12,8]	6,91±2,07	7,0 [4,0]	56,03±10,36	57,0 [12,8]
21-22	57	50,61±12,65	53,0 [20,0]	6,86±2,47	6,0 [3,5]	57,47±13,11	60,0 [20,0]
≥23	40	47,98±12,77	48,0 [17,5]	6,48±2,61	6,0 [3,0]	54,45±13,56	54,5 [17,8]
Statistical analysis		χ^2=2,558		χ^2=2,579		F=0,889	
Possibility		p=0,465		p=0,461		p=0,447	
Gender							
Woman	199	48,36±11,26	49,0 [17,0]	6,79±2,05	7,0 [3,0]	55,14±11,41	56,0 [16,0]
Man	50	51,86±11,03	53,0 [15,0]	6,86±3,12	6,0 [5,0]	58,72±12,45	61,0 [16,3]
Statistical analysis		t=-1,974		Z=-0,720		Z=-1,937	
Possibility		**p=0,049**		p=0,472		p=0,053	
Education level							
Associate degree	234	49,07±11,30	50,0 [16,3]	6,88±2,29	7,0 [4,0]	55,94±11,71	57,0 [16,0]
Bachelor / Master	15	48,93±11,44	49,0 [20,0]	5,80±2,18	6,0 [3,0]	54,73±11,83	56,0 [20,0]
Statistical analysis		Z=-0,200		Z=-1,957		Z=-0,518	
Possibility		p=0,842		p=0,050		p=0,604	

*"Independent Sample-t" test (t-table value) for comparison of measurement values of two independent groups in data with normal distribution; "ANOVA" test (F-table value) statistics were used to compare three or more independent groups. "Mann-Whitney U" test (Z-table value) for comparison of measurement values of two independent groups in data not having normal distribution; "Krusk-Wallis H" test statistics (χ2-table value) were used to compare three or more independent groups.

A statistically significant difference was found in terms of X-ray knowledge scores according to status (t=7,470; p=0,000). X-ray knowledge scores of service providers are significantly higher than service recipients. It can be thought that the reason for its high level is because health students, especially students of medical imaging techniques, take courses related to radiation.

A statistically significant difference was found in terms of X-ray awareness scores according to status (Z=-3.406; p=0.001). X-ray awareness scores of service providers are significantly lower than service recipients.

A statistically significant difference was found in terms of awareness scale scores on protection from X-rays according to status (Z=-6.464; p=0.000). Awareness scale scores of service providers about protection from X-rays are significantly higher than service recipients.

There was no statistically significant difference in terms of X-ray knowledge, X-ray awareness, and awareness of X-ray protection scale scores according to age classes (p>0.05).

A statistically significant difference was found in terms of X-ray knowledge scores according to gender (t=-1.974; p=0.049). X-ray knowledge scores of men are significantly higher than women. It can be thought that the reason for this result is the high participation rate among male students studying in the Medical Imaging Techniques program.

There was no statistically significant difference in terms of X-ray awareness and awareness of X-ray protection scale scores according to gender (p>0.05).

There is no statistically significant difference in terms of X-ray knowledge, X-ray awareness, and awareness of X-ray protection scale scores according to education level (p>0.05).

RESULTSAND DISCUSSION

Arslanoglu et al. In their studies found that most doctors and interns underestimate radiation and do not have knowledge and awareness about protection. As a result of the analysis made by Fisher's exact k-square test, they suggested that the radiation knowledge level of doctoral candidates who had medical education should be increased (Arslanoğlu et al., 2007). According to Guduk et al. As a result of the questionnaire they applied to the patients who were examined and had the necessary diagnostic procedures, they found that 76% of the patients knew that the X-rays in the radiological examinations were harmful, but did not know what type of radiation the examinations applied during the procedure were (Guduk et al., 2018).

According to the results of the study; A statistically significant difference was found in terms of awareness scale scores on protection from X-rays according to status (Z=-6.464; p=0.000). It shows that the necessity of protection from X-rays is aware by the service providers. This result revealed a statistically significant difference in terms of X-ray knowledge scores (t=7,470; p=0,000). The reason why there is no significant difference in the scale of X-ray knowledge, X-ray awareness, and awareness of X-ray protection according to education level is that the majority of the students are at the associate degree level. The close mean age also caused no significant age-related difference. There was a significant difference in the level of knowledge of the students, who will serve the purpose of the study, about X-ray radiation and radiation protection. It is important to raise the awareness of the students who will be radiation workers. Since none of the students who were surveyed had completed the professional practice course, it should be kept in mind that their knowledge was not completed. However, even if there is no education about X-rays, it is necessary to increase the level of awareness, since they can be exposed to a radiological examination at any time. For this purpose, subjects related to radiation and radiation protection can be added to the curriculum.

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Ethical Dimension

Permission for the study was obtained from the relevant institution and the non-interventional ethics committee of a university (Decision Number: 117 and Date: 10.12.2021). For the use of the Applied Scale, Prof. Dr.'s Permission was obtained from Mustafa YÜKSEK via e-mail. Participants were included voluntarily.

REFERENCES

Arıkan, İ.H., The Effects of Environmental Radiation on the Sustainability of Life. Doctoral Thesis, Ankara University, Institute of Social Sciences ,2007.

Arslanoglu, A., Bilgin, S., Kubali, Z., Ceyhan, M. N., İlhan, M. N., & Maral, I. Doctors' and intern doctors' knowledge about patients' ionizing radiation exposure doses during common radiological examinations. *Diagnostic and Interventional Radiology*, *13*(2), 53, 2007.

Algüneş, Ç., Radyasyon Biyofiziği. Trakya Üniversitesi Rektörlüğü Yayınları, No:51. s.134, Edirne, 2002.

Bałturkiewicz Z, Musiałowicz T. 100 lat ochrony przed promieniowaniem jonizującym. Raport CLOR nr 136. Centralne Laboratorium Ochrony Radiologicznej, Warszawa,1999.

Başekim CÇ, Öztürk E. Radyasyon güvenliği açısınan doz kontrolü. BT ve ÇKBT (erişkin ve pediatrik). TURKRAD 2007. Kongres Kurs Kitabı. 27-31 Ekim 2007.

Başar Y, Karaarslan E. Bilgisayarlı tomografide doz hesaplama ve düşük doz uygulamaları. In Gelal F, editor. Radyoloji Fiziği. İstanbul: Nobel Tıp Kitabevleri; 2019.p.92-100.

Brenner DJ, Hall EJ. Computed tomography--an increasing source of radiation exposure. N Engl J Med. 2007;357:2277–84. doi:10.1056/NEJMra072149

Ballsieper B. Radiation protection material based on silicone. The United States Patent Application Publication; No: US 2006/0217477 A1, 2006.

Coşkun, A., & Mavi, B. Investigation of External Radiation Dose Changes in Some X-ray Applications. *Acta Physica Polonica, A.*, 128, 2015.

Çelik, S., Radiation Protection Program and Radiation Protection Optimization. Master Thesis, Ankara University, Institute of Nuclear Sciences,2013.

Eder H. Lead substitute material for radiation protection purposes. United States Patent; No: 7,041,995 B2, 2006.

Eder H. Lightweight radiation protection material for a large energy application range. The United States Patent Application Publication; No: US 2009/0230334 A1, 2009.

Güdük, Ö., KILIÇ, C. H., & Güdük, Ö. Radyasyonun Zararli Etkileri Hakkinda Hastalarin Bilgi Düzeyinin Değerlendirilmesi: Bir Hastane Örneği. *Adıyaman Üniversitesi Sağlık Bilimleri Dergisi*, *4*(2), 874-889, 2018.

González Abd, Mahesh M, Kim K-P, Bhargavan M, Lewis R, Mettler F, Land C. Projected cancer risks from computed tomographic scans performed in the United States in 2007. Arch Intern Med.169:2071–7, 2009.

Hallenbeck, W.H., Radiation Protection. Lewis, 269p, 1994. https://www.trod.org.tr/app_society_patient?id=14 (accessed March 08, 2022)

Kraska A, Bilski B. Narażenie pracowników ochrony zdrowia na promieniowanie jonizujące a hipoteza Hormezy radiacyjnej. *Medycyna Pracy*;63:371-376, 2012.

Kurtman, C., Radyobiyolojide hücre siklusu, 5r ve hasar. Ankara Sağlık Hizmetleri Dergisi, 17(1), 25-27, 2018.

Mitchel, J.B., Sullivian,F.J., Bernstein, E.F., Salamon.G.D., and Glatstein,E. Biology of Chronic Radiation Effect on issues and Wound Healing. Clinic and Plastic Surgery,20(3),435-453, 1993.

Phillips, L.J., Gibbs, L.M, Goris, M.L, Segall, G.M, Denko, N.C, Arvind, A.M, Freeman, L., and Marsh, M., Radiation Safety Manual, Stanford University, 110p, 2010.

Tuncel E. Klinik Radyoloji. 2nd ed. Bursa: Nobel ve Güneş Tıp Kitabevleri, 2008.

Yülek,G.G., Radyasyon Fiziği. SEK Yayınları No:14, 198s. Ankara, 1992.

Yaramış, B., 1985. Nükleer Fizik. İstanbul Teknik Üniversitesi Fen Edebiyat Fakültesi, 258, İstanbul.

Zuguchi M., Chida K, Taura M, Inaba Y ve ark. The usefulness of non-lead aprons in radiation protection for physicians performing interventional procedures. Radiation Protection Dosimetry;131: 531-534.2008.

UNCLEAR. Radiation effects and sources: What is radiation? What does radiation do to us? Where does radiation come from? [Nairobi, Kenya?]: United Nations Environment Programme; 2016.

Determining the Views of Pediatric Nurses on the Importance of Children's Hospices and Their Establishment in Turkey*

Çiğdem Müge HAYLI [1], *Nazım BERATLI*[2], *Mira Rana GÖKDOĞAN*[3]

Corresponding Author

Çiğdem Müge HAYLI

DOİ

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Hospice care, End of life care, Turkey, Nurse practice, Pediatric, Pediatric nurse, Palliative care.

ABSTRACT

Background: Hospices improve the quality of end-of-life care. In particular, the care needs of children in this area are important.

Objectives: This research was conducted to determine the opinions of nurses working in the field of pediatrics in Turkey about the importance of child hospices and its establishment in Turkey.

Methods: The sample of the study consisted of 365 nurses working in the field of pediatrics. In the collection of data, "Question Form Explaining the Importance of Child Nursing Home/End of Life Palliative Care" and "Scale for Determining the Views of Nurses Working in the Field of Pediatrics about Child Nursing Home" were used. It was developed by Çiğdem Müge Haylı, the owner of the research, which was developed to determine the feelings and thoughts of nurses working in the field of pediatrics about the importance and establishment of child care centers in Turkey, and consists of 17 questions. There is no study or development regarding the Children's Hospice in Turkey yet.

Result: Of the nurses who participated in the study; 60.82% were female and 39.18% were male.43.01% thought the country does not need any more children's hospice services, 42.47% considered that developing them in Turkey would not happen due to a lack of information and training about hospices of these services and 95.92% stated that the country needs more children's hospices.

Conclusion: The fact that nurses who could take an active role in the establishment of pediatric hospices and palliative care applications, lack of basic training in hospice care and experience in advanced care practices will affect the perspective of children's hospices. In Turkey, pediatric nurses do not have enough knowledge about hospices. The fact that nurses and their families do not have sufficient knowledge on this subject is an obstacle to the further establishment in children's hospices in Turkey.

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[1] Çiğdem Müge Haylı, Assistant Professor Doctor, Hakkari University, Faculty of Health Sciences, Department of Nursing, Hakkari, Turkey, chayli17@ku.edu.tr Orcid Number: https://orcid.org/0000-0001-7630-9619

[2] Nazım Beratlı, Associate Professor Doctor, Girne American Universty, School of Nursing, Kyrenia, TRNC, nazimberatli@gau.edu.tr Orcid Number: https://orcid.org/0000-0002-4064-6055

[3] Mira Rana Gökdoğan, Associate Professor Doctor, Cyprus International University, Faculty of Health Sciences,Department of Nursing, Nicosia, Kyrenia, miragok@gmail.com TRNC Orcid Number: https://orcid.org/0000-0002-5075-9192

INTRODUCTION

Hospices are institutions where a home-like environment and conditions and care activities can be provided for terminally ill patients (Işıkhan, 2008). They first appeared when the Roman Empire first accepted Christianity (in the fourth century BC); the influence of religious authority in Europe began to increase and hospices were transferred to religious institutions. Although hospices continued to serve in this period, some of them were converted into monasteries and churches during the Reformation in Europe and some were closed down. The hospices which were closed this movement, were reopened again in 1842 by Jeanne Garnier in France and by the 1900's the number of these centers had increased to throughout the country. The first international pediatric hospice institution was the International Pediatric Hospice Hospital, established in 1983 in Virginia, USA (CHO, 2010). Children's hospices have spread in countries such as Germany, France and the UK since the 1980's. In addition to symptom-based care programs in pediatric hospices, they provide guidance and emotional support to patients and their relatives. In the report published by the World Health Organization in 2014, the importance of pediatric hospices has been demonstrated and studies have been initiated to promote them worldwide (WPCA, 2014).

The rapid progress in healthcare around the world has led to the diversification and expansion of comprehensive and full care practices for terminally ill children and their families. In Turkey many problems such as a lack of healthcare personnel to provide palliative care for children the need for long-term care of children and the families' need for physical, emotional, and financial support have increased the necessity of children's hospices (Çarkoğlu ve Kalaycıoğlu, 2012). Children's hospices should be evaluated and supported not only within the scope of healthcare services but also within the scope of social services and social policies. In the (Republic of Turkey the) Ministry of Health under the leadership of the Ministry of Family and Social Policy and the Ministry of Education will sign a charter for psychosocial activities for patients who are terminally ill, thereby improving their health and educational services (Elçigil, 2014).

The activities of the Ministry of Health, the Ministry of Family and Social Policies for hospice and palliative care centers started between 2010 and 2015. However, there have been some problems regarding the structuring and establishment of hospices in Turkey. One of the most important problems here is the division of the ministry budget into various units and areas in other public hospitals.

Another problem is that the hospices are not adequately promoted and remain outside of the cultural structure of Turkish society. The fact that hospices are similar to nursing homes is contrary to the family tradition and cultural structure of Turkish society. For these reasons, the relatives of the patients carry out the treatment process in the hospitals but carry out the care activities for children and elderly patients at home (Demir, 2017).

Although there are few children's hospices in Turkey, the most important task of health institutions is to provide examination and treatment services. Under the leadership of the Ministry of Health, all public, foundation and private hospitals have palliative care centers. One of the biggest obstacles to palliative care and hospices is that only the Ministry of Health carries out studies in this field. This situation negatively has affected the opening of palliative care centers in health institutions (Demir, 2017).

To provide modernization in the hospice field it is necessary to establish palliative care and hospice departments and courses in the faculties of medicine, nursing, and health sciences, to train experienced and knowledgeable healthcare team members in this field. In this way, there will be an increase in the quality and number of scientific studies on hospice and palliative care as well as an increasw ing the number of well-equipped medical team members (Köse, 2015). Hospices are institutions that provide healthcare and social services. For this reason, The Ministry of Health and The Ministry of Family and Social Policies should carry out activities for hospices (Tutku, 2016).

Hospices are healthcare institutions that organize their own internal units and should be handled separately from other healthcare institutions. In hospices, priority is the implementation of comprehensive healthcare services and treatment services are the most important after current services. The classification of hospices varies according to age group and disease type. A multidisciplinary team consisting of doctors, nurses, psychologists, social workers, dieticians, and religious officials should be involved in pediatric hospices (Akbulut et.al, 2015).

Hospices provided protection against negative social conditions (capitalism, child labor, etc.) and reflect the value given to human life in the infrastructure of this transformation. The position of children's hospices should also be sought in these sociological and psychological origins (Yolcuoğlu, 2010).

Palliative services and hospice applications are multifaceted services that include psychological support as well as the alleviation of pain and symptoms. They can be applied to improve the quality of life and normalize the death of the patient. In this sense, relieving the physical pain and providing

psychological support related to the life of a terminally ill child has an effect that increases his/her quality of life. In today's society, the increase in the population is causing an increase in the types of death and quite painful types of death have been revealed. Rehabilitation of the painful death process for children, who are the most basic objects of endearment in society is very important for the psychology of the child and his/her family (Valiee, 2012).

Although there is little desire for the development of hospice services in Turkey due to various factors, it evident that these services are in serious need. Hospice services are classified into three groups ımportance for the terminally ill child, the child's family and for the community itself. As a fairly new concept in Turkey, three is a preconception that hospice services for terminally ill patients are not a foreign concept. However, hospice services from foreigners in Turkey are an effective approach because of cultural codes to ease the pain of terminally ill children and their families. They are literally producing some of the children's hospice practices in Turkey and the child, family and social aspects are very important (Kostak ve Akan, 2011).

Hospices are also very important in terms of providing services for the families of terminally ill children. Because they generally need emotional support and thanks to this child care services are very important for the healthy progress of the family. This is the most important point that separates hospice services from care home. The approach to caring for the terminally ill child requires expertise (Kostak ve Akan, 2011).

This research was conducted to determine the opinions of nurses working in the field of pediatrics in Turkey about the importance of child hospices and its establishment in Turkey.

MATERIALS AND METHODS

2.1. Research Model

This research was carried out as a descriptive study in order to determine the feelings and thoughts of nurses working in the field of pediatrics in Turkey, about the importance of establishing pediatric hospices in Turkey and the problems they encounter in the care of end-of-life children and their families.

2.2. Place of Research

This research was carried out by preparing an online questionnaire with the Survey method and applying it to the nurses working in hospitals actively working in the field of pediatrics in Turkey and participating from all over Turkey until the sample value was reached.

2.3. Research Population and Sample

The population of the research consists of pediatric nurses actively working in Turkey. The sample will consist of pediatric nurses who will be drawn from this population. Around 7000 Pediatric nurses are actively involved throughout Turkey (Türkmen, 2015). From this population, 365 samples were reached with 95% confidence and 5% sensitivity. The sample size was obtained by means of the sampling formula when the universe was known **(Figure 1).**

Figure 1: Sampling formula

$$\frac{Nt^2pq}{d^2(N-1)+t^2pq}$$

Sampling inclusion criteria

-Nurses actively working in the pediatric services.

Sampling exclusion criteria

- Nurses who are not actively working in the pediatric services.

2.4. Data Collection Tools in the Research

Before starting the research, data collection was started on December 2016 with the permission of the Ethics Committee. The study was approved by the relevant ethics committee and was conducted in accordance with the Helsinki Declaration of Principles. Instructions were added to the beginning of the questionnaire and the scale to ensured that the nurses who agreed to participate were willing to read the information form.

In order to collect the data of this study, the Questionnaire Descriptive of the Importance of Child Hospice / Palliative Care in the End of Life Period and the Scale Form for Determining the Opinions of Nurses Working in the Field of Pediatrics about Child Hospice were used to determine the feelings and thoughts of the nurses.

Questionnaire Descriptive of the Importance of Child Hospice / Palliative Care in the End of Life Period

This form consists of 42 questions prepared in order to determine the introductory characteristics of nurses working in the field of pediatrics, the problems they encounter in the care of children and their families in the end-of-life period.

Scale for Determining Pediatric Nurses' Views on Child Hospice

This scale, which was developed to determine the feelings and thoughts of nurses working in the field of pediatrics regarding the importance of pediatric

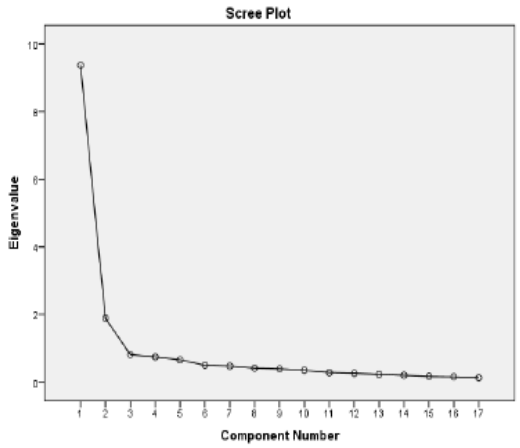
hospices and their establishment in Turkey, was developed by research owner Çiğdem Müge Haylı since December 2016 and consists of 17 questions. While developing this scale, opinions were taken from 10 academicians who are experts in the field and necessary corrections were made in line with the views. The scale form for determining the views of the pediatric nurses on children's hospices comprised 17-items with a 5-point Likert scale; completely disagree (1), disagree (2), undecided (3), agree (4), and completely agree (5) developed and validated for reliability. Scoring was based on the score given for each item. 10 experts were consulted during the scale development.

Cronbach's alpha (α) reliability coefficients were calculated to determine the construct validity of the views of pediatric nurses on pediatric hospices to determine the exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and reliability. The arithmetic mean was taken calculate the scale score. The total score obtained from the 17 questions was divided into 17 hence the minimum score for each question was 1 and the maximum score was 5 and the average score of the scale ranged from 1 to 5 points.

Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis **(**EFA) was used to statistically determine the construct validity of the scale. KMO [Kaiser-Meyer-Olkin] and Bartlett's sphericity test were used to determine whether the scale was suitable for EFA. In this context, the KMO test result should be 0.50 or higher and Bartlett's sphericity test result should be statistically significant (Jeong, 2004). In this study, KMO test result was 0.93 and Bartlett's sphericity test achieved ($p < 0.01$).

Figure 2: Scattering diagram of eigenvalues of factors



Accordingly, there was high correlations between the variables, and thus our data set was suitable for EFA (Kalaycı, 2009). In the first analysis, it was determined that there were two factors with an eigenvalue greater than 1 **(Figure 2).**

Table 1. Scale factor load values of the pediatric nurses as a result of the factor analysis to determine their opinions on pediatric hospices.

Question Value	Factor
M14	0.828
M9	0.825
M11	0.824
M13	0.824
M8	0.810
M12	0.794
M10	0.791
M6	0.787
M4	0.756
M7	0.754
M3	0.750
M5	0.750
M2	0.715
M15	0.688
M17	0.619
M16	0.586
M1	0.380

In the EFA, the limit value was taken as 0.30 for the load values in the factor in which the items were located since with a factor load value of less than this should be excluded from the analysis (Sumerian, 2000). However all factors fulfilled this criterion. The findings from the EFS on the scale form for determining the views of pediatric nurses on children's hospices are given in (Table 1). As a result of the EFA, it was concluded that nurses had two factors explainings 55.14% of the total variance of the scale form data. The data obtained as a result of the factor analysis indicate that the validity of the scale is at a high level.

Confirmatory Factor Analysis (CFA)

Data were collected via an identity scale adapted for the researcher. The scale included 15 items and two factors. The total number of participants was 365. First and second level Confirmatory Factor Analysis (CFA) was used to determine whether the factor structure of the scale was verified. The aim of (CFA) is to evaluate whether a factorial model consisting of many observable variables (latent variables) corresponds to the actual data. The model to be examined can be used to define a structure determined by using empirical data or based on a specific theory.

The following indices were used to assess the validity of the model with CFA. Chi- squared goodness of fit (χ^2) the comparative fit index (CFI), the non-standardized (non-normed) fit index (NNFI) the normed fit index (NFI), the goodness of fit index (GFI), and the root mean square error of approximation (RMSEA). The values observed for the scale model were $X2 / d < 3$, $0 < RMSEA < 0.05$, $0.97 \leq NFI \leq 1$, $0.97 \leq CFI \leq 1$, $0.95 \leq GFI \leq 1$ and $0.95 \leq NFI \leq 1$ for the first level and $4 < X2/ d < 5$, $0.05 < RMSEA < 0.08$, $0.95 \leq NNFI \leq 0.97$, 0.95

≤ CFI ≤ 0.97, 0.90 ≤ GFI ≤ .95 and 0.90 ≤ NFI ≤ 0.95 for the second level, which show acceptable agreement (Sumer, 2000).

Table 2: Regression and t-values of the scale.

Item	Regression Value	t - value	Item	Regression Value	t- value
M1	0.32	6.13	M10	0.79	17.79
M2	0.69	14.85	M11	0.83	19.19
M3	0.72	15.81	M12	0.79	17.79
M4	0.74	16.47	M13	0.81	18.78
M5	0.74	16.37	M14	0.81	18.64
M6	0.78	17.53	M15	0.64	13.41
M7	0.73	16.14	M16	0.52	10.37
M8	0.81	18.56	M17	0.55	11.23
M9	0.83	19.28			

When the compliance statistics calculated with CFA were considered, it was decided that the previously determined structure of the scale generally complied with the collected data. When the regression values and t- values of the scale items were examined, it was found that the obtained regression coefficients and t- values were significant (> 1- 92) thus the model was validated **(Table 2).**

According to the results of confirmatory and exploratory factor analysis one of the most commonly used methods for measuring internal consistency for reliability is Cronbach's (α). A scale is not reliable when $0.00 < \alpha < 0.40$; has low reliability when $0.40 < \alpha < 0.60$; is reliable when $0.60 < \alpha < 0.80$ and very reliable when $0.80 < \alpha < 1.00$[16]. Cronbach's α for this study was calculated as 0.93 according to the statistics, indicating that the scale could makes a very reliable measurements.

The fit indices were found as $\chi 2$=483.12, X2/sd= 4.06, RMSEA=0.076, CFI=0.92, IFI=0.92, NNFI=0.91 and NFI=0.91. When the coefficients showing the relationship between the observed variables of the model showing the factorial structure of this scale and its factors were examined, it was concluded that all the coefficients were at a sufficient level. Considering the fit statistics calculated by CFA, it was decided that the previously determined structure of the scale was generally compatible with the collected data. It was determined that the obtained regression coefficients and t values were significant (t>1.92) and the model was confirmed.

In order to determine the reliability of the scale, the Cronbach Alpha reliability coefficient was calculated. According to the statistics, the alpha value of the scale was determined as 0.93. Tezbaşaran (1997) states that a reliability coefficient that can be considered sufficient in a Likert type scale should be as close to 1 as possible. According to these results, it can be said that the reliability of the entire scale is at a high level.

2.5. Data Collection for the Research

The data of this research was completed by preparing an online (google form) questionnaire using the Questionnaire method from the nurses actively working in the field of pediatrics in Turkey. Data were collected between 12.12.2016 and 03.02.2017. Although the nurses have the advantage on the day and time they want, information about the application method of the research is given. Before applying the questionnaire and scale, the nurses were informed about the scope of the research, instructions were added by the researcher, and it was stated that participation was on a voluntary basis. The nurses who accepted to participate in the study were asked to read the information form and the instruction about the research beforehand. It was important for the research to fill the Scale for Determining the Opinions of Nurses Working in the Field of Pediatrics on Child Hospice. Questionnaire and scale application were continuously observed online until reaching the exact number of identified populations.

2.6. Data Analysis Method

Data were analyzed with the SPSS 20 package. Frequency, percentage, arithmetic mean, and standard deviation were used for the descriptive statistics. Frequency, percentage, arithmetic mean and standard deviation values of the questions of the Scale for Determining the Opinions of Nurses Working in the Field of Pediatrics on Child Hospice were examined by considering the sub-dimensions. Mann Whitney U, Kruskal Wallis-H and Post-Hoc Multiple Comparison Tests were used for the data that did not show normal distribution between the groups. In case of normal distribution knit, Kruskal Wallis-H Test and Post-Hoc Multiple Comparison Test were used.

RESULTS

Table 3: Sociodemographic characteristics

		n	%
Gender	Famale	222	60,82
	Male	143	39,18
	Total	365	100
Marial Status	Single	269	73,7
	I'm in a relationship	21	5,75
	Separate	4	1,1
	Divorced	4	1,1
	The married	67	18,36
	Total	365	100
Where were you born?	Central Anatolia Region	51	13,97
	Eastern Anatolia Region	66	18,08
	Aegean Region	84	23,01
	Marmara Region	82	22,47
	the Mediterranean region	31	8,49
	black Sea region	31	8,49
	South East Anatolia Region	18	4,93
	Other	2	0,55
	Total	365	100
Please tick the settlement where you have lived the longest?	Bay	8	2,19
	District	91	24,93
	Province	264	72,33
	Abroad	2	0,55
	Total	365	100
Do you have children?	There is	62	16,99
	no	303	83,01
	Total	365	100
What is the last school you graduated from?	Normal highschool	4	1,1
	Vocational high School	27	7,4
	Associate degree program	89	24,38
	undergraduate program	236	64,66
	Degree	9	2,47
	Total	365	100
What is your mother's education level?	illiterate	31	8,49
	Primary school graduate	75	20,55
	Secondary school graduate	35	9,59
	High school graduate	213	58,36
	Graduated from a Universty	11	3,01
	Total	365	100
Does your mother work?	Yes	183	50,14
	No	182	49,86
	Total	365	100
If yes, what is your mother's occupation?	Employee	37	20,22
	Officer	133	72,68
	Small business	13	7,1
	Total	183	100

Table 3: Sociodemographic characteristics (continuation of the table)

		n	%
What is your father's education level?	İlliterate	6	1,64
	Primary school graduate	63	17,26
	secondary school graduate	30	8,22
	High school graduate	244	66,85
	Graduated from a Universty	22	6,03
	Total	365	100
Does your father work?	Yes	265	72,6
	No	100	27,4
	Total	365	100
If yes, what is your father's occupation?	Employee	69	26,14
	Officer	155	58,71
	Small business	40	15,15
	Total	264	100
Are you continuing your education in the vocational field?	Yes	308	84,38
	No	57	15,62
	Total	365	100
If your answer is yes, how do you continue?	Undergraduate completion	113	36,69
	postgraduate education	181	58,77
	Other	14	4,55
	Total	308	100
What is your total working time after graduation?	1-5 years	73	20
	6-10 years	145	39,73
	11-15 years	86	23,56
	16-20 years	47	12,88
	21 and over	14	3,84
	Total	365	100
In which part of Turkey do you work?	Central Anatolia Region	34	9,32
	Eastern Anatolia Region	41	11,23
	Aegean Region	92	25,21
	Marmara Region	124	33,97
	the Mediterranean region	41	11,23
	Black Sea region	23	6,3
	South East Anatolia Region	10	2,74
	Total	365	100

Of the nurses participating in this study; 60.82% were female and 39.18% were male. 95.46% of the participants stated that they were continuing with their vocational education. While 58.77% of them were graduate, 36.69% had completed undergraduate training. Other information on sociodemographic characteristics is given in Table 3

Table 4: Percentage distribution of palliative care knowledge and experience

		n	%
Do you think it is necessary to receive additional training in palliative care?	Yes	361	98.9
	No	4	1.1
	Total	365	100
What was the weight of the information training you received?	Giving bad news	16	4.38
	Communication skills	213	58.36
	Symptom management	39	10.68
	Legal and ethical issues	17	4.66
	Basic concepts and principles of palliative care	78	21.76
	Other	2	0.16
	Total	365	100
When working in the field of nursing, did you come across an individual in need of palliative care?	Yes	339	92.88
	No	26	7.12
	Total	365	100

After graduation, 57.26% of the participants were working in public hospitals and 35.89% in private hospitals. Moreover 20% of them had worked there for 1 - 5 years, 39.73% for 6 - 10 years, 23.56% for 11 - 15 years, 12.88% for 16 - 20 years and 3.84% for 21 years or over. 98.9% of the nurses participating in the study thought that it was necessary to receive additional training in palliative care during the vocational training and working process. Indeed, 58.36% and 21.76% had received palliative care training on learning the basic concepts and principles respectively. This is because 92.88% of the nurses had encountered palliative care during their employment (Table 4).

Table 5: Percentage distribution of nurses' awareness of children's hospices.

		n	%
What do you think are the reasons for the development of hospice care in Turkey?	Inadequate training on hospice	155	42.47
	Because is not necessary	157	43.01
	Lack of regulations on hospices	45	12.33
	The concept of hospices is not one of the nursing duties	8	2.19
	Total	365	100
Is it necessary to establish more hospice institutions in Turkey?	Yes	349	95.62
	Undecided	15	4.11
	No	1	0.27
	Total	365	100
Do you know what a chilren's hospice is?	Yes	284	77.81
	Partially	68	18.63
	No	13	3.56
	Total	365	100
Where did you get information about hospices during your professional career?	Seminars	103	28.22
	Conferences	94	25.75
	In-service training	54	14.79
	Newspapers and magazines	13	3.56
	Media (TV, Radio and Internet)	31	8.49
	Colleagues	42	11.51
	Professional publications and journals	28	7.67
	Total	365	100
Would you recommend a children's hospicea relative /child of an acquaintance who needs terminal care or continuous care?	Yes	320	87.67
	Partially	29	7.95
	No	16	4.38
	Total	365	100

Concerning the growth of children's hospice services in Turkey; 43.01% of the study participants thought that they had not been developed because they were not required and 42.47% stated that the service had not been developed because of insufficient training and information. In addition 95 – 62 % of hospice nurse had seen the establishment of the necessary institutions in Turkey. Moreover 77.81% of the nurses stated that they knew what a children's hospice was and 94.52% thought that the establishment of more children's hospices in Turkey was also essential. 28.22% of the nurses stated that hospice information was obtained from seminars and 25.75% from conferences. In addition, 87.67% of nurses stated that they would recommend hospice for the continuous care of a terminally ill relative or an acquaintance's child (Table 5).

Table 6: Distribution of the scale scores for determining the views of pediatric nurseson pediatric hospices.

	n	Mean	Median	Min	Max	ss
Children's Hospice Score	365	1.37	1.18	1	5	0.48

The average of the total scale scores of the pediatric nurses participating in the study was 1.37±0,48 and the children' s hospice score was also expressed, for which the median value of the points was 1.18 (the minimum score was 1 and the maximum score was 5). Hence, it was concluded that the establishment of more children's hospices was positive (Table 6).

DISCUSSION

Palliative care centers and pediatric hospices established for terminally ill pediatric patients in turkey was the main subject of our research and the necessity of pediatric hospices has been emphasized. Today, children's hospices are a part of modern healthcare services and one of the most important healthcare institutions established for the development of child healthcare services. Hospices and palliative care centers, which have started to spread all over the world since the 1980s, now serve many disease types and age groups. Children's hospices have also emerged in this context. The World Health Organization has drawn attention to the importance of hospices aimed at enhancing the quality of life by making effective evaluations in the palliative care process (Çolak ve Özyılkan, 2006; Tezbaşaran, 1997).

The time of life when palliative care is most required is the terminal period during which patient care services are not only the responsibility of the doctor, but also a multidisciplinary understanding of the doctors and nurses in hospice institutions, social workers, psychologists, physiotherapists, dietitians, sociologists, and clerics (Karan, 2005). Psychological support should be given to terminally ill children which will not only cause the child to relax but also contribute to the continuation of physical, mental, spiritual and physical development. Children who are at this stage of life should continue their education as much as possible, while parents can continue their education with coordination between the school management and the healthcare personnel (Öz and Bahardır, 2009).

The final focus of the research findings is on the extent to which awareness of children's hospices in Turkey has improved. 42.47% of the participants stated that the reason for not developing children's hospices was not being given the necessary education and 43.01% stated that hospices were not needed. Accordingly, while most pediatric nurses do not have the necessary awareness in the community about pediatric hospices, the majority think that such a practice has no place in society.

The majority of participants in the study were aware of children's hospices in Turkey and think that the establishment of children's hospice is necessary. In our study, the mean for 17 items calculated by taking the average of the children's hospice score indicated the direction of the establishment of children's hospice quite clearly.

In many studies on the importance of palliative care in the neonatal unit, it was found that nurses responded to the item palliative care is as important as therapeutic care: 96% in Australia (Chen et.al., 2013; Kain et.al, 2009), 95.21% in Taiwan (Chen et.al., 2013), (93.32%) in Iran (Azzizadeh et.al., 2017). Nurses without basic education may not have the opportunity to educate themselves in palliative care in their professional lives. In this regard, stated that palliative care should be included in neonatal nursing education (Kain et.al, 2009). In their study, 98% of the nurses stated that palliative care education is necessary and 34% of them had in-service training about communication skills. In similar survey, the rates of palliative care were 96.3% and 60% and 82.1% and 39.3%, respectively (Azzizadeh et.al., 2017; Chen et.al., 2013) which is in parallel with our study.

According to study, the majority of the nurses had problems in dealing with terminally ill children; their experience was inadequate and so many patients were referred to the hospital. In contrast to our study, 87% of nurses had palliative care experience for dying infants and their families, 69% experienced frequent infant deaths in the neonatal unit, 60% found that caring for dying babies was a traumatic experience. and 21% had a feeling of personal failure when a baby died in the clinic.

The authors considered it important to include training programs for palliative care during and after nursing education to strengthen the ability of nurses to deal with problems in the care and interventions for terminally ill patients and their relatives (Kain et.al, 2009).

In study, the nurses' approach to palliative care in cases they had not encountered before was questioned and it was determined that they examined the previous medical records of the patient and educated themselves according to appropriate care behavior (Andersson et.al., 2016). It is very important for the

palliative care nurses to be up-to-date and improve themselves, to use the evidence-based care practices, to plan care for the patient's needs and to protect and defend the patient when necessary to provide more effective and safe care to him/her and his/her family (Filiz ve Dikmen, 2017). However, the lack of healthcare policies and application areas in the countries and the lack of understanding of palliative care by both nurses and families has revealed difficulties [Aldridge et.al., 2016; Kavalieratos et.al., 2014; Balboni et.al., 2013; Garner et.al., 2013].

CONCLUSION AND RECOMMENDATIONS

There is a lack of education about children's hospice nursing in Turkey, which is the reason for asking pediatric nurses to participating in this study on the development of pediatric hospice services. The results of the questionnaire and scale reveal the necessity for more children's hospices as part of the modernization of healthcare services and public health in Turkey. Increasing the number of nurses and healthcare personnel specialized in the field of child health will positively affect the structuring of hospices. One of the most important issues to be carried out in this context is to inform the public about hospices, to raise awareness, and to explain why hospices are needed.

Palliative care and hospices offer a solution for healthcare and social problems concerning death that affect the family structure and emotional state. Therefore, the activities to be conducted for hospices should not be limited to the Ministry of Health and the Ministry of Family and Social Policies should make the necessary contributions to these studies.

Pediatric nurses who care for terminally ill patients should improve themselves in the planning and implementation of nursing interventions for terminal and palliative care for the child and his family, help the child and family to control their feelings of hopelessness, worthlessness, and guilt by using the therapeutic approach, expressing thoughts, expressing social relations. and increase the support of the immediate environment.

Limitations of the Research

350 nurses working in the field of pediatrics were included in the study. Research results can only be generalized to the sample group in the study.

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Ç.M.H.

Ethical Statement

Before starting the research, data collection was started on December 2016 with the permission of the*** Girne American University Social Sciences Research Ethics Committee (17.12 / 16 approval). The study was approved by the relevant ethics committee and was conducted in accordance with the Helsinki Declaration of Principles.Instructions were added to the beginning of the questionnaire and the scale to ensured that the nurses who agreed to participate were willing to read the information form.

Conflict of İnterest

The authors declare that they have no conflict of interest.

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Authors' Contributions

The authors confirm contribution to the paper as follows: study conception and design: ÇMH; N.B., M.R.G, data collection: Ç.M.H.,; analysis and interpretation of results: Ç.M.H. draft manuscript preparation: Ç.M.H. All authors reviewed the results and approved the final version of the manuscript.

REFERENCES

Akbulut G., Akçiçek F., Çiftçi A. (2015). Support center workshop report [Support center workshop report]. *Journal of Health Research Development and Education Association*. 1:33-35

Aldridge M.D, Hasselaar J, Garralda E, Van der Eerden M, Stevenson D, McKendrick K, Meier D.E. (2016). Education, practice and policy barriers to further integration of palliative care: A literature review. *Palliative. Medicine*. 30(3): 224-239.

Andersson E, Salickiene Z, Rosengren K. (2016). To be İnvolved: A qualitative study of nurses' experience of caring for dying patients. *Nurse Education Today*38: 144-149. https://doi.org/10.1016/j.nedt.2015.11.026.

Azzizadeh Forouzi M.A, Banazadeh M, Ahmadi J.S, Razban F. (2017). Barriers to palliative care in Neonatal Intensive Care Units: Attitudes of neonatal nurses in southeastern Iran. *American Journal of Hospice and Palliative Medicine.* 2017; 34(3): 205-211. https://doi.org/10.1177/1049909115616597.

Balboni M.J, Sullivan A, Enzinger A.C, Epstein-Peterson Z.D, Tseng Y.D, Mitchell C, Balboni T.A. (2014). Nurse and physician barriers to spiritual care provision at the end of life. *Journal of Pain Symptom Management.* 2014; 48(3): 400-410. https://doi.org/10.1016/j.jpainsymman.2013.09.020.

Çarkoğlu A, Kalaycıoğlu E. (2012). Health in Turkey: A sociological evaluation, Health in Turkey: A sociological review. *Health Journal*. 6(2): 35-37.

Chen C.H, Huang L.C, Liu H.L, Lee H.Y, Wu S.Y, Chang Y.C, Peng N.H.(2013). To investigate the beliefs and attitudes of neonatal nurses towards the care of dying newborns in Taiwan. *Journal of Maternal Child Health*17 (10): 1793-1801.

Çolak D, Özyılkan Ö. (2006). Palliatives in cancer patients [Paliative therapy in cancer patients]. *Turkiye Klinikleri Journal of Medical Sciences*. 2(10): 1-9.

Demir M. (2017). Ethics of palliative care [Ethics of palliative care]. *Journal of Intensive Care*. 7: 2-66. http://doi:10.5152/dcbybd.2016.1202.

Elçigil A. (2014). Palliative care nursing [Palliative care nursing]. *Gulhane Medical Journal*. 2014; 54: 324-334. http://doi:10.5455/gulhane.30582.

Filiz NY, Dikmen Y. (2017). Patient advocacy in end-of-life care practices [Patient advocacy in end-of-life care practices]. *Journal of Human Rhythm*; 3(2): 95-100.

Garner K.K, Goodwin J.A, McSweeney J.C, Kirchner, J.E. (2013). Executives' perceptions of end-of-life care provided in hospitals. *Journal of Pain Symptom Management*. 45(2): 235-243. https://doi.org/10.1016/j.jpainsymman.2012.02.021.

International Children's Hospice (CHO) (2011). [online database]. International Hospice About CHI. Retrieved from *http://www.chionline.org/about-chi/*
Işıkhan V. (2008). Death site preferences of terminal cancer patients [Death site preferences in terminal stage cancer patients]. *Turkish Journal of Oncology* 23(1): 34-44.

Jeong J. (2004). Analysis of the factors and roles of HRD in organizational learning styles identified by key information sources in selected companies in the *Republic of Korea (PhD thesis)*. Retrieved from http://hdl.handle.net/1969.1/2222

Kain V, Gardner G, Yates P. (2009). Neonatal palliative care attitude scale: Developing a tool to measure the barriers and facilitators of palliative care in neonatal nursing. *Journal of Pediatrics.* 2009; 123(2): 07-209. https://doi.org/10.1542/peds.2008-2774.

Kalaycı S. (2009). SPSS applied multivariate strategy strategy, 4 editions [Book of SPSS applied multivariate statistical techniques, 4th edition].; *Ankara, Turkey: Pegem Publications*.

Karan M.A.(2005). Terminal patient and his problems [Terminal patient and his problems]. 7th National Internal Medicine Congress. *Book 8 April Antalya*, p: 18.

Kavalieratos D, Mitchell E.M, Carey T.S, Dev S, Biddle A.K, Reeve B.B, Weinberger, M. (2014). "Not the 'grim reaper service'": An assessment of provider knowledge, attitudes, and perceptions regarding palliative care referral barriers in heart failure. *Journal of the American Heart Association*. 3(1): 1-11. https://doi.org/10.1161/JAHA.113.000544.

Köse B. (2015). Situation and planning within the scope of palliative care services [current status and planning of palliative care services directive]. Republic of Turkey Ministry of Health, Turkey Public Hospitals Agency Report City, *Turkey: Name of publisher*. pp: 12-32.

Kostak, Akan M.M. (2011). Palliative Care of the Child in the Terminal Period [Paliative Care of the Child in the Terminal Period]. *Turkish Journal of Oncology*. 26: 182-192.

Öz F, Bahardır Yılmaz E. (2009). An important concept in the protection of mental health: Psychological resilience [An important concept in the protection of mental health: Psychological stability]. *Faculty of Health Sciences Nursing Journal*. 16(3): 82-89.

Sumerian N. (2000). Structural models models:. Basic concepts and examples [Structural equation models: Basic concepts and examples]. *Journal of Turkish Psychology Writings*. 3(6): 49-74.

Tezbaşaran A. (1997). Likert type scale application guide, 2 editions [Likert type scale development guide, 2nd edition]. *Ankara, Turkey: Turkish Psychological Association Publication*

Tutku E.Ş. (2016). Palliative care [Palliative care]. Republic of Turkey Ministry of Health, Turkish Public Health Institution Cancer Department Report City; Ankara, *Turkey: Name of publisher*. p: 12-36.

Türkmen, E. (2015). Hemşire istihdamının hasta ve hemşire sonuçları ile organizasyonel çıktılara etkisi: Yataklı tedavi kurumlarında hemşire insan gücünü planlama. *Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi*, *2*(3), 69-80.

Valiee S, Negarandeh R, Nayeri N.D. (2012). Investigation of end-of-life care experiences of Iranian intensive care nurses: *A qualitative study. Nurse Intensive Care*. 17(6): 309-315. https://doi.org/10.1111/j.1478-5153.2012.00523.x.

Worldwide Palliative Care Association (WPCA) (2014). [online database]. The global atlas of palliative care at the end of life. Retrieved from; (2014); *https://www.who.int/nmh/Global_Atlas_of_Palliative_Care.pdf*

Yolcuoğlu İ. (2010). Risk factors for family and children in child exploitation and service intervention. *Journal of Society and Social Work*. 21:74-76.

Distance Education Process Experiences and Perceived Stress Levels of Health School Students at the End of the First Year of the COVID-19 Pandemic

Şeyma KALKUZ[1], *Fatma YÜKSELİR ALASIRT*[2], *Figen DIĞIN*[3], *Yeliz MERCAN* [4]

Corresponding Author

Şeyma KALKUZ

DOİ

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Distance education, Perceived stress, Self-efficacy, Health school, COVID-19 pandemic.

ABSTRACT

It was aimed to investigate the distance education process experiences of health school students at the end of the first year of the Covid-19 pandemic and the relationship of these experiences with their perceived stress levels (PSLs). This descriptive study was conducted as an e-survey in March 2021 in Kırklareli (N=929). Those who had difficulty in concentrating on courses forgot the subjects taught quickly, and had difficulty in learning the programs used in the distance education system, those who had communication problems with the instructors, could not express their opinions freely, and did not find the distance education system as effective as face-to-face education, those who said that the uncertainty of the distance education process negatively affected their professional skills had higher perceived stress levels (p<0.001). Those who said that the COVID-19 pandemic affected the teaching processes, thought that distance education did not offer alternative options in the learning processes, did not find this system adequate in the teaching processes, and said that the teaching processes were affected negatively because of technical problems had higher perceived stress levels (p<0.001). At the end of the first year of the COVID-19 pandemic, the PSL of the students was found to be moderate.

[1] Research Assistant, MSc, Kırklareli University School of Health Department of Nutrition and Dietetics, 39000 Kırklareli, Turkey. seymakalkuz@gmail.com, Orcid Number: 0000-0001-9769-5707

[2] Research Assistant. MSc, Kırklareli University School of Health Department of Health Management, 39000 Kırklareli, Turkey. ftmykslr@gmail.com, Orcid Number: 0000-0002-2442-0531

[3] Assistant Professor, MSc, PhD, Kırklareli University School of Health Department of Midwifery, 39000 Kırklareli, Turkey. fgndgn2013@gmail.com, Orcid Number: 0000-0003-1861-0221

[4] MPH, Ph.D, Kırklareli University School Orcid Number: 0000-0002-7099-4536of Health Department of Health Management, 39000 Kırklareli, Turkey. Assistant Professor, MPH, Ph.D. mercan.yeliz@gmail.com, Orcid Number: 0000-0002-7099-4536

INTRODUCTION

The worldwide spread of the Coronavirus Disease (COVID-19) has caused important changes in human life. The workload of health care professionals increased. Due to the uncertainty concerning how long the pandemic will last and how affect our lives, the stress levels of people elevated. Furthermore, new psychiatric symptoms occurred in people (Montemurro, 2020). The pandemic has significantly affected students, educational institutions, educators, and education systems in general all around the world. Educational institutions were closed and the transition to the distance education system was realized because of the pandemic in many countries (Adnan & Anwar, 2020).

Distance education is a modern system providing education for students wherever there is the internet, regardless of time and place (Çiçeklioğlu & Akmaz, 2020), and provides students with the opportunity to review and learn subjects at any time. It is also considered to have positive effects on cognitive learning (Voutilainen, Saaranen, & Sormunen, 2017). However, technological support is required in the learning process, and technological problems might appear in this respect. The lack of functional disorders of the equipment such as personal computers, webcams, and fixed internet interrupt the learning process in distance education (Wong, 2007). According to Sari et al., problems with internet access and lack of infrastructure are among the most important difficulties faced in distance education (Sari & Nayır, 2020). It was reported in previous studies that the opportunities of students such as not having a computer and internet access affect their opinions on distance education negatively (İnce, Kabul, & Diler, 2020). Al-Balaset al. reported that the satisfaction rate with distance education was 26.8% in a study conducted with medical faculty students (Al-Balas et al., 2020). Educational problems such as communication problems with the instructors, lack of socialization, sharing ideas or information are also experienced in the distance education process (Adnan & Anwar, 2020). Another concern of students regarding distance education is the hardships in learning clinical practices, the disruption of vocational education, and failures (Peloso et al., 2020). However, there are also studies, which report that the perceptions of students regarding distance education are positive in the COVID-19 pandemic (Schlenz, Schmidt, Wöstmann, Krämer, & Schulz-Weidner, 2020) (Sujarwo, Sukmawati, Akhiruddin, Ridwan, & Siradjuddin, 2020).

It is considered that the mental health of students was negatively affected after the transition to distance education. It is speculated that distance education affects the learning process negatively by causing depression and anxiety in students (Abdulghani, Sattar, Ahmad, & Akram, 2020). Mental health might affect the motivation, concentration, and social aspects of students. These are of great importance for students in being successful in educational life (Son, Hegde, Smith, Wang, & Sasangohar, 2020). In a previous study, it was shown that depression, stress, and anxiety are common among students during the COVID-19 pandemic (Islam, Barna, Raihan, Khan, & Hossain, 2020). It is argued that learning through online platforms causes depression and anxiety disorders among university students. It was reported that there is a significant relationship between student satisfaction and depression, anxiety, and stress prevalence (Fawaz & Samaha, 2020). Prolonged use of smart devices, screens, and tablets with distance education increases stress and anxiety levels (Mheidly, Fares, & Fares, 2020). In a study that examined the stress levels associated with distance education, it was reported that the general stress levels were higher in students who used smartphones instead of other electronic devices for distance education, and who did not have special places to study (Masha'al, Rababa, & Shahrour, 2020). Moreover, it was shown that cyberbullying attitudes and cyberbullying perpetration significantly increased during the pandemic (Barlett, Simmers, Roth, & Gentile, 2021). When combined with the stress brought by distance education, the stress caused by the pandemic process can affect the person in a way that causes fatigue and burnout (Mheidly et al., 2020). For this reason, it is considered that determining the opinions and stress levels of students on the distance education process will contribute to improving the distance education process. In this study, it was aimed to investigate the distance education process experiences of health school students at the end of the first year of the COVID-19 pandemic and the relationship of these experiences with their stress levels.

MATERIALS AND METHODS

2.1. Study Design

This descriptive study was conducted in March 2021 in Kırklareli, northwest Turkey. The study population consisted of 2.541 students who were studying at Kırklareli University School of Health Nursing (n=533), Midwifery (n=272), Nutrition and Dietetics (n=403), Child Development (n=698), and Health Management (n=635) departments. The minimum sample size of the study was calculated as 334 (N = 2541, p = 0.50, $\alpha = 0.05$) in the Epi Info 7.2 program.. A total of 929 students aged 18 and over who

volunteered to participate in the study were contacted for the study.

2.2. Data Collection

A Questionnaire Form was used as the data collection tool in the study. Due to the pandemic and the transition to distance education, students were not in the face-to-face education. Therefore, the survey was applied online. The data were collected by sharing the form over WhatsApp, and Microsoft teams programs with Google Forms. The participants were first informed about the study in Google Forms, and after their voluntary consent was obtained to participate in the study, they were allowed to answer the questions. The questionnaire form consisted of three parts, which were the Descriptive Form, Experiences Form about Distance Education Process, and the Perceived Stress Scale.

2.2.1. Descriptive Form

In the form that was prepared by the researchers based on the literature data, the sociodemographic characteristics of the students, their age, gender, and other descriptive characteristics, such as their department, grades, technological tools they had, internet access status, and the status of being diagnosed with COVID-19 in themselves and in their families were questioned (Al-Balas et al., 2020; Alsoufi et al., 2020; Masha'al et al., 2020).

2.2.2. Experiences Form about Distance Education Process

In the form, which was prepared by the researchers based on the literature data, the distance education processes of the students were questioned (Al-Balas et al., 2020; Alsoufi et al., 2020; Keskin & Derya, 2020; Masha'al et al., 2020). Expert opinion was received while preparing the parts related to the distance education process in the survey. Distance education processes consist of the propositions on cognitive learning, affective learning, behavioral learning of students (Kay & Kibble, 2016), and student opinions. The answers were recorded as “yes” and “no”. These propositions were classified during the mixed analysis step during the application.

2.2.3. Perceived Stress Scale

Perceived Stress Scale (PSS), which measures how stressful some situations in the life of a person are perceived, was developed by Cohen et al. in 1983 (Cohen, Kamarck, & Mermelstein, 1983). The scale, which was adapted into Turkish by Eskin et al. (2013), has three different forms consisting of 14, 10, and 4 items (Eskin, Harlak, Demirkıran, & Dereboy, 2013). The 10-item form that has the 5-point Likert-type scale was used in the present study. The scale has two sub-dimensions, which are Perception of Stress/Discomfort and Perception of Insufficient Self-efficacy. The discomfort perception reflects the feelings and opinions on the individual’s feelings that s/he cannot control important things in life, feeling nervous and stressed, feeling uncomfortable because of something unexpected, becoming angry because of events developing out of control, feeling that everything is not going well, and feeling that problems accumulate so much that they cannot be overcome. Insufficient self-efficacy perception means the feelings and opinions such as feeling unable to cope with everything, feeling insecure about the ability in handling personal issues, feeling unable to control the hardships faced in life, realizing that one cannot cope with the things that must be done. The total score, which may be received from the scale varies between 0-40, and a high score shows the high-level stress perception of the individual. Eskin et al. reported that the Cronbach’s alpha coefficient of the scale was 0.82, and was reported as 0.80 and 0.69 for stress/discomfort and insufficient self-efficacy sub-dimensions, respectively. The Cronbach’s alpha coefficient was calculated as 0.83 for the total PSS, 0.85 and 0.61 for the sub-dimensions, respectively, in this study (Eskin et al., 2013).

2.3. Study Analysis

In the present study, descriptive statistics such as number (n), percentage (%), mean, standard deviation (±SD), minimum (Min.) and maximum (Max.) values were used. The normality of the distribution was checked with the Kolmogorov-Smirnov test. Reliability Analysis was used to determine the Cronbach’s alpha coefficient of the scale. The Mann-Whitney U test was used in this study to compare the mean values between two groups for scales with nonparametric distribution, and the Kruskal-Wallis test was used to compare the mean values of three or more groups. Statistical Package for the Social Sciences 22.0 was used in the analysis of the study data, and it was considered significant when the p-value was below 0.05.

2.4. Ethic Approval

Approval for the study was obtained from the Ethics Committee of the Institute of Health Sciences of ********** University (PR******-15/02/2021). Permission of the relevant institution and the use of the scale were obtained from the author.

RESULTS

A total of 86.7% of the participants, whose mean age was 21.84±3.35 (min:18, max:45), were female, 30.8% were at health management department, 29.9% were 4th-grade students, and 51.8% were living in the city center, and 60.0% of the students had mobile phones and computers/tablets, and 63.6% had unlimited internet in the place where they lived. A total of 12.3% of the students and 26.7% of their families were diagnosed with COVID-19. When the stress levels of the participants were examined according to their descriptive characteristics, total mean PSS (p=0.001) score and discomfort perception sub-dimension score of those aged 22 years and younger (p<0.001), and the mean discomfort perception score of the female students (p=0.026) were high at statistically significant levels. It was found that having limited internet access in the place where the individual lived affected the mean scores of PSS total (p=0.008), sub-dimensions of discomfort perception (p=0.033), and perception of insufficient self-efficacy (p=0.012) at significant levels. No significant differences were detected between self or family diagnosis of COVID-19 and PSS scores and sub-dimension scores (p<0.05) (Table 1).

Table 1. The distribution of the descriptive characteristics of the participants and the distribution of their stress levels according to these characteristics (n=929).

		PSS		Discomfort Perception		Perception of Insufficient Self-Efficacy	
Variables	**n (%)**	**Mean±SD**	**p-value**	**Mean±SD**	**p-value**	**Mean±SD**	**p-value**
Sex							
Female	805 (86.7)	22.04±6.57	0.053	14.14±4.82	0.026	7.91±2.73	0.429
Male	124 (13.3)	21.28±6.92		13.14±5.34		8.15±2.96	
Age							
≤ 22	696 (74.9)	22.37±6.56	0.001	14.33±4.84	0.000	8.03±2.71	0.110
> 22	233 (25.1)	20.68±6.66		13.02±4.98		7.66±2.90	
Department							
Nutrition and Dietetics	189 (20.3)	22.87±6.97	0.170	14.57±5.13	0.108	8.30±2.90	0.247
Midwifery	89 (9.6)	20.89±6.62		13.30±4.76		7.58±2.65	
Nursing	151 (16.3)	21.13±6.73		13.28±5.17		7.84±2.82	
Health Management	286 (30.8)	22.08±6.18		14.22±4.72		7.86±2.62	
Child Development	214 (23.0)	21.95±6.72		14.01±4.75		7.94±2.83	
Grade							
1	243 (26.2)	21.69±6.81	0.828	13.79±5.17	0.723	7.90±2.92	0.142
2	260 (28.0)	22.15±6.54		13.95±4.87		8.20±2.63	
3	148 (15.9)	22.09±6.49		14.30±5.04		7.80±2.66	
4	278 (29.9)	21.89±6.62		14.09±4.63		7.81±2.80	
Living place							
City center	481 (51.8)	21.84±6.92	0.390	13.79±5.24	0.292	8.05±2.81	0.055
County town	317 (34.1)	21.71±6.35		14.03±4.60		7.68±2.63	
Town, village, abroad	131 (14.1)	22.88±6.08		14.72±4.24		8.16±2.88	
Owned technology tools							
Mobile phones	341 (36.7)	22.47±6.53	0.409	14.26±4.96	0.589	8.21±2.74	0.126
Computers/Tablets	31 (3.3)	20.45±7.24		13.00±5.23		7.45±3.25	
Mobile phones & Computers/Tablets	557 (60.0)	21.70±6.63		13.90±4.85		7.80±2.74	
Internet access							
Using the nearby internet network	83 (8.9)	22.69±6.90	0.008	14.42±5.14	0.033	8.27±2.96	0.012
Unlimited internet in the place where they lived	591 (63.6)	21.35±6.69		13.65±4.94		7.69±2.75	
Limited internet in the place where they lived	255 (27.4)	23.09±6.20		14.68±4.66		8.40±2.68	
Self diagnosis of COVID-19							
Yes	114 (12.3)	23.10±6.08	0.106	14.74±4.48	0.113	8.36±2.56	0.121
No	815 (87.7)	21.78±6.68		13.90±4.95		7.88±2.79	
Family diagnosis of COVID-19							
Yes	248 (26.7)	22.49±6.96	0.298	14.45±5.07	0.094	8.04±2.93	0.725
No	681 (73.3)	21.74±6.48		13.84± 4.83		7.90±2.70	

PSS: Perceived Stress Scale; SD: Standart Deviation

The mean PSS score of the students was found as 21.94±6.62 (min:1, max:40). When the sub-dimensions of the scale were examined, the mean score of the perception of discomfort sub-dimension was found to be 14.00±4.90, and the mean perception of insufficient self-efficacy score was 7.94±2.77 (Table 2).

Table 2. Distribution of participants' Perceived Stress Scale (PSS) total and sub-dimensions mean scores

Scale	N	Mean ± SD	Min.-Max.	Min.-Max. for PSS	Cronbach's alpha coefficient
PSS	929	21.94 ± 6.62	1-40	0-40	0.83
Discomfort Perception	929	14.00 ± 4.90	0-24	0-24	0.85
Perception of Insufficient Self-Efficacy	929	7.94 ± 2.77	0-16	0-16	0.61

PSS: Perceived Stress Scale; SD: Standart Deviation

In the present study, the mean PSS total, stress/discomfort perception, and insufficient self-efficacy perception scores of those, who had difficulty in concentrating on courses, forgot courses quickly, and students who had difficulty in learning the programs used in the distance education system were found to be higher at statistically significant levels ($p<0.001$).

Among the propositions on affective learning, the mean scores in PSS total, stress/discomfort perception, and insufficient self-efficacy perception of those who had communication problems with instructors, who were not able to express their opinions freely, and who did not find the distance education system as effective as face-to-face education, were high at statistically significant levels ($p<0.001$); and no differences were detected between PSS total and sub-dimension scores and the increase in anxiety levels of practicing in healthcare institutions during the pandemic period ($p>0.05$).

The mean PSS total, stress/discomfort perception, and insufficient self-efficacy perception scores of the students, who said that the uncertainty of the distance education process, which is one of the propositions on behavioral learning, affected their professional skills negatively, were found to be higher at statistically significant levels ($p<0.001$).

The mean PSS total, stress/discomfort perception, and insufficient self-efficacy perceptions of students, who said that the COVID-19 pandemic affected the teaching processes, who thought that distance education did not provide alternative options in the learning processes, who did not find this system sufficient in teaching processes, and who said that the teaching processes were affected negatively because of technical problems, were high at statistically significant levels ($p<0.001$); and the mean score of students who thought that distance education is not inevitable in the future were found to be significantly high in insufficient self-efficacy sub-dimension ($p=0.040$) (Table 3).

Table 3. Participants' views on internet access and distance education and their comparison with Perceived Stress Scale (PSS) mean scores (n=929).

Items	n (%)	PSS		Discomfort Perception		Perception of Insufficient Self-Efficacy	
		Mean±SD	p-value	Mean±SD	p-value	Mean±SD	p-value
Cognitive Learning							
I have difficulty in concentrating on courses distance education system.							
Yes	692 (74.5)	23.37±6.19	0.000	15.03±4.54	0.000	8.33±2.63	0.000
No	237 (25.5)	17.78±6.06		10.99±4.67		6.79±2.84	
I forget courses quickly in distance education system.							
Yes	640 (68.9)	23.51±6.11	0.000	15.13±4.51	0.000	8.38±2.64	0.000
No	289 (31.1)	18.47±6.39		11.51±4.82		6.97±2.78	
Distance education system dicreases my academic success.							
Yes	629 (67.7)	23.57±6.21	0.000	15.19±4.52	0.000	8.39±2.62	0.000
No	300 (32.3)	18.53±6.13		11.52±4.74		7.00±2.83	
I have difficulty in learning the programs used in the distance education system.							
Yes	415 (44.7)	23.71±6.28	0.000	15.27±4.59	0.000	8.44±2.80	0.000
No	514 (55.3)	20.52±6.55		12.98±4.91		7.54±2.67	
Affective Learning							
I can easily communicate with the instructors in distance education.							
Yes	551 (59.3)	20.33±6.29	0.000	12.92±4.74	0.000	7.40±2.69	0.000
No	378 (40.7)	24.30±6.39		15.58±4.71		8.72±2.69	
I am able to express my opinion freely in the distance education system.							
Yes	433 (46.6)	19.71±6.39	0.000	12.42±4.74	0.000	7.29±2.80	0.000
No	496 (53.4)	23.89±6.19		15.38±4.62		8.51±2.60	
I find the distance education system as effective as face-to-face education.							
Yes	176 (18.9)	17.67±6.36	0.000	10.88±4.94	0.000	6.79±2.94	0.000
No	753 (81.1)	22.94±6.27		14.73±4.60		8.21±2.65	
Practicing in healthcare institutions increases my stress levels during the pandemic period.							
Yes	539 (58.0)	21.86±6.55	0.565	13.98±4.94	0.816	7.88±2.76	0.512
No	390 (42.0)	22.06±6.72		14.04±4.86		8.02±2.77	
Behavioral Learning							
Uncertainty of the distance education process affect my professional skills negatively.							
Yes	654 (70.4)	23.60±6.09	0.000	15.23±4.46	0.000	8.38±2.61	0.000
No	275 (29.6)	18.00±6.15		11.09±4.68		6.90±2.85	
Opinions of Students							
COVID-19 pandemic affected the teaching processes.							
Yes	779 (83.9)	22.80±6.28	0.000	14.65±4.60	0.000	8.16±2.67	0.000
No	150 (16.1)	17.47±6.56		10.67±5.08		6.80±2.95	
Distance education provides alternative options in the learning processes.							
Yes	408 (43.9)	19.71±5.97	0.000	12.53±4.62	0.000	7.19±2.63	0.000
No	521 (56.1)	23.69±6.58		15.16±4.81		8.53±2.73	
Distance education system is sufficient in teaching processes.							
Yes	253 (27.2)	18.40±6.42	0.000	11.49±4.98	0.000	6.91±2.88	0.000
No	676 (72.8)	23.27±6.19		14.94±4.53		8.33±2.62	
My teaching processes are affected negatively because of technical problems in distance education process							
Yes	742 (79.9)	22.98±6.31	0.000	14.79±4.62	0.000	8.19±2.69	0.000
No	187 (20.1)	17.84±6.22		10.88±4.74		6.96±2.86	
Distance education is inevitable in the future.							
Yes	601 (64.7)	21.73±6.26	0.143	13.91±4.71	0.327	7.82±2.72	0.040
No	328 (35.3)	22.33±7.22		14.17±5.24		8.16±2.84	

PSS: Perceived Stress Scale; SD: Standart Deviation

DISCUSSION

In this study, the mean PSS scores of the students were determined at medium level. Our study finding was lower than students who were studying in social, health and natural sciences at different universities in Turkey reported by Aslan et al (Aslan, Ochnik, & Çınar, 2020). However, the study finding was similar to the results reported in the study of Sheroun et al., and was higher than those reported by Rogowska et al. and by Lai et al. (Lai et al., 2020; Rogowska, Kuśnierz, & Bokszczanin, 2020; Sheroun, Wankhar, Devrani, Lissamma, & Chatterjee, 2020). The differences in these studies, in which the same scale was used, might be related to difficulties in internet access. As a matter of fact, it was found in the study that more than a quarter of the participants had limited internet access, which had significant effects on their stress levels.

Among the propositions regarding cognitive learning, the mean PSS total, stress/discomfort perception, and insufficient self-efficacy perception score of the students who had difficulty in learning the programs employed in the distance education system (44.7%) was high. Similarly, Lai et al. (2020) conducted a

study with students who were studying in England and the USA and reported that the changes in the education-training format during the pandemic process had negative effects on mental health (Lai et al., 2020). In a study that was conducted on medical school students, 59.3% of the students said that they agreed with the statement "Online learning content is difficult to understand". However, although the stress levels of the students who found it difficult to learn in distance education were found to be low, this was not at a significant level (Abdulghani et al., 2020). Also, in our study, 68.9% of the students said that they forgot the subjects they learned during the distance education process quickly. The mean score of those students was found to be significantly higher than those who did not forget the subjects, in PSS and in all other sub-dimensions. Parallel to the findings of our study, Abbasi et al. (2020) reported in their study, which they conducted with medical and dental faculty students, that 34% of the students said that they were not confident enough to pass the exams after distance education (Abbasi et al., 2020).

In the present study, it was found that 74.5% of the students had difficulty in concentrating on courses during the distance education process, and those who had difficulties also had significantly higher stress perceptions. In the study conducted by Abdulghani et al., 25.9% of the students said that they had difficulty concentrating on online courses, and the stress levels of those who had difficulties were significantly higher (Abdulghani et al., 2020). In another study, the statement "The use of new digital teaching methods (e.g. online teaching) motivates me to learn" was scored 3.78/ 5.00 points by students (Schlenz et al., 2020). The differences in the percentage of those who had difficulty in concentrating on lessons might be because of regional and educational changes. Among the propositions on affective learning, the mean PSS total, stress/discomfort perception, and insufficient self-efficacy perception scores of those who did not find the distance education system as effective as face-to face education were significantly higher. Similarly, in another study, 83% of the students said that they had concern that the education they received through distance education would be insufficient (Yolcu, 2020). It was reported in the study of Qanash et al. that the students who were in favor of distance education were within normal limits as a result of the psychological evaluations (Qanash et al., 2020). However, according to the study of Schlenz et al., almost all students thought that distance education is a good option during the COVID-19 pandemic period (Schlenz et al., 2020). These differences might have occurred because of the changes in the distance education system according to the regions where the studies were conducted.

In the present study, no relations were detected between practicing in healthcare institutions and stress levels during the pandemic period. In the study that was conducted by Senturk & Dogan with nursing students before the pandemic, a very strong and positive relationship was shown between academic and practical stress and the stress in nursing education (Senturk & Dogan, 2018). This difference that was detected in the study was associated with the fact that students were educated through practical lessons, homework, online seminars, etc. during the pandemic period, and that students did not have to go to healthcare institutions such as hospitals. However, 70.4% of the students thought that the uncertainty of the distance education process might affect their professional skills, which will, in turn, affect their stress levels significantly. According to Abbasi et al. (2020), who conducted a study with students of health sciences including medicine and dentistry from different countries, it was reported that 74.7% of students thought that clinical and practical skills could be learned best in laboratories and clinics (Abbasi et al., 2020). When this is considered, great efforts should be made for the practical processes of the students who participated in the study after the pandemic.

The mean PSS total, stress/discomfort perception, and insufficient self-efficacy perception score (79.9%) of the students, who said that the teaching processes were affected negatively because of technical problems in the propositions in the opinions of students, was significantly high. Abbasi et al. (2020) reported that 41% of the learning processes of students were interrupted by internet problems, and Abdulghani et al. (2020) reported that 54.3% of the students agreed to the statement "There is mental pressure before online learning session because of internet connection". It was found that 31.8% of the students, who agreed to this statement, experienced mild stress, 5.3% moderate stress, and 11.4% severe stress. The student profile may have caused these differences as the students were connected to the system by their own means due to distance education.

CONCLUSION AND RECOMMENDATIONS

In this study, at the end of the first year of the COVID-19 pandemic, the mean PSS, perception of discomfort, and insufficient self-efficacy score of the students were at a moderate level. The perceived stress levels of students, who had difficulty in learning the programs employed in the distance education system, who thought that the teaching processes were affected negatively because of technical problems, who did not find the distance education system adequate in the teaching processes, who have communication problems in distance education, who forgot the subjects taught with distance education quickly, and

who had difficulty in concentrating on courses, perception and insufficient self-efficacy levels were high. It was also found that the uncertainty of the distance education process of the students affected their professional skills, which affected their stress levels at significant levels.

During the pandemic, the distance education process has been challenging for students due to the fact that students continue their education life outside of their accustomed school environment and the anxiety caused by the uncertainty regarding COVID-19. As suggestions, the participation and motivation of students can be increased in distance education by using interactive methods, providing student-instructor interaction, and receiving feedback from students, and learning processes can be supported with interactive methods. Online psychological counseling services can be provided to decrease the stress levels of students. It is possible to be prepared for unexpected situations in the future by determining the experiences of educational institutions on distance education and the opinions of students during the COVID-19 pandemic with the studies conducted in this field.

Conflict of Interest:

The authors declare no conflict of interest.

Ethical Approval (Must be answered):

Approval for the study was obtained from the Ethics Committee of the Institute of Health Sciences of Kırklareli University (PR0298R0-15/02/2021). Permission of the relevant institution and the use of the scale were obtained from the author.

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REFERENCES

Abbasi, Maria S, Ahmed, Naseer, Sajjad, Batool, Alshahrani, Abdullah, Saeed, Sumera, Sarfaraz, Shaur, . . . Abduljabbar, Tariq. (2020). E-Learning perception and satisfaction among health sciences students amid the COVID-19 pandemic. *Work*(Preprint), 1-8.

Abdulghani, Hamza Mohammad, Sattar, Kamran, Ahmad, Tauseef, & Akram, Ashfaq. (2020). Association of COVID-19 Pandemic with undergraduate Medical Students' Perceived Stress and Coping. *Psychology Research and Behavior Management, 13*, 871.

Adnan, Muhammad, & Anwar, Kainat. (2020). Online Learning amid the COVID-19 Pandemic: Students' Perspectives. *Online Submission, 2*(1), 45-51.

Al-Balas, M., Al-Balas, H. I., Jaber, H. M., Obeidat, K., Al-Balas, H., Aborajooh, E. A., . . . Al-Balas, B. (2020). Distance learning in clinical medical education amid COVID-19 pandemic in Jordan: current situation, challenges, and perspectives. *BMC Med Educ, 20*(1), 341. doi:10.1186/s12909-020-02257-4

Alsoufi, A., Alsuyihili, A., Msherghi, A., Elhadi, A., Atiyah, H., Ashini, A., . . . Elhadi, M. (2020). Impact of the COVID-19 pandemic on medical education: Medical students' knowledge, attitudes, and practices regarding electronic learning. *PloS one, 15*(11), e0242905. doi:10.1371/journal.pone.0242905

Aslan, I., Ochnik, D., & Çınar, O. (2020). Exploring Perceived Stress among Students in Turkey during the COVID-19 Pandemic. *Int J Environ Res Public Health, 17*(23). doi:10.3390/ijerph17238961

Barlett, C. P., Simmers, M. M., Roth, B., & Gentile, D. (2021). Comparing cyberbullying prevalence and process before and during the COVID-19 pandemic. *J Soc Psychol, 161*(4), 408-418. doi:10.1080/00224545.2021.1918619

Cohen, Sheldon, Kamarck, T, & Mermelstein, ROBIN. (1983). Perceived stress scale (PSS). *J Health Soc Beh, 24*, 285.

Çiçeklioğlu, H, & Akmaz, A. (2020). Üniversite öğrencilerinin kişilik özelliklerinin uzaktan eğitim sistemine bakış açıları üzerine etkisi: Covıd-19 sürecine bir bakış. *Journal of Social and Humanities Sciences Research, 7*(60), 2939-2953.

Eskin, Mehmet, Harlak, Hacer, Demirkıran, Fatma, & Dereboy, Çiğdem. (2013). *Algılanan stres ölçeğinin Türkçeye uyarlanması: güvenirlik ve geçerlik analizi.* Paper presented at the New/Yeni Symposium Journal.

Fawaz, Mirna, & Samaha, Ali. (2020). *E-learning: Depression, anxiety, and stress symptomatology among Lebanese university students during COVID-19 quarantine*. Paper presented at the Nursing Forum.

Islam, Md Akhtarul, Barna, Sutapa Dey, Raihan, Hasin, Khan, Md Nafiul Alam, & Hossain, Md Tanvir. (2020). Depression and anxiety among university students during the COVID-19 pandemic in Bangladesh: A web-based cross-sectional survey. *PloS one, 15*(8), e0238162.

İnce, Ebru Yılmaz, Kabul, Ahmet, & Diler, İbrahim. (2020). Distance education in higher education in the COVID-19 pandemic process: A case of Isparta Applied Sciences University. *Distance Education, 4*(4).

Kay, D., & Kibble, J. (2016). Learning theories 101: application to everyday teaching and scholarship. *Adv Physiol Educ, 40*(1), 17-25. doi:10.1152/advan.00132.2015

Keskin, Merve, & Derya, ÖZER. (2020). COVID-19 sürecinde öğrencilerin web tabanlı uzaktan eğitime yönelik geri bildirimlerinin değerlendirilmesi. *İzmir Katip Çelebi Üniversitesi Sağlık Bilimleri Fakültesi Dergisi, 5*(2), 59-67.

Lai, Agnes Yuen-kwan, Lee, Letitia, Wang, Man-ping, Feng, Yibin, Lai, Theresa Tze-kwan, Ho, Lai-ming, . . . Lam, Tai-hing. (2020). Mental health impacts of the COVID-19 pandemic on international university students, related stressors, and coping strategies. *Frontiers in Psychiatry, 11*.

Masha'al, Dina, Rababa, Mohammad, & Shahrour, Ghada. (2020). Distance Learning–Related Stress Among Undergraduate Nursing Students During the COVID-19 Pandemic. *Journal of Nursing Education, 59*(12), 666-674.

Mheidly, N., Fares, M. Y., & Fares, J. (2020). Coping With Stress and Burnout Associated With Telecommunication and Online Learning. *Front Public Health, 8*, 574969. doi:10.3389/fpubh.2020.574969

Montemurro, N. (2020). The emotional impact of COVID-19: From medical staff to common people. *Brain Behav Immun, 87*, 23-24. doi:10.1016/j.bbi.2020.03.032

Peloso, R. M., Ferruzzi, F., Mori, A. A., Camacho, D. P., Franzin, Lcds, Margioto Teston, A. P., & Freitas, K. M. S. (2020). Notes from the Field: Concerns of Health-Related Higher Education Students in Brazil Pertaining to Distance Learning During the Coronavirus Pandemic. *Eval Health Prof, 43*(3), 201-203. doi:10.1177/0163278720939302

Qanash, Sultan, Al-Husayni, Faisal, Alemam, Shereen, Alqublan, Lina, Alwafi, Emad, Mufti, Hani N, . . . Ghabashi, Ala'a. (2020). Psychological Effects on Health Science Students After Implementation of COVID-19 Quarantine and Distance Learning in Saudi Arabia. *Cureus, 12*(11).

Rogowska, Aleksandra M, Kuśnierz, Cezary, & Bokszczanin, Anna. (2020). Examining anxiety, life satisfaction, general health, stress and coping styles during COVID-19 pandemic in Polish sample of university students. *Psychology Research and Behavior Management, 13*, 797.

Sari, Tamer, & Nayır, Funda. (2020). Challenges in Distance Education During the (Covid-19) Pandemic Period. *Qualitative Research in Education, 9*(3), 328-360.

Schlenz, M. A., Schmidt, A., Wöstmann, B., Krämer, N., & Schulz-Weidner, N. (2020). Students' and lecturers' perspective on the implementation of online learning in dental education due to SARS-CoV-2 (COVID-19): a cross-sectional study. *BMC Med Educ, 20*(1), 354. doi:10.1186/s12909-020-02266-3

Senturk, Sibel, & Dogan, Nevin. (2018). Determination of the stress experienced by nursing students' during nursing education. *International journal of caring sciences, 11*(2), 896-904.

Sheroun, Deepika, Wankhar, D, Devrani, Amita, Lissamma, PV, & Chatterjee, K. (2020). A Study to Assess the Perceived Stress and Coping Strategies among B. Sc. Nursing Students of Selected Colleges in Pune during COVID-19 Pandemic Lockdown'. *International Journal of Science and Healthcare Research, 5*(2), 280-288.

Son, Changwon, Hegde, Sudeep, Smith, Alec, Wang, Xiaomei, & Sasangohar, Farzan. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of medical internet research, 22*(9), e21279.

Sujarwo, Sujarwo, Sukmawati, Sukmawati, Akhiruddin, Akhiruddin, Ridwan, Ridwan, & Siradjuddin, Suharti Siradjuddin Suharti. (2020). An Analysis of University Students' Perspective on Online Learning in the Midst of Covid-19 Pandemic. *Jurnal Pendidikan dan Pengajaran, 53*(2), 125-137.

Voutilainen, A., Saaranen, T., & Sormunen, M. (2017). Conventional vs. e-learning in nursing education: A systematic review and meta-analysis. *Nurse Educ Today, 50*, 97-103. doi:10.1016/j.nedt.2016.12.020

Wong, Dominic. (2007). A critical literature review on e-learning limitations. *Journal for the Advancement of Science and Arts, 2*(1), 55-62.

Yolcu, Hacı Hasan. (2020). Sınıf öğretmeni adaylarının uzaktan eğitim deneyimleri. *Açıköğretim Uygulamaları ve Araştırmaları Dergisi, 6*(4), 237-250.

Determining Relationship Between Headache and Cyberchondria Levels in University Students with Headache

Mustafa Savaş TORLAK[1], Halil TÜRKTEMIZ[2]

Corresponding Author
Halil TÜRKTEMİZ

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ABSTRACT

Background: University students may experience various health problems throughout their education life. One of the most common health problems faced by students is headache. Today, university students use the internet extensively to access information. Therefore, it is predicted that university students with headaches may tend to search for health information on the internet.

Purpose of the Study: In this study, it was aimed to determine the relationship between headache and cyberchondria levels of university students with headache.

Method: A questionnaire form was used to collect data in the descriptive study. The questionnaire form included Socio-demographic form, Cyberchondria Scale, Headache Impact Test (HIT-6) and Visual Analog Scale (VAS). The study data were obtained from the Vocational School of Health Services of a University in Konya. 225 volunteers whose headaches lasted more than 30 minutes were included in the study. Independent sample t-test was used for pairwise comparisons, and one-way analysis of variance was used to compare more than two groups. Correlation analysis was used to determine the relationship between scales.

Findings: Headache impact levels (60.19±7.99) and pain severity (6.75±1.88) of the participants were high. Headache impact level and severity of female students were higher than males ($p<0.05$). In the study, a positive correlation was found between impact ($p<0,01$, $r=0,269$) and severity of headache ($p<0,01$, $r=0,216$) and the level of cyberchondria.

Conclusion: Increase in headache in university students increased the level of cyberchondria. Therefore, there is a need for approaches to reduce headaches in order to reduce students' cyberchondria level. It is recommended to increase the social activities that can help reduce the stress levels and headaches of the students, and to increase the number of elective courses with physical activities.

[1] Assist. Prof., Vocational School of Health Services, KTO Karatay University, Konya. mustafa.savas.torlak@karatay.edu.tr, Orcid Number: htttps://orcid.org/0000-0002-8084-6203
[2] Assist. Prof., Vocational School of Health Services, KTO Karatay University, Konya. halilturktemiz@gmail.com, Orcid Number: https://orcid.org/0000-0001-8920-8120

INTRODUCTION

Today, the Internet is the most popular tool used to access information. The Internet makes it possible to access a large number of information and opinions at relatively low costs (Singh et al 2016). The Internet is often used to research health-related topics. About 60-80% of internet users search for health-related information on the web (Berle et al 2020). But only 2% of all internet searches contain accurate medical information (White and Horvitz 2009).

Searching for health information online allows people to learn about their diseases and treatments. However, it is observed that some people's anxiety levels increase due to online misinformation about their diseases (White and Horvitz 2009). In a study, 46% of the participants stated that they thought of applying to a psychiatrist because of their health information on the internet (Fox and Duggan 2013). The person's increased anxiety causes them to search for more disease information online. This event turns into a vicious circle and the state of cyberchondria emerges (Varma et al 2021). The term cyberchondria was first used in an article in the Wall Street Journal in 1999 (Starcevic and Berle 2013). The cyberchondria is derived from the words cyber and hypochondriasis. Although hypochondriasis is not a disorder in the body, it is characterized as the behavior of going to the doctor by feeling sick all the time. In other words, cyberchondria is the digital version of hypochondriasis (Starcevic et al 2020). The cyberchondria cause increased anxiety and depressive state (Mathes et al 2018). In studies conducted with students, it was stated that students with health problems intensely seek medical information online and these students are anxious and distressed (Singh and Brown 2014; Muse et al 2012).

The pain is a subjective experience influenced by genetic, gender, social, cultural and personal parameters. Today, it is accepted that pain is not only effective in biological but also psychological factors. For example, the mood experienced by the person can lower the pain threshold and cause the person to feel the pain more severely. Pain experience is closely related to many cognitive factors such as thought about the source of pain, perception of pain threshold, and perception of controllability of pain (Michealides and Zis 2019, Okyayuz 2013).

The headaches are one of the most common complaints in population. The rate of people who experience a headache at least once in their lifetime is over 90% in the general population (Özsaydı and Balcı 2021). In a study conducted in Turkey, migraine was found in 29.2% of adolescents and children and tension-type headache in 26.7% of them (Wöber et al 2018). Similarly, in a study conducted with 2023 university students in Turkey, tension-type headache was found in 22.64% and migraine in 17.89% (Kurt and Kaplan 2008). The headache can be thought of as pain radiating to the forehead, around the eyes, temples, or scalp and usually does not include pain specific to the face or neck (Whitehouse and Agrawal 2017).

For students who come to the university and start a new life; many reasons such as the new environment they encounter, new friends, academic staff, financial and academic difficulties carry the potential for stress (Durna, 2006). These stress factors can cause headaches in university students. At the same time, university students who actively use the internet may tend to search for health problems they encounter on the internet. Although the relationship between cyberchondria and anxiety has been clearly demonstrated in studies, no study has been found that examines the relationship between headache and cyberchondria. The aim of this study is to examine the relationship between cyberchondria levels and headache status in university students.

MATERIALS AND METHODS

In the descriptive study, a questionnaire form was used as a data collection. The questionnaire form consisted of four parts. In the first part, there were questions about the socio-demographic characteristics of the participants such as age and gender. The second part included the Cyberchondria Scale. The Turkish reliability and validity study of the cyberchondria scale developed by McElroy and Shevlin (2014) was performed by Batıgün et al. Cyberchondria Scale consists of 28 items scored on a 5-point likert type ("1=Never", "2=Rarely", "3=Sometimes", "4=Often" and "5=Always"). High scores from the scale indicate that the level of cyberchondria has increased (Batıgün et al 2018). Headache Impact Test (HIT-6) was included in the third part. The Turkish reliability and validity study of the HIT-6 developed by Bayliss et al (2003) was performed by Dikmen et al. The Headache Impact Test (HIT-6) includes areas such as vitality, pain and psychological state, social, role, and cognitive functioning. Each question is answered using a 5-point Likert scale (6 = never, 8 = rarely, 10 = sometimes 11 = very often, 13 = always). A score of 36 to 78 can be obtained from the test, and high scores indicate an increased headache impact. (Dikmen et al 2020). In the fourth section, the visual analog scale (VAS) was included. The Turkish reliability and validity study of the VAS developed by Boonstra et al (2008) was performed by Aydın et al. VAS is a 10 cm linear subjective scale. The participant marks the

current pain between 0-10 cm. A value of 0 means no pain, a value of 10 means severe pain (Aydın et al 2011). The Cronbach's Alpha values of the Headache Impact Test (HIT-6) and the Cyberchondria Scale used in the study were found to be 0.867 and 0.931, respectively. Considering these values, the scales were found reliable.

The study was carried out at a Foundation University in Konya. The population of the research consisted of Vocational School of Health Services students (n=750). No sampling method was chosen in the research, and 352 people who voluntarily participated in the research formed the sample of the research.

SPSS 21.0 package program was used for statistical analysis of the data (IBM SPSS Statistics for Windows, Version 21.0., IBM Corp., Armonk, NY, USA). Since the data showed normal distribution, analyzes were performed using parametric tests at 95% confidence interval (p=0.05). Frequency and percentage analysis were used for descriptive statistics. Independent sample t-test was used for pairwise comparisons, and one-way analysis of variance was used to compare more than two groups. Correlation analysis was used to determine the relationship between scales.

RESULTS

The mean age of the participants was 21.03±2.52. The mean headache impact level mean was 60.19±7.99 and the mean pain severity was 6.75±1.88 of the participants. There was no difference between the headache impact level (p=0.215 >0.05), headache severity (p=0.662 >0.05) and cyberchondria levels (p=0.932 >0.05) according to the class levels of the participants. There was no difference between the headache impact level (p=0.584 >0.05), headache severity (p=0.730 >0.05) and cyberchondria levels (p=0.377 >0.05) according to the age groups of the participants.

Table 1: Socio-demographic findings

Variable	Group	Frequency	%
Gender	**Female**		**88.4**
	Male		11.6
Age	**18-20**	**110**	**48.9**
	21-23	102	45.3
	24+	13	5.8
Program	Anesthesia	31	13.8
	Child development	**58**	**25.8**
	Dialysis	36	16.0
	Physiotherapy	25	11.1
	First and Emergency Aid	37	16.4
	Medical Imaging	38	16.9
Class	1	91	41.4
	2	**129**	**58.6**

The socio-demographic data of the participants are shown in Table 1. 88.4% of the participants were female students and 11.62% were male students. 48.9% of the age groups are in the 18-20 age group, 45.3% are in the 21-23 age range, 5.8% are in the age group of 24 and over. It is included in 13.8% of the participants were anaesthesia, 25.8% child development, 16.0% dialysis, 11.1% physiotherapy, 16.4% first and emergency aid and 16.9% the medical imaging techniques program. 41.4% of the participants are in the 1st grade and 58.6% are in the 2nd grade.

Table 2: Headache and cyberchondria levels by gender of the participants

Gender		Mean	St. Deviation	t	p
Headache Impact Test (HIT-6)	**Female**	**60.84**	**7.736**	3.498	**0.001**
	Male	55.15	8.289		
Headache Severity (VAS)	**Female**	**6.86**	**1.871**	2.525	**0.012**
	Male	5.88	1.774		
Cyberchondria	Female	2.30	0.635	1.953	0.052
	Male	2.04	0.730		

Table 2 shows the levels of headache and cyberchondria according to the gender of the participants. It was determined that the impact level of headache was statistically higher in female students compared to male students (t=3.498; p=0.001). Similarly, headache severity of female students was statistically higher than males (t=2.525;

p=0.012). There was no significant difference between the levels of cyberchondria according to the gender of the participants (p=0.052>0.05).

Table 3: Headache and cyberchondria levels according to the programs of the participants

		Mean	St. Deviation	F	P	Difference
Headache impact level	*Anaesthesia*	*61.23*	*8.313*	*3.093*	***0.010***	***1-3 2-4,6 3-1,4,5,6***
	Child Development	*58.38*	*7.838*			
	Dialysis	*57.08*	*9.403*			
	Physiotherapy	*62.80*	*7.320*			
	First- Emer. aid	*61.32*	*6.425*			
	Med. İmaging	*62.21*	*7.215*			
Headache Severity	*Anaesthesia*	*6.52*	*0.382*	*1.008*	*0.414*	
	Child Development	*6.79*	*0.265*			
	Dialysis	*6.30*	*0.257*			
	Physiotherapy	*6.60*	*0.321*			
	First- Emer. aid	*7.13*	*0.353*			
	Med. İmaging	*7.03*	*0.259*			
Cyberchondria	*Anaesthesia*	*2.57*	*0.110*	*1.737*	*0.127*	
	Child Development	*2.24*	*0.068*			
	Dialysis	*2.14*	*0.134*			
	Physiotherapy	*2.25*	*0.146*			
	First- Emer. aid	*2.28*	*0.967*			
	Med. İmaging	*2.20*	*0.109*			

Table 3 shows the headache and cyberchondria levels of the participants according to their programs. It was determined that the headache impact levels of the students in the dialysis program were statistically lower than the students in the anesthesia, physiotherapy, first and emergency aid and medical imaging programs (F=3.093; p=0.010). It was seen that the headache impact levels of the students in the child development program were statistically lower than the students in the physiotherapy and medical imaging techniques programs (F=3.093; p=0.010). There was no difference between the headache severity and cyberchondria levels of the participants.

Table 4. Headache impact level, headache severity and relationship with cyberchondria

	1	**2**	**3**
HIT6	1		
VAS	.483**	1	
Cyberchondria	.269**	.216**	1

**** Correlation is significant at the 0.01 level (2-tailed).**

Table 4 shows the correlation between headache and cyberchondria levels of the participants. There was a positive correlation between headache impact level and headache severity. There was a positive correlation between the headache impact level and cyberchondria. Similarly, a positive correlation was found between headache severity and cyberchondria.

CONCLUSION AND RECOMMENDATIONS

In the study, it was observed that the headache impact levels (60.19±7.99) and pain severity (6.75±1.88) of the participants were high. This finding shows that students have headaches above the average. Özsaydı and Balcı (2021) stated that approximately 47% of the students had a headache severity average of more than 5 according to the VAS, and that headache had a negative impact on students' success. So much so that it shows that the headache that university students face is one of the factors that should be considered for their success in the courses.

When headache was evaluated according to gender, it was determined that the headache impact level and headache severity of female students were statistically higher than males. Similarly, Özsaydı and Balcı (2021) showed that female students have higher headaches than males. Scher (2008) states that chronic headache is a risk factor in women. In a study comparing genders, it was shown that women complain of headache more than men because their social roles, physiology and disease orientations are different from men (Celentano et al 1990). This finding is also important for students studying in health fields. Because the majority of students studying in health fields are girls. On the other hand, the obtained finding is similar to the literature.

It has been stated that university students in the field of health often suffer from headaches (Anaya et al 2022). University students experience stress, anxiety and depression that can cause headaches more than the normal population. Especially during exam periods, students' fear and anxiety increase (Quek et al 2019). Headache impact levels of dialysis program students in the study; anesthesia, first and emergency aid, physiotherapy and medical imaging techniques program were found to be lower than students. Headache impact levels of the students of the child development program were lower than the students of the physiotherapy and medical imaging techniques program. As a result, it was thought that dialysis program students might have higher levels of stress and anxiety compared to other programs.

In the study, it was observed that as the headaches of the students increased, the levels of cyberchondria also increased. Individuals with chronic pain often turn to the Internet to find out the origin of their pain. However, individuals often get inaccurate information on the Internet and worry (Gibler et al 2019). It is an obvious example to search the causes of headaches on the internet and consider the possibility of a brain tumor, which is the last possibility (Erdoğan et al 2020). Üstüner et al. (2010) conducted a study on students' headaches; stated that it is important to identify situations that increase stress and stay away from them in order to relieve headaches. In this respect, we think that attempts to reduce headache can also reduce cyberchondria.

There were some limitations of our study. The anxiety levels of the participants in the study were not measured. In addition, a questionnaire to evaluate internet addiction was not used. For this reason, the increase in anxiety due to cyberchondria could not be determined.

REFERENCES

Anaya, F., Aliya W. A., Hamoudeh, F., Nazzal, S. & Beesan, M. (2022). Epidemiological and clinical characteristics of headache among medical students in Palestine: a cross sectional study. BMC Neurology, 22(4), 1-8. https://doi.org/10.1186/s12883-021-02526-9.

Aydın, A., Araz, A., Aslan, A. (2011). Görsel analog ölçeği ve duygu kafesi: kültürümüze uyarlama çalışması, Türk Psikoloji Yazıları, 14(27), 1-17.

Bayliss, M.S., Dewey, J.E., Dunlap, I., Batenhorst, A.S., Cady, R., Diamond, M., Shefyell, F. (2003). A study of the feasibility of Internet administration of a computerized health survey: The headache impact test (HIT), Quality of Life Research,12:953–961

Batıgün, A. D., Gör, N., Kömürcü, B. & Ertürk, İ. Ş. (2018). Siberkondriya ölçeği (SİBKÖ): Geliştirme, geçerlik ve güvenirlik çalışması. The Journal of Psychiatry and Neurological Sciences, 31(2), 148-162.

Berle, D., Starcevic, V., Khazaal, Y., Viswasam, K., Hede, V. & Mcmullan, R. D. (2019). Relationships between online health information seeking and psychopathology. Gen Hosp Psychiatry, 62:96-97. https://doi.org/10.1016/j.genhosppsych.2019.04.006.

Boonstra, A.M., SchiphorstPreuper, H.R., Reneman, M.F., Posthumus, J.B. & Stewart, R.E. (2008). Reliability and validity of the visual analogue scale for disability in patients with chronic musculoskeletal pain. International Journal of Rehabilitation Research, 31(2):165–169. https://doi.org/10.1097/MRR.0b013e3282fc0f93.

Celentalo, D.D., Linet, M.S. & Stewart, F.F. (1990). Gender differences in the experience of headache. Social Science & Medicine, 30(12), 1289-95. https://doi.org/10.1016/0277-9536(90)90309-G

Dikmen, P.Y., Bozdağ, M., Güneş, M., Koşak, S., Taşdelen, B., Uluduz, D. & Ozge, A. (2020). Reliability and validity of turkish version of headache impact test (HIT-6) in patients with migraine. Archives of Neuropsychiatry, 58(4):300-307. https://doi.org/10.29399/npa.24956.

Durna, F. (2006). Üniversite öğrencilerinin stres düzeylerinin bazı değişkenler açısından incelenmesi. Journal of Economics and Administrativve Sciences, 20(1):319-343.

Erdoğan, T., Aydemir, Y., aydın, A., İnci, M. B., Ekerbiçer, H., Muratdağı, G. & Kurban, A. (2020). İnternet ve televizyonda sağlık bilgisi arama davranışı ve ilişkili faktörler. Sakarya Tıp Dergisi, 10(Özel Sayı), 1-10. https://doi.org/10.31832 smj.739127

Fox, S., Duggan, M. (2013). Health Online 2013. https://www.pewinternet.org/wp-content/uploads/sites/9/media/Files/Reports/PIP_HealthOnline.pdf.

Gibler, R.C., Jastrowski Mano, K.E., O'Bryne, E.M. & Beadel, J.R. (2019). The role of pain catastrophizing in cyberchondria among emerging adults. Psychology, Health & Medicine, 24(10):1267-1276.
https://doi.org/10.1080/13548506.2019.1605087.

Kurt, S., Kaplan, Y. (2008). Epidemiological and clinical characteristics of headache in university students. Clinical Neurology and Neurosurgery, 110(1):46-50.

Mathes, B.M., Norr, A.M., Allan, N.P., Albanese M.J. & Schmidt, N.B. (2018). Cyberchondria: overlap with health anxiety and unique relations with impairment, quality of life, and service utilization, Psychiatry Research, 261:204-211. https://doi.org/10.1016/j.psychres.2018.01.002

McElroy, E., Shevlin, M. (2014). The development and initial validation of the cyberchondria severity scale (CSS), Journal of Anxiety Disorders, 28(2):259-65.

Michealides, A., Zis, P. (2019). Depression, anxiety and acute pain: links and management challenges. Postgraduate Medicine, 131(7), 438-444, https://doi.org/10.1080/00325481.2019.1663705

Muse, K., McManus, F., Leung, C., Meghreblian, B., Williams, J.M. (2012). Cyberchondriasis: fact or fiction? A preliminary examination of the relationship between health anxiety and searching for health information on the Internet. J Anxiety Disord, 26(1):189-196. https://doi.org/10.1016/j.janxdis.2011.11.005.

Okyayuz, Ü.H. (2013). Sağlık Psikolojisi. Türk Psikologlar Derneği.

Özsaydı S., Balcı E., (2021). Erciyes Üniversitesi tıp fakültesi öğrencilerinde baş ağrısı sıklığı ve ilişkili faktörler. Yükseköğretim ve Bilim Dergisi/Journal of Higher Education and Science, 11(3), 496-502. https://doi.org/10.5961/jhes.2021.469

Quek T.T.C., Tam, W.W.S., Tran & B.X. et al. (2019). The global prevalence of anxiety among medical students: a Meta-analysis. International Journal of Environmental Research and Public Health, 16:2735.

Scher, A.I., Midgette, L.A. & Lipton, R.B. (2008), Risk factors for headache chronification. Headache: The Journal of Head and Face Pain, 48: 16-25. https://doi.org/10.1111/j.1526-4610.2007.00970.x

Singh, K., Fox, J. R. E. & Brown, R. J. (2016). Health anxiety and Internet use: A thematic analysis. Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 10(2), article 4. doi: 10.5817/CP2016-2-4

Singh, K., Brown, R.J. (2014). Health-related internet habits and health anxiety in university students. Anxiety Stress Coping, 27(5):542-554. https://doi.org/10.1080/10615806.2014.888061

Starcevic, V., Berle, D. (2013). Cyberchondria: towards a better understanding of excessive health-related Internet use. Expert Rev. Neurother, 13(2), 205–213.

Starcevic, V., Berle, D. & Arnaez, S. (2020). Recent Insights Into Cyberchondria. Current Psychiatry Reports, 22:56, https://doi.org/10.1007/s11920-020-01179-8

Üstüner Top, F., Usta, T. & Gücesan, S. (2010). Sağlık bilimleri fakültesi öğrencilerinin baş ağrılarının karakteristik özelliklerinin belirlenmesi ve baş ağrısını geçirmek için uyguladıkları yöntemlerde kültürel inanışların değerlendirilmesi. Ağrı, 22(1), 13-20.

Varma, R., Das, S. & Singh, T. (2021). Cyberchondria amidst COVID-19 pandemic: challenges and management strategies. Front Psychiatry, 12:618508. https://doi.org/10.3389/fpsyt.2021.618508. eCollection 2021.

Vos, T., Flaxman, A.D., Naghavi, M., Lozano, R., Michaoud, C., ……& Memish, Z.A. (2012). Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. 380(9859): 2163–2196. https://doi.org/10.1016/S0140-6736(12)61729-2.

White, R.W., Horvitz, E. (2009). Cyberchondria: studies of the escalation of medical concerns in web search. ACM Transactions on Information Systems, 27(4). https://doi.org/10.1145/1629096.1629101

Whitehouse, W.P., Agrawal, S. (2017). Management of children and young people with headache. Archives of Disease in Childhood. Education and Practice Edition, 102:58–65. https://doi.org/10.1136/archdischild-2016-311803

Wöber, C., Wöber-Bingöl, Ç., Uluduz, D., Aslan, T.S., Uygunoglu, U., et al. (2018). Undifferentiated headache: broadening the approach to headache in children and adolescents, with supporting evidence from a nationwide school-based cross-sectional survey in Turkey. The Journal of Headache Pain, 19(1):18. https://doi.org/10.1186/s10194-018-0847-1.

Investigation of the Relationship between Health Literacy and Quality of Life in Cancer Patients Treated in the Oncology Clinic *

Sezer AVCI[1], Muhammet Emin AYIK[2]

Corresponding Author

Sezer AVCI

DOİ

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Patients, Cancer, Health literacy, Quality of life.

ABSTRACT

The research was carried out to examine the relationship between health literacy and quality of life in cancer patients treated in the oncology clinics of a university hospital in a city in Turkey. The cross-sectional study was conducted with 160 cancer patients treated between September 2020 and July 2021. In the collection of data, Information Form for Introducing Cancer Patients, Rotterdam Symptom Checklist (RSCL), and Turkey Health Literacy-32 (THL-32) Scale were used. The mean total score of the patients from the THL-32 Scale was 33.82±13.29, and the total mean RSCL score was 43.31±18.10. The scores obtained from the sub-dimensions of RSCL are as follows: Physical Symptom Discomfort (51.34±25.79), Psychological Symptom Discomfort (61.63±25.82), Activity Level (28.98±33.61), Quality of Life (78.43±16.11). It was found that there was a moderate positive correlation between the total mean score of RSCL and the mean score of THL-32 Scale (r=0.31, p<0.01). The health literacy level of cancer patients participating in the study was determined as problematic/limited. It was concluded that as the health literacy level of the patients increased, their quality of life was moderately positively affected. In addition, it was determined that the patients were negatively affected by the physical symptoms and psychological state changes caused by the treatment during the treatment process, they were not in good condition in daily living activities and their quality of life was low.

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[1] Asistant Professor, Health Sciences of Faculty, Hasan Kalyoncu University, Gaziantep. sezer.avci@hku.edu.tr, Orcid Number: https://orcid.org/0000-0003-3575-4585

[2] Oncology Clinic Nursing, Dicle University Hospital, Diyarbakır. muhammet.ayik@std.hku.edu.tr, Orcid Number: https://orcid.org/0000-0001-8651-5248

INTRODUCTION

Cancer; It is one of the chronic diseases that continues to be important today due to its prevalence, mortality and disability, and high side effects and treatment costs (Donar, 2021; Gursu et al., 2012). It ranks second among the causes of death in Turkey and in the world, and one of 6 deaths in the world and one of 5 deaths in Turkey is due to cancer (WHO, 2021; TSI, 2017). In addition, cancer greatly affects the quality of life of patients in terms of physical, mental and social problems and disability caused by both the disease and the healing (Bakar, 2017).

World Health Organization defined quality of life as "the individual's feeling of self-life in a culture and value organization according to his/her own goals, hopes, standards and benefits" (WHO, 2003). When cancer is diagnosed early and treatment is started on time, it will prolong the survival of individuals and may positively affect their quality of life (Lemieux et al., 2011). It has been observed that individuals who value their health and want to improve their health exhibit positive lifestyle attitudes, are less likely to have cancer, and have a better quality of life (Kucukberber, Ozdıllı & Yorulmaz, 2011).

Diagnosing cancer and starting treatment upsets the physical, emotional, social and economic order of the person and the family, prevents them from being satisfied with life and reduces their quality of life (Bıkmaz & Unsar, 2021). Determining the level of impact on the quality of life of patients receiving chemotherapy is important in terms of helping patients in this regard (Arslan & Bolukbas, 2003). It is of great importance to turn to useful and reliable data from the right information sources in order to prevent or cure cancer. Reaching real and reliable information about healing in cancer increases compliance with the healing process (Deger & Zorluoglu, 2021).

Individuals need to be literate in adapting to survival, increasing their quality of life and maintaining their own participation in their lives. The fact that literacy skills are developed increases the individual's control over his own health and illness (Ersin, 2015). When the terms health and literacy, which are two important terms for people to control their own health, are combined, the concept of health literacy has emerged (Eadie, 2014). Health literacy; "it is related to literacy and it is about making decisions in people's daily lives regarding their health status, and it is the knowledge, compliance and competence to access, understand, evaluate and use the necessary health data for the purpose of further improving their health and preventing diseases in order to improve/maintain their quality of life" (Sørensen et al., 2012).

When health literacy is examined from an individual point of view, disease control is difficult, complications are high, quality of life is low, non-compliance with treatment and dissatisfaction with service are present in people with low health literacy (Al Sayah & Williams, 2012). Individuals are responsible for their own health and they need to exhibit appropriate attitudes and behaviors with sufficient knowledge and awareness in order to maintain their health status (Tozun & Sozmen, 2014).

It is thought that having health information about the diagnosis of cancer patients after the diagnosis of cancer may be related to health literacy in the fulfillment of individual applications for knowing the stages of the treatment process. The quality of life of individuals with insufficient health literacy in important diseases such as cancer may be adversely affected due to the negative health outcomes and the burdens of medical treatment. Having accurate information about the causes of cancer disease, appropriate treatment options and complications can also increase compliance with treatment by making it easier to cope with the uncertainty and stress caused by the disease or its complications. The quality of life of individuals with cancer can be increased by having sufficient information about the disease, active participation in the treatment process and necessary lifestyle changes. In line with this information, this study was conducted to determine the relationship between health literacy and quality of life in cancer patients treated in the oncology clinic of the hospital.

MATERIALS AND METHODS

2.1. Type, Population and Sample of the Study

The population of the cross-sectional study consists of all patients (300 patients) hospitalized in the oncology clinics of a university hospital in a province of Turkey between September 2020 and July 2021. The sample of the study consists of 160 cancer patients covering 53.3% of the population.

2.2. Data Collection Tools

"Cancer Patients Information Form", "Rotterdam Symptom Checklist (RSCL)" and "Turkey Health Literacy-32 (THL-32) Scale" were used to collect data.

2.2.1. Information Form for Introducing Cancer Patients: There are 27 questions that include information about the patient's sociodemographic characteristics, medical characteristics of the disease, knowledge about chemotherapy, quality of life satisfaction, and medical concepts used in the hospital.

2.2.2. Rotterdam Symptom Checklist (RSCL): It was used to evaluate the quality of life of the patients. The Turkish reliability and validity of the RSCL, which was developed by De Haes, Van Knippenberg, and Neijt (1990) to evaluate the symptoms expressed by cancer patients in clinical studies, was performed by Can, Durna, and Aydıner (2004). In the original study, the Cronbach Alpha value of the RSCL was found to be 0.88 (De Haes, Van Knippenberg & Neijt, 1990). In our study, the Cronbach Alpha value of the RSCL was found to be 0.88. Consisting of 39 questions, the scale has 4 sub-dimensions. These are the level of being affected by the physical symptoms caused by cancer and its treatment, the physical symptom discomfort sub-dimension (23 questions), the level of being affected by the psychological state changes, the psychological discomfort sub-dimension (7 questions), the level of being affected by the activity of daily living (ADL) sub-dimension (8 questions) and evaluates the overall quality of life in the last week with the quality of life sub-dimension (1 question). An increase in scores in the sub-dimensions of physical symptom discomfort, psychological discomfort and quality of life indicates that patients are adversely affected, and an increase in the level of activity indicates that patients are in good functional condition (Can, Durna & Aydıner, 2004).

2.2.3. Turkey Health Literacy-32 (THL-32) Scale: HLS-EU Consortium; Sørensen et al. (2012) and Turkish reliability and validity of the health literacy scale were performed by Abacıgil, Harlak, and Okyay (2016). The Turkish Cronbach Alpha value of the scale was found to be 0.93 (Abacıgil, Harlak & Okyay, 2016). In our study, the Cronbach Alpha value was found to be 0.91. The THL-32 Scale, which has 32 questions, consists of two basic health-related dimensions (treatment and service, prevention of diseases/health promotion) and four components (accessing and understanding health-related information, evaluating, using/application). Health literacy level; It is evaluated in four categories as 0-25 points insufficient, 26-33 points problematic/limited, 34-42 points sufficient, 43-50 points excellent health literacy (Abacıgil, Harlak & Okyay, 2016).

2.3. Data Collection

It was collected through face-to-face interviews with patients. The time to apply the forms took 30-45 minutes for each patient.

2.4. Ethical Aspect of Research

Ethical approval of the study was obtained by applying to the Non-Interventional Research Ethics Committee of a foundation university in Gaziantep (Decision No: 2020/059; Decision Date: 28.08.2020). The study complied with the Declaration of Helsinki. Written permission was obtained from the hospital where the study was conducted. Written consent form was obtained from cancer patients who volunteered to participate in the study.

2.5. Analysis of Data

SPSS (Statistical Package for Social Sciences) 23.0 Windows package program was used for data analysis. Statistical significance level was taken as $p<0.05$. Parametric t test and analysis of variance, non-parametric Kruskal Wallis H and Mann Whitney U tests were used. Simple correlation analysis was used to compare the mean scores of the RSCL with the mean scores of the THL-32 Scale.

The “F” value shown in the tables are the values obtained from the One-Way ANOVA analysis. The “t” value shown in the tables are values from the Independent Samples t test analysis. The “U” value shown in the tables are the values obtained from the Mann Whitney U analysis. The “X^2” value shown in the tables are the values obtained from the Kruskal Wallis H analysis. In the correlation analysis, the symbol of the correlation has indicated as a lowercase “r”.

RESULTS

It was determined that there was a statistically significant difference between the descriptive characteristics of the patients and the total mean score of the THL-32 Scale in terms of age, gender, education, knowing the side effects of chemotherapy and being able to understand what the doctor said ($p<0.05$) (Table 1).

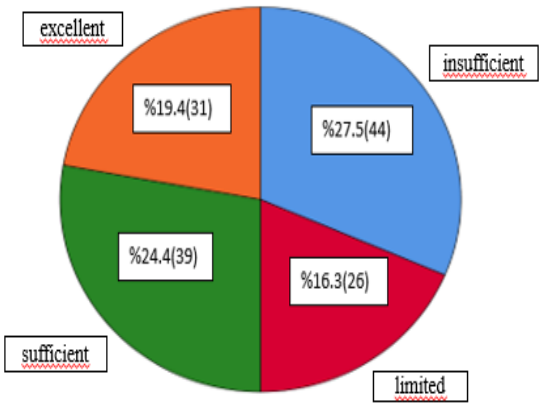
Table 1. Comparison of Some Characteristics of the Patients and the Total Mean Scores of the THL-32 Scale

	n	THL-32 Scale Mean ± SD	Significance Values
Age			
19-30	18	28.09±8.09	F=7.21
31-50	36	28.58±15.96	**p=0.001***
51-84	106	36.58±12.21	
Gender			
Female	68	38.27±12.62	t=3.78
Male	92	30.54±12.87	**p=0.001****
Working status			
Yes	14	28.86±11.92	U=776.500
No	146	34.30±13.35	p=0.130***
Education			
Illiterate / Literate / Primary School Graduate	73	41.74±10.22	X^2=58.99
Secondary School Graduate	56	30.45±10.73	**p=0.001****
High School/University Graduate	31	21.28±11.72	
Knowing The Side Effects of Chemotherapy			
Knows	146	33.03±13.04	U=617.500
Does not know	14	42.15±13.42	**p=0.010****
Evaluation of Quality of Life After Chemotherapy			
Good	24	33.07±16.31	F=0.07
Bad	68	34.22±12.20	p=0.920*
I donot know	68	33.71±13.35	
Understanding What The Doctor is Saying			F=23.15
Yes	41	24.56±12.65	**p=0.001***
No	47	41.65±11.46	
Sometimes	72	33.99±11.40	

*One-Way ANOVA, **Independent Samples t test,***Mann Whitney U test, ****Kruskal Wallis H test

It was determined that 27.5% of the patients participating in the study had insufficient health literacy, 16.3% had limited/problematic, 24.4% had sufficient and 19.4% had excellent (Graphic 1).

Graphic 1. Distribution of the Total Mean Scores of the Patients from the THL-32 Scale



When some of the descriptive features of the patients participating in the study were compared with the RSCL total score averages; It is seen that there is a statistically significant difference between the working status of the total mean score of the RSCL and the ability to understand what the doctor says ($p<0.05$) (Table 2).

Table 2. Comparison of Some Characteristics of the Patients and their RSCL Total Scores

*One-Way ANOVA, **Independent Samples t test,***Mann Whitney U test, ****Kruskal Wallis H test

	n	RSCL Mean ± SD	Significance Values
Age			
19-30	18	41.46±18.25	
31-50	36	40.37±16.76	F=0.84
51-84	106	44.62±18.53	p=0.430*
Gender			
Female	68	42.81±17.90	t=0.29
Male	92	43.68±18.33	p=0.760**
Working Status			
Yes	14	54.27±17.57	U=687.00
No	146	42.26±17.86	**p=0.040*** **
Education			
Illiterate / Literate / Primary School Graduate	73	44.45±19.12	X^2=1.27
Secondary School Graduate	56	43.55±18.05	p=0.520****
High School/University Graduate	31	40.17±15.76	
Evaluate your health			
Better than a year ago	21	40.64±19.15	F=0.46
almost the same	15	39.45±19.76	p=0.760*
Worse than a year ago	77	43.43±18.17	
Much worse than a year ago	47	45.55±18.10	
Quality of life after chemotherapy evaluation			
Good	24	37.54±19.37	
Bad	68	45.54±17.44	F=1.75
I donot know	68	43.11±18.10	p=0.170*
Understanding what the doctor is saying			
Yes	41	36.03±18.19	
No	47	45.14±16.08	F=4.72
Sometimes	72	46.26±18.39	**p=0.010***

The total mean score of the patients participating in the study from the THL-32 Scale was 33.82±13.29. The mean score of the patients in the first dimension of the THL-32 Scale, Treatment and Service, was 29.35±13.84. The mean score of the second dimension of the THL-32 Scale in Preventing Diseases/Promoting Health is 38.30±16.11. The mean RSCL total score of the patients was 43.31±18.10 (Table 3).

Table 3. Mean Total Scores of the Patients on the THL-32 Scale and RSCL and Total Scores of the Sub-Dimensions

Dimensions of the THL-32 Scale	THL-32 Scale Mean±S.D
1. Treatment and Service	**29.35±13.84**
Access to health information	29.92±15.32
Understanding health-related information	30.26±13.19
Evaluating health-related information	30.70±19.30
Using/applying health-related knowledge	26.53±14.20
2. Prevention of Diseases/Improvement of Health	**38.30±16.11**
Access to health information	36.76±16.07
Understanding health-related information	39.06±16.60
Evaluating health-related information	41.58±23.83
Using/applying health-related knowledge	32.78±20.22
THL-32 Scale total score average	**33.82±13.29**
RSCL sub-dimensions	**RSCL Mean±S.D**
1. Physical Symptom Discomfort	51.34±25.79
2.Psychological Symptom Discomfort	61.63±25.82
3. Activity Level	28.98±33.61
4. Quality of Life	78.43±16.11
RSCL total score average	**43.31±18.10**

It was found that there was a moderate positive correlation between the patients' THL-32 Scale total mean scores and their RSCL total mean scores (r=0.31, p<0.01). It was determined that there was a weak positive correlation between the total mean score of treatment and service in the THL-32 Scale sub-dimension and the mean total score of RSCL (r=0.26, p<0.01). It was determined that there was a weak positive correlation between the total score average of the THL-32 Scale sub-dimension prevention of diseases/health promotion and the total score of RSCL (r=0.29, p<0.01) (Table 4).

Table 4. Evaluation of the Relationship between the THL-32 Scale and its Sub-Dimensions and RSCL of the Patients

Dimensions of the THL-32 Scale	**RSCL r and p**
1. Treatment and Service	**r=0.26 p=0.001**
Access to health information	r=0.15 p=0.001
Understanding health-related information	r=0.30 p=0.001
Evaluating health-related information	r=0.22 p=0.001
Using/applying health-related knowledge	r=0.29 p=0.001
2. Prevention of Diseases/Improvement of Health	**r=0.29 p=0.001**
Access to health information	r=0.27 p=0.001
Understanding health-related information	r=0.31 p=0.001
Evaluating health-related information	r=0.14 p=0.001
Using/applying health-related knowledge	r=0.27 p=0.001
THL total score average	**r=0.31 p=0.001**

Table 5 presents the relationship between patients' RSCL sub-dimensions and the THL-32 Scale. Except for the activity level, a positive moderate/weak correlation was found between the THL-32 Scale in other sub-dimensions (p<0.01).

Table 5. Evaluation of the Relationship between the RSCL and Sub-dimensions of the Patients and the THL-32 Scale

RSCL sub-dimensions	**THL-32 Scale r and p**
1. Physical Symptom Discomfort	r=0.37 p=0.001
2.Psychological Symptom Discomfort	r=0.37 p=0.001
3. Activity Level	r= -0.28 p=0.001
4. Quality of life	r=0.19 p=0.001
RSCL total score average	**r=0.31 p=0.001**

DISCUSSION

In our study, it was determined that the mean total score of the THL-32 Scale of the patients aged 51-84 was significantly higher than those in the younger age group (p<0.05) (Table 1). In another study, unlike our results, it was observed that as the age of the patients increased, the level of health literacy decreased (Abacıgil, Harlak & Okyay, 2016). In a similar study, it was determined that the level of health literacy was low because there may be regressions in the mental functions of elderly individuals within a year (Sequeira et al., 2013). This may be due to the characteristics of the hospital and patients where the research was conducted. In our study, we see that the education level of the patients is low. It is a positive situation that the health literacy level of the older age group is high.

It was found that the mean total score of the THL-32 Scale of female patients was higher than that of males (p<0.05) (Table 1). In a study conducted in Taiwan, it was determined that the health literacy level of men was higher than that of women (Van Duong et al., 2017). Emre et al. found similar result that we found in our study (Emre et al., 2021). According to the THL-32 scale in the Turkish Health Literacy Level survey conducted in our country; It has been determined that women have lower health literacy than men (Turkish Health Literacy Level and Related Factors Survey, 2018). It is thought that this may be due to the fact that women receive education about their disease after being diagnosed with cancer or try to have information.

It was found that the total mean score of the THL-32 Scale of the patients with high school or university education was significantly lower than those who were illiterate, literate, or primary and secondary school graduates (p<0.05) (Table 1). Studies have shown that as the level of education increases, the level of health literacy also increases (Emre et al., 2021; Ozturk, Kırac & Kavuncu, 2018). In a similar study, it was determined that higher education level is

not the only criterion for adequate health literacy (Shah, West, Bremmeyr & Savoy-Moore, 2010). It is seen that the finding of our study is different from the literature. We think that higher education level is not the only criterion for adequate health literacy in our study.

It was determined that the total mean score of the THL-32 Scale of those who did not know about the side effects of chemotherapy was significantly higher than those who knew ($p<0.05$) (Table 1). In a similar study, it was determined that 73.6% of the patients who received treatment were informed about chemotherapy and 19.2% of the patients considered the information they received insufficient (Ozturk & Senyuva 2021). In our study, it is seen as a positive situation that the health literacy levels of those who do not have knowledge of the side effects of chemotherapy treatment are high, and we think that it is important to inform all patients about the treatment.

The total score averages of the THL-32 Scale were found to be significantly lower in those who stated that they could understand what the doctor said, compared to those who stated that they did not understand what the doctor said and that they sometimes understood ($p<0.05$) (Table 1). In another study, patients with low health literacy levels were found to have poor communication strategies (Schwartzberg, Cowett, VanGeest & Wolf, 2007). In our study, the health literacy of the patients who did not understand what the doctor said was found to be high. Accordingly, we think that the patients themselves are in the way of learning about their disease.

It was determined that 27.5% of the patients participating in the study had insufficient health literacy, 16.3% had limited/problematic, 24.4% had sufficient and 19.4% had excellent (Graphic 1). In a similar study, it was determined that the health literacy levels of 38.6% of the patients who received treatment were insufficient, 33.6% were problematic-limited, and 6.1% were excellent (Ozturk & Senyuva 2021). In another study, 17.1% (n=36) of the participants were inadequate, 28.9% (n=61) problematic-limited, 28.4% (n=60) sufficient, 25.6% (n=56) was determined to have an excellent level of health literacy (Emre et al., 2021). In another study, it was found that 7.8% of patients with hypertension were inadequate, 55% had limited and 37.2% had adequate health literacy (Naimi, Naderiravesh, Bayat, Shakeri & Matbouei 2017). According to the THL-32 scale in the Turkish Health Literacy Level survey conducted in our country; It was determined that 30.9% of the participants in the study were inadequate, 38.0% problematic-limited, 23.4% sufficient and 7.7% excellent (Turkish Health Literacy Level and Related Factors Survey, 2018). The research finding shows similarities and differences compared to the findings in the literature. Each individual is responsible for their own health, and each individual needs to exhibit adequate knowledge, awareness and correct behavior for the continuity of their health status (Tozun & Sozmen 2014). Adequate literacy skills of individuals make it easier for them to cope with illness and health (Ersin, 2015). In this context, we suggest that it is important to repeat the information so that the information given to the patients is understandable, and it is important to measure how much they can understand by observing them, their behaviors or by asking questions and getting feedback.

It was determined that the mean RSCL total score of the working patients (54.27±17.57) was significantly higher than the RSCL total score average of the non-working patients (42.26±17.86) ($p<0.05$) (Table 2). In a similar study, it was determined that the quality of life of working individuals is high when they work (Pınar, Alger, Colak & Ayhan 2008). In another study, it was found that working status had no effect on quality of life (Caliskan, Duran, Karadas, Ergin & Tekir 2015). In a study, it was determined that the quality of life increases as the income level of individuals increases (Bostancı, 2019). In our study, we see that there may be an increase in the income status of the working patients and accordingly, it causes an increase in their quality of life. On the other hand, patients who do not work in any job may have a low quality of life due to the side effects of chemotherapy and the severe course of the disease processes, as well as the economic hardship.

The mean RSCL total score of the patients who stated that they could understand what the doctor said (36.03±18.19) was found to be statistically significantly lower than the patients who stated that they could not understand what the doctor said (45.14±16.08) and sometimes understood (46.26±18.39) ($p<0.05$) (Table 2). In our study, it was found that they were lower the health literacy levels of the patients who stated that they could understand what the doctor said. Similarly, we see that they also has decreased the quality of life of the patients who stated that they could understand what the doctor said. We think that this is due to the fact that patients do not feel comfortable in terms of both health and social aspects.

The mean score of the patients participating in the study from the THL-32 Scale was found to be 33.82±13.29 (Table 3). According to this result, the health literacy level of cancer patients participating in the study was determined as problematic/limited. In a similar study, the level of health literacy was found to be problematic/limited (Abacıgil, Harlak & Okyay 2016). Understanding the necessary messages correctly enables individuals to make the right decision about their health. Compared to individuals with better health literacy levels, people with insufficient and limited health literacy levels do not

fulfill their personal care needs to protect their health, they do not have useful habits such as physical activity and healthy nutrition, they do not know about preventive health services, and they have insufficient information about the causes of disease and prevention methods, it has been revealed by studies that the rates of applying to the appropriate health institution are low, they cannot meet their health needs or medical care at the appropriate time, there are communication problems with health workers, and the rate of misuse of drugs is higher (Ennis, Hawthorne & Frownfelter 2012; Nutbeam, McGill & Premkumar 2018) . We think that having health information about the diagnosis of cancer patients after the diagnosis of cancer is related to the level of health literacy in the patient's fulfillment of individual practices for knowing the stages of the treatment process.

The mean RSCL total score of the patients participating in the study was determined as 43.31±18.10. The scores obtained from the sub-dimensions are as follows; Physical Symptom Discomfort (51.34±25.79), Psychological Symptom Discomfort (61.63±25.82), Activity Level (28.98±33.61), Quality of Life (78.43±16.11) (Table 3). In another study, it was determined that the functional status and general well-being of the patients were high, and therefore their quality of life was high (Ozkan & Akın 2017). In another study, it was found that the quality of life of cancer patients was moderate, and social support from their families affected the quality of life positively (Caliskan, Duran, Karadas, Ergin & Tekir 2015). In the work of Ozgun, Turker & Kaya; It was concluded that the depression and anxiety levels of cancer patients who are in the treatment process negatively affect their quality of life (Ozgun, Turker & Kaya, 2020). According to the findings obtained from the research; We have determined that the patients participating in the study were adversely affected by the physical symptoms and psychological status changes caused by the treatment during the treatment process, they were not in good condition in daily life activities and their quality of life was low. We think that family support is also important in order to improve the psychological discomfort of cancer patients participating in the study.

It was found that there was a moderate positive correlation between the THL-32 Scale total score average and the RSCL total score average (r=0.31, p<0.01). It was determined that there was a weak positive correlation between the total mean score of treatment and service in the THL-32 Scale sub-dimension and the mean total score of RSCL (r=0.26, p<0.01). It was determined that there was a weak positive correlation between the total score average of the THL-32 Scale sub-dimension prevention of diseases/health promotion and the total score of RSCL (r=0.29, p<0.01) (Table 4). In a study, it was determined that individuals with low health literacy levels exhibit behaviors that may negatively affect their quality of life (Berkman, Davis & McCormack 2010). In another study, it was determined that there is a positive relationship between health literacy and quality of life (Naimi, Naderiravesh, Bayat, Shakeri & Matbouei 2017). Literacy comes to the fore in people's adaptation to life, maintaining active participation in their lives, and developing skills to increase their quality of life (Ersin, 2015). According to our research results, we see that individuals with cancer who participated in our research increase their quality of life moderately as their health literacy level increases.

It was found that there was a moderate positive correlation between RSCL sub-dimension physical symptom discomfort and psychological symptom disorder total score mean and THL-32 scale total score mean (r=0.37, p<0.01). It was found that there was a weak negative correlation between the RSCL sub-dimension activity level average total score and the THL-32 scale total score average (r=-0.28, p<0.01). It was determined that there was a weak positive correlation between the RSCL sub-dimension quality of life total score and the THL-32 scale total score (r=0.19, p<0.01) (Table 5). In the study, we see that cancer patients with increased physical and psychological symptoms also moderately increased their health literacy. We see that as the activity level of the patients increases, their health literacy also decreases at a low level. In addition, we have found that as the quality of life of the patients increases, their health literacy also increases at a weak level.

4.1. Limitations of the study

The generalizability of the study consists of patients hospitalized in the oncology clinics of the university hospital where the study was conducted between September 2020 and July 2021. During the Covid-19 epidemic, the number of patients in hospital clinics was halved and there were 24-hour shifts every other day, making the data collection process difficult.

CONCLUSION AND RECOMMENDATIONS

Health literacy of elderly patients was higher than younger patients, and female patients were higher than male patients. Patients with higher education levels had lower health literacy. Patients who did not know the side effects of chemotherapy and did not understand what the doctor said had higher health literacy. The health literacy level of the patients was determined as problematic/limited. It was determined that working patients had higher quality of life than non-working patients. It was found that the quality of life of the patients who stated that they could understand what the doctor said was lower. According

to the findings in the sub-dimensions of RSCL; It was concluded that the patients were adversely affected by the physical symptoms and psychological state changes caused by the treatment, they were not functionally well in their daily living activities and their quality of life was low. It was concluded that as health literacy increases, quality of life is moderately positively affected.

We suggest that health professionals, especially nurses who have more contact with the patient in the field, aim to increase the health literacy level of individuals by providing the highest quality education to the patients and observing that the education they give turns into behavior. We recommend increasing the adaptation process to the treatment of patients whose quality of life is affected and providing the most appropriate quality treatment, and providing material and moral assistance that will facilitate the comfortable life of the patients during and after this period.

Conflict of Interest:

The authors declare that they have no conflict of interest.

Ethical Approval :

Ethical approval of the study was obtained by applying to the Non-Interventional Research Ethics Committee of a foundation university in Gaziantep (Decision No: 2020/059; Decision Date: 28.08.2020). The study complied with the Declaration of Helsinki.

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REFERENCES

Abacıgil, F., Harlak, H., & Okyay, P. (2016). Turkish version of the European health literacy scale. Okyay P, Abacıgil F. (Ed.). *Turkish health literacy scales reliability and validity study*. Ankara: Republic of Turkey Ministry of Health, Publication No: 1025: 21-41.

Al Sayah, F., & Williams, B. (2012). An integrated model of health literacy using diabetes as an exemplar. Canadian Journal of Diabetes, 36(1), 27-31.

Arslan, S., & Bolukbas, N. (2003). Evaluation of the life quality of the patients with cancer. Anatolian Journal of Nursing and Health Sciences, 6(3), 38-47.

Bakar, C. (2017). Cancer epidemiology in the world and in Turkey. Turkey Clinics Journal of Medical Genetics-Special Topics, 2(2), 49-59.

Berkman, N. D., Davis, T. C., & McCormack L. (2010). Health literacy: what is it?. Journal of Health Communication, 15(S2), 9-19.

Bıkmaz, Z., & Unsar, S. (2021). Quality of life and social support levels in leukemia patients. Journal of General Health Sciences, 3(3), 200-214.

Bostancı, S. (2019). The effect of health literacy on quality of life in hypertensive patients (Unpublished Master's Thesis). Uludag University Institude of Health Sciences, Nursing Department, Bursa.

Calıskan, T., Duran, S., Karadas, A., Ergin, S., & Tekir, O. (2015). Assessment the levels of life quality and social support of the cancer patients. Journal of Karadeniz University Faculty of Medicine, 17(1), 27-36.

Can, D., Durna, Z., & Aydıner, A. (2004). Assessment of fatique in and care needes of Turkish women with breast cancer. Cancer Nursing, 27(2), 153-161.

De Haes, J. C. J. M., Van Knippenberg, F. C. E., & Neijt, J. P. (1990). Measuring psychological and physical distress in cancer patients: structure and application of the Rotterdam Symptom Checklist. British Journal of Cancer, 62(6), 1034-1038.

Deger, M. S., & Zorluoglu, G. (2021). Relation between health literacy and cancer information overload in people applying to primary healthcare. Anatolian Clinic the Journal of Medical Sciences, 26(1), 108-117.

Donar, G. B. (2021). The relationship between cancer ıncidence and awareness activities and Google online search volume in Turkey: A Retrospective Research. Acıbadem University Journal of Health Sciences, 12(2), 353-360.

Eadie, C. (2014). Health Literacy: A Conceptual Review. Academy of Medical-Surgical Nurses, 23(1), 10-14.

Emre, N., Arslan, M., Edirne, T., Ozsahin, A., & Cigdem, A. (2021). Health literacy levels of family medicine outpatients in a university hospital and related factors. Lokman Hekim Journal, 11(3), 588-595.

Ennis, K., Hawthorne, K., & Frownfelter, D. (2012). How physical therapists can strategically effect health outcomes for older adults with limited health literacy. Journal of Geriatric Physical Therapy, 35(3), 148-154.

Ersin, F. (2015). The importance of the public health nurse in health literacy. Health Nursing Journal, 17, 27-37.

Gursu, R. U., Kesmezacar, O., Karacetin, D., Mermut, O., Okten, B., & Guner, S. I. (2012). Istanbul Research and Training Hospital Oncology Division:

18-Month Results of a Newly Formed Unit. Istanbul Medical Journal, 13(1), 13-18.

Kucukberber, N., Ozdıllı, K., & Yorulmaz, H. (2011). Evaluation of factors affecting healthy life style behaviors and quality of life in patients with heart disease. Anatolian Journal of Cardiology, 11(7), 619-626.

Lemieux, J., Goodwin, P. J., Bordeleau, L. J., Lauzier, S., & Theberge, V. (2011). Quality-of-life Measurement in Randomized Clinical Trials İn Breast Cancer: An Updated Systematic Review (2001-2009). Journal of the National Cancer Institute, 103(3), 178-231.

Naimi, A. J., Naderiravesh, N., Bayat, Z. S., Shakeri, N., & Matbouei, M. (2017). Correlation between health literacy and health-related quality of life in patients with hypertension, in Tehran, Iran, 2015–2016. Electronic Physician, 9(11), 5712-5720.

Nutbeam, D., McGill, B., & Premkumar, P. (2018). Improving health literacy in community populations: a review of progress. Health Promotion International, 33(5), 901-911.

Ozgun, G., Turker, P. F., & Kaya, B. (2020). Assesment of quality of life, anxiety and anthropometric measurements of oncology patients according to cancer types. Hacettepe University Faculty of Health Sciences Journal, *7*(3), 345-368.

Ozkan, M., & Akın, S. (2017). Evaluation of the effect of fatigue on functional quality of life in cancer patients. Florence Nightingale Journal of Nursing, 25(3), 177-192.

Ozturk, D. C., & Senyuva, E. (2021). Development of education material for health literacy and education needs of patients who receives chemotherapy. Research Square, 1-17.

Ozturk, Y. E., Kırac, R., & Kavuncu, B. (2018). Examining the relationship between health literacy and self-efficacy.*2nd International Social and Educational Sciences Symposium*, 22-24 October 2018 – Konya, Turkey.

Pınar, G., Algıer, L., Colak, M., & Ayhan, A. (2008). Quality of life in patients with gynecologic cancer. International Journal of Hematology and Oncology, 31(1), 141-149.

Sequeira, S. S., Eggermont, L. H., Silliman, R. A., Bickmore, T. W., Henault, L. E., Winter, M. R., & Paasche-Orlow, M. K. (2013). Limited health literacy and decline in executive function in older adults. Journal of Health Communication, 18(sup1), 143-157.

Shah, L. C., West, P., Bremmeyr, K., & Savoy-Moore, R. T. (2010). Health literacy instrument in family medicine: the "newest vital sign" ease of use and correlates. The Journal of the American Board of Family Medicine, 23(2), 195-203.

Schwartzberg, J. C., Cowett, A., VanGeest, J., & Wolf M. S. (2007). Communication techniques for patients with low health literacy: a survey of physicians, nurses, and pharmacists. American Journal of Health Behavior, 31(Suppl 1), 96-104.

Sørensen, K., Van den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z., & Brand, H. (2012). Health literacy and public health: a systematic review and integration of definitions and models. BMC Public Health, 12(1), 1-13.

Tozun, M., & Sozmen, M. K. (2014). Health literacy with perspective of public health. Smyrna Medical Journal, (2), 48-54.

TSI (Turkish Statistical Institute). Cause of Death Statistics, 2017. tuikweb.tuik.gov.tr/PreHaberBultenleri.do?id=27592, 12.07.2022.

Turkish Health Literacy Level and Related Factors Survey, 2018. https://sggm.saglik.gov.tr/Eklenti/39699/0/soya-rapor-1pdf.pdf 13.07.2022.

Van Duong, T., Chang, P. W., Yang, S. H., Chen, M. C., Chao, W. T., Chen, T., & Huang, H. L. (2017). A new comprehensive short-form health literacy survey tool for patients in general. Asian Nursing Research, 11(1), 30-35.

WHO (World Health Organization). Cancer Key facts 03 March 2021. https://www.who.int/en/news-room/fact-sheets/detail/cancer, 12.07.2022.

WHO (2003). Health and Development Through Physical Activity and Sport, http://whqlibdoc.who.int/hq/2003/WHO_NMH_NPH_PAH_03.2.pdf, 20.07.2021.

The Effect Of The Economıc Crıses After 2000 On Prıvate Hospıtals In Turkey

Sevil ASLAN[1], Mehmet ÇINIBULAK[2]

Corresponding Author

Sevil ASLAN

DOİ

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ABSTRACT

A local or global economic crisis has serious economic consequences. The severity and duration of crises, which may occur due to more than one factor, may vary depending on these factors. The economic crisis has a negative impact on the health sector as well as all other sectors. The main purpose of the study is to determine the effect of the economic crises after 2000 on private hospitals in Turkey. For this purpose, a total of fourteen parameters such as the number of private hospitals, the number of beds, the total number of imaging, the number of applications to the physician, the number of inpatients, the total number of surgery and the number of physicians were examined. Within the scope of the study, document analysis was carried out as a method. Turkey Health Statistics Yearbook (2020) belonging to the Ministry of Health were taken as a basis in the said document review. When we look at the historical background of Turkey, it is seen that there was an economic crisis in 2001, 2008 and 2016. The 2001 crisis was excluded due to insufficient data. It has been observed that the number of private hospitals in Turkey has increased every year, regardless of the crisis. No effect of the 2008 crisis on the analyzed parameters was observed. When the parameters are evaluated, it was determined that the economic crisis experienced only in 2016 had a negative impact on private hospitals. This crisis had a negative impact on eight of the fourteen parameters examined.

[1] Kafkas University, Kağızman School of Applied Sciences, sevilaslan716@gmail.com, 0000-0003-4128-310X
[2] Kafkas University, Kağızman School of Applied Sciences, mehmet.cinibulak06@gmail.com, 0000-0002-4131-9419

INTRODUCTION

The word crisis is etymologically derived from the Greek word 'krisis' which means decision (Aktan and Şen, 2001). The crisis in general; it is defined as an unexpected situation that mostly affects all small and large organizations negatively and creates damage and losses (Hoştut, 2019). It is possible to talk about types of crises in different fields, but since the focus of this study is economic crises, the others will not be mentioned. Crises that occur on an economic basis and also have economic consequences with their effects are considered as economic crises. As crises are easier, more frequent and more pervasive with the effect of globalization, in generally global crises are occur (Apak and Ataç, 2009). For this reason, it can be said that all world economies have faced crises from past to present (Memişoğlu and Durgun, 2011).

When we look at the history of Turkey, it is seen that there are small or large scale economic crises. However, the economic crises that have been experienced since the 2000s will be scrutinized in terms of their relevance to the periods in which the private health sector existed in Turkey, their belonging to recent periods and the measurement of their effects. Since the health data of 2000-2001 were not reached in the document review, this crisis year will be excluded from the evaluation. For this reason, the crises experienced in 2008 and 2016 will be briefly mentioned below. In the continuation of the study, the word crisis will be used to describe the economic crisis.

The Crisis of 2008: The crisis, which started in 2007 and made itself felt in 2008, is external origin rather than domestic reasons (Sancak and Demirbaş, 2011). Problems in the repayment of mortgage loans given to low-income households due to the rise in interest rates in the USA have affected the countries of the world. In this process, developing countries were less affected by the crisis compared to other countries (Yıldırım, 2010).

The Crisis of 2016: For Turkey, 2016 has been a difficult year in every respect due to the overlap of many crises. In this year internal conflicts, street incidents, terrorist incidents, suicide bombings and the "July 15 Coup Attempt" happened (Karagül, 2016). All these have both deeply injured the country sociologically and caused great damage to the country's economy. Such that its effects have been felt for many years. Events such as the contraction experienced in the country's economy after seven years, downsizing and the excessive increase in foreign currency values are associated with this crisis (Davras and Aktel, 2018).

1.1. Health Sector in Turkey and the Effects af Crises on the Sector

Since the establishment of the Ministry of Health in Turkey, it has been in a health structuring in parallel with the shaping of the economic, sociological and administrative structure of the country. Although there are some changes periodically, the social state mentality has prevailed in the provision of health services. Currently, the chief service provider is the Ministry of Health. Besides foundations, universities and private enterprises also play a role in the sector. Preventive (primary level), curative (secondary and tertiary level) and rehabilitative (tertiary level) services are provided in the country. Private hospitals take an active role in curative and rehabilitative services. There are a total of 1534 hospitals in Turkey, of which 900 (%58.7), 68 (%4.4) universities and 566 (%36.9) private hospitals belong to the Ministry of Health (T.R. Ministry of Health, 2020) . These figures show us that the number of private hospitals in the provision of secondary and tertiary care is quite high.

The financial resources required for the provision of health services are mostly in the form of insurance services carried out by the Social Security Institution (SSI), private health insurances and out-of-pocket payments made by consumers. Recently, It is seen that the private sector has gained weight in recent investments, and even public hospitals are built with public-private partnerships. This situation causes private hospitals to take an active role rapidly in the health sector of the country, changes in health service delivery and economy. While private capital had a very limited place in the health sector before 1980, many countries have followed neoliberal policies since 1980. As a result, the health sector has received large amounts of private equity investment. For example; the share of the private sector in health expenditures, which was 5 million TL in total in 1999 in Turkey, was approximately 2 million TL. In 2020, the share of the private sector in spending, which reached 250 billion TL in total, increased to 52 billion TL (TSI, 2020). As can be understood from the situation in question; with the support of private sector investments in the country, the number of private hospitals has increased, serious employment opportunities have arisen for health human resources and the burden of service delivery on the public has been alleviated (Can and Eroğlu, 2016).

1.1.1. Current Situation of Private Hospitals in Turkey

Private hospitals that can be established by real or legal persons; they can differ according to the types of activities, service units, number of beds, technological competencies and medical specialties. The number of private hospitals for which the Ministry of Health is authorized in the openings, licensing and inspections has shown a continuous increase over the years. In

2020, approximately %36.9 (566) of the total hospitals actively providing health services in the country are private hospitals. At the same time, it is seen that private hospitals have %20.8 (52.230) of the total number of beds in the sector (251.182) (T.R. Ministry of Health, 2019). Today, private hospitals are faced with some negative situations such as the low prices of HSN, the existence of city hospitals opened by the public (the increase in the quality of public health services with the establishment of city hospitals has affected the potential of patients who prefer private hospitals), the problems in the contracts made with the SSI and in the repayments. Besides; it is foreseen that they will continue to be an important partner in the health sector of the country as the leading power of health tourism with the health services they provide in international accreditation standards (Dömbekci et al., 2018).

1.1.2. Effects of Crises on the Health Sector

In addition to the uncertain demand for health services in general, some of the health needs are urgent, while an important part of them is partially postponed. In this context; when the economic crisis, the purchasing power of individuals will be adversely affected and non-urgent demands for health services may be delayed or reduced (Çıraklı, 2017). In addition, in this period, the private sector demand decreases as the demand for health services shifts to public health institutions where there is no out-of-pocket payment.

Institutions that provide health services have high personnel and material expenses in the service delivery process. For this reason, institutions need sustainable financing resources. In times of economic crisis, it is inevitable that various problems arise in the provision or use of financial resources. Accordingly, some disruptions or delays may occur in the health service delivery process. Therefore, in addition to the decrease in the demand for private health services, problems in supply may cause the sector to face serious losses (Gider, 2011).

1.1.2.1. Effects of Crises on Service Delivery of Private Hospitals

The health sector is likely to be adversely affected by the economic crisis due to its service-intensive structure, the need to provide high-quality services, the predominance of economic resource use, high import rate, high dependence on foreign sources and technology (Çaman, 2009). For example; in a study conducted, it was seen that Acıbadem Health Services and Trade Inc. was adversely affected by the 2000-2001 economic crises. The first private hospital in Turkey is the Private American Hospital, which was established by Admiral Bristol in 1920 (American Hospital, 2020). In the following years, private hospitals originating from foreign capital were opened. For this reason, although the economic crises experienced in those years did not reflect on the private health sector, they had negative effects on public hospitals (Gider, 2011). Until 2000, the private sector did not develop adequately, as the health sector did not receive enough investment in Turkey.

Private health expenditures, which amounted to 1.937 million TL in 1999 in the health sector in Turkey, had a regular increase until 2007. With the effect of the global crisis in 2008, these expenditures decreased in 2008 and 2009. Then, after the crisis effects disappeared, it increased steadily (TSI, 2020). While there were 271 private health institutions in 2002, it has been observed to increase every year except 2016 (T.R. Ministry of Health, 2019). The capital structure of private hospitals differs from public hospitals in terms of their profit motive. Especially after 2002, corporate private hospitals emerged and became a great power in service delivery in a short time (Kıyan, 2019). Considering the situation of private hospitals as the leading power in health tourism; the rise that started with the arrival of 163.252 health tourists in 2010 continued even in 2016, when the country was in a crisis environment and has continued until today (TSI, 2020). Private hospitals, which have a large market share, have a high contribution to the positive developments in the field of health tourism.

When we evaluate the effects of crises on private hospitals in general; we can say that it has been severely affected by the crises as it is suitable for unexpected situations during service delivery and the demand is uncertain. It is foreseen that the effects of the crises on the health sector and health institutions will be minimal if the necessary measures for the crisis are taken quickly and successfully implemented in the sector. On the other hand, it should not be forgotten that health systems generally emerge from crises by making health reforms (Hanefeld et al., 2018). In addition, the Health Transformation Program, which was initiated in 2003 in Turkey and successfully implemented by the Ministry of Health, has been a shield for the health sector in the face of crisis situations experienced in the country over the years (Çıraklı, 2017).

MATERIALS AND METHODS

The aim of this study is to evaluate whether private hospitals are affected by economic crises. For this purpose, document analysis, one of the qualitative research methods, was conducted. The document analysis method is known as a qualitative research method that is used to deal with the content of written documents in a comprehensive and systematic way (Kıral, 2020). In the study, the crises after the year 2000, when health data began to be kept regularly, were evaluated. In the review, the World Health Organization, OECD and Turkish Health Statistics Yearbook (2000-2020) were examined. However, it has been determined that data on private hospitals are only included in the Health Statistics Yearbook. For this reason, only the Turkey Health Statistics Yearbook 2020 is taken as a source. It has been determined that there has been an economic crisis in Turkey in 2000 and after 3 different times (2000-2001, 2008 and 2016). However, the data for the year 2000-2001 were excluded from the evaluation as they were very incomplete. In the study, only the effects of the 2008 and 2016 crises were evaluated. In order to evaluate the effects of economic crises, 14 parameters related to private hospitals (Number of Private Hospitals, Number of Beds, Number of Qualified Beds, Number of Intensive Care Beds, Number of Medical Devices, Number of Imaging, Number of Applications to the Physician, Number of Inpatients, Total Number of surgery, Number of Hospitalized Days, Bed Occupancy Rate, Bed Turnover Rate, Number of Physicians and Patient Satisfaction Rate) were examined. In order to evaluate the effects of the crisis, these parameters were evaluated by considering the years before and after the crisis. The data is calculated as a percentage change, because to make it the change more visible.

RESULTS

The first crisis period that affected Turkey in the 2000-2020 period was in 2001. While examining the changes in the parameters examined in the study, the 2000-2001 crisis year was excluded because there was not have enough data. However, the data announced in this period are briefly evaluated. While there were 239 private hospitals in the country in 2001, it increased to 271 after the crisis year, increasing by %13. While 12.331 physicians were working in private hospitals in the country during the 2001 crisis, this number became 11.766 after the crisis and decreased by %4.6. In 2002, in private hospitals; Although the number of qualified beds was 5.693, the total number of doctor visits was 5.697.170, the number of inpatients was 556.494, and the total number of operations was 218.837, no evaluation could be made about these, since there is no data for the crisis year and the year before the crisis.

Table 1. Comparison of 2008 and 2016 Crisis Years in Turkey in terms of Parameters.

	2. PERIOD OF CRISIS			3. PERIOD OF CRISIS		
PARAMETERS	**2007**	**2008**	**2009**	**2015**	**2016**	**2017**
Number of Private Hospitals	365	400	450	562	565	571
Number of Physicians	13.255	22.598	24.454	28.384	27.853	29.498
Number of Beds	17.397	20.938	25.178	43.645	47.143	49.200
Number of Qualified Beds	15.092	15.491	18.093	31.518	31.030	32.147
Number of Intensive Care Beds	4.299	4.416	5.183	13.569	14.018	15.379
Number of Medical Devices	-	574	-	5.313	5.359	5.572
Number of Imaging	-	1.716.693	2.795.559	14.886.472	14.020.755	14.945.533
Total Number of Surgery	986.224	1.383.671	1.665.984	1.604.126	1.499.829	1.525.685
Number of Inpatients	1.782.381	2.338.211	2.503.992	4.237.453	4.048.696	4.120.734
Number of Hospitalized Days	3.203.632	4.241.645	4.986.717	10.649.770	10.368.845	11.032.616
Number of Applications to the Physician	24.485.650	38.688.313	47.618.186	77.217.044	71.147.878	72.208.615
Bed Occupancy Rate	46	51	50.3	59.6	60.3	61.4
Bed Turnover Rate	93.4	101.9	92.1	86.6	85.9	83.8
Patient Satisfaction Rate	-	61.2	-	60.3	64.3	61.5

The second crisis period that affected Turkey in the 2000-2020 period was experienced in 2008. While 365 private hospitals were operating in 2007, it increased to 400 in the crisis year and to 450 in the year after the crisis. In other words, the number of private patients was not affected by the crisis and increased by %9.6 before the crisis and %12.5 after the crisis. While 13.255 physicians were working in private hospitals in the year before the crisis, it increased by %70 to 22.598 in 2008, and reached 24.454 with an %8.2 increase in the year immediately after the crisis. In the year before the crisis, the total number of beds owned by private hospitals was 17.397, the number of qualified beds was 15.092 and the number of intensive care beds was 4.299. During

the crisis, these numbers increased by %20, %2.6 and %2.7 (total number of beds 20.938, number of qualified beds 15.491 and number of intensive care beds 4.416), respectively. In the year after the crisis, the total number of beds was 25.178, the number of qualified beds was 18.093 and the number of intensive care beds was 5.183, with increases of %20, %17 and %17, respectively. In addition, during the 2008 crisis, private hospitals had a total of 574 MR and CT devices throughout the country. With these devices, 1.716.693 views were reached. Although the data on the number of devices owned after the crisis could not be reached, the number of views increased by %63 compared to the year before the crisis and reached 2.795.559. While a total of 24.485.650 applications were made to physicians working in private hospitals in 2007, the number of applications increased by %58 to 38.688.313 during the crisis period, and reached 47.618.186 with an increase of %23 after the crisis. While there were 1.782.381 inpatients in private hospitals before the crisis, it was found to be 2.338.211 with an increase of %31 in the crisis year and 2.503.992 with an increase of %7.1 in the year following the crisis. Considering the number of days hospitalized, it was seen that it was 3.203.632 days in 2007, 4.241.645 days with an increase of %32.4 in 2008, and 4.986.717 days with an increase of %17.6 in 2009. When the total number of operations is examined; While it was 986.224 before the crisis, it was 1.383.671 with a %40 increase during the crisis period, and 1.665.984 with an increase of %20 after the crisis. The bed turnover rate, which was 93.4 before the crisis; It was realized as 101.9 with an increase of %8.5 in the crisis year and as 92.1 with a decrease of %9.8 after the crisis. While the bed occupancy rate of private hospitals was 46 before the crisis, it increased from 10.9 to 51 in the crisis year, and after the crisis, it was found to be 50.3 with a decrease of %1.4. Considering the satisfaction rate as the last parameter evaluated, it was determined that this rate was %61.2 in 2009, although no data was available before 2009.

Table 2. Percentage (%) Change of Examined Parameters in 2016 Crisis Compared to the Previous and Next Year

	3. PERIOD OF CRISIS		
PARAMETERS	**2015**	**2016**	**2017**
Number of Private Hospitals	+%1.08	+%0.5	+%1.06
Number of Physicians	+%0.5	**-%1.9**	+%6
Number of Beds	+%7.7	+%8	+%4.4
Number of Qualified Beds	+%7.6	**-%1.5**	+%3.6
Number of Intensive Care Beds	+%17.3	+%3.3	+%9.7
Number of Medical Devices	+%4.9	+%0.9	+%4
Number of Imaging	+%3.7	**-%5.8**	+%6.6
Total Number of Surgery	+%1.01	**-%6.5**	+%1.7
Number of Inpatients	+%8.6	**-%4.5**	+%1.8
Number of Hospitalized Days	+%11.8	**-%2.6**	+%6.4
Number of Applications to the Physician	+%6.7	**-%7.8**	+%1.5
Bed Occupancy Rate	+%3.5	+%0.4	+%1.1
Bed Turnover Rate	+%2.7	**-%0.7**	**-%2.1**
Patient Satisfaction Rate	+%2.5	+%4	**-%2.8**

The third and last crisis period that affected Turkey in the 2000-2020 period was experienced in 2016. In addition to the global economic problems, the negative effects of the coup attempt in Turkey were deeply felt in the year of the crisis, while 565 private hospitals were operating in the year, while it was 562 before the crisis and 571 after the crisis. Again, the number of private hospitals continued to increase with an increase of less than %1 after the third crisis Turkey experienced. As seen in Table 2, while 28.384 physicians were working in private hospitals in 2015, it decreased by %1.09 to 27.853 in 2016, and reached 29.498 with an increase of %1.06 in the year after the crisis. Despite the crisis, an increase has been observed in the number of hospitals established, but the number of employed persons has decreased. It is seen that private hospitals reduce the number of employees first while implementing their downsizing strategies. In the year before the crisis, the total number of beds was 43.645, the number of qualified beds was 31.518, the number of intensive care beds was 13.569 and the total number of medical devices was 5.313. During the crisis period, the total number of beds increased by %8 to 47.143, the number of intensive care beds increased by %3.3 to 14.018, and the total number of medical devices increased by less than %1 to 5359. The number of qualified beds decreased by %1.5 during the crisis period to 31.030. Immediately after the crisis, the total number of beds was 49.200, qualified beds 32.147, intensive care beds 15.379 and medical devices 5.572, with increases of %4.4, %3.6, %9.7 and %4, respectively. While the number of applications made to physicians working in private hospitals was 77.217.044 in 2015, it decreased to 71.147.878 (-%7.8) during the crisis period, and

reached 72.208.615 with an increase of %1.5 in the year after the crisis. Considering the number of inpatients; The total number of inpatients, which was 4.237.453 before the crisis, decreased by %4.5 to 4.048.696 in the crisis year and increased by %1.8 to 4.120.734 in the year after the crisis. While the number of days spent was 10.649.770 before the crisis, it decreased to 10.368.845 (-%2.6) during the crisis, and increased to 11.032.616 (%6.4) after the crisis. While the number of surgeries performed in private hospitals was 1.604.126 in the year before the crisis, it became 1.499.829 with a decrease of %6.5 during the crisis period, and this number increased by %1.7 and became 1.525.685 after the crisis. While the total number of views in private hospitals was 14.886.472 in 2015, it reached 14.020.755 with a decrease of %5.8 in 2016, which was the year of the crisis, and reached 14.945.533 with an increase of %6.6 after the crisis. While the bed turnover rate of private hospitals was 86.6 before the crisis, it became 85.9 with a decrease of %0.7 in the crisis year, and after the crisis, this rate was realized as 83.8 with a decrease of %2.1. While the bed occupancy rate was 59.6 before the crisis, it was 60.3 with an increase of %0.4 in the crisis year, and after the crisis it was found to be 61.4 with an increase of %1.1. Finally, while the satisfaction rate of patients who preferred private hospitals in the said period was 60.3 before the crisis, it was 64.3 with an increase of %4 in the crisis year, while it was 61.5 with a decrease of %2.8 after the crisis.

DISCUSSION

In this part of the study, national and international studies were examined in order to evaluate the impact of economic crises on hospitals. The results of the studies identified in the examination were compared with our study results. First of all, if we talk about the studies in the international literature; in Greece, which is one of the countries where economic crises are experienced frequently, many studies have been carried out on how the health sector is affected during crisis periods. One of these studies was conducted by Rachiotis et al in 2014. In the study, it was concluded that the economic crisis in Greece caused a shortage of medical supplies in the health sector (Rachiotis et al., 2014). In the study of Zavros et al., it was concluded that health services were used less by the Greek people in times of crisis (Zavros et al., 2013). In another study conducted in 2011, Kentikelenis et al. found that long waiting times occur in health institutions during crisis periods (Kentikelenis et all., 2011). When we compare the findings of the studies conducted in Greece and the studies we conducted in Turkey, it is seen that the results obtained are similar. In the crisis of 2016 in Turkey, it was determined that there were decreases at different rates for parameters such as the number of physicians, the number of qualified beds, the total number of imaging, the number of surgery, the number of inpatients, the number of days hospitalized, the number of visits to the physicianand the bed turnover rate.

Watts (2016) concluded in his study that there is an increasing patient demand during the developing economic crisis in Brazil (Watts, 2016). In our study, in the economic crisis in Turkey in 2008, the number of surgeries, the number of inpatients, the number of visits to the physician increased compared to the year before the crisis and continued to increase after the crisis. Therefore, a common effect was determined as a result of the two studies. De Vos et al. (2010) conducted a study in which they examined the effects of different economic crises that took place between 1996 and 2008 in Cuba on the national health system. In the study, it was concluded that hospitals such as Cienfuegos, which operate in a good and strong national health system in Cuba, can be effective and efficient even under limited resource conditions (De Vos et al., 2010). In the study of Olafsdottir et al. examining the effect of the economic crisis in Iceland in 2013 on the health sector, it was concluded that the economic crisis in the country is a critical test of the resilience of the country's health system and they gave this test successfully (Olafsdottir et al., 2013). It has been determined that during the crisis that took place in Turkey in 2008, input parameters such as the number of beds, the number of devices, and output parameters such as the number of imaging, the number of surgery, and the number of patients were not affected by the crisis and continued their increasing trend. In addition, the number of private hospitals, the number of beds and the number of medical devices in the country continued to increase in both 2008 and 2016 without being affected by the crises. Therefore, it can be stated that the national health sector in Turkey has a developed and strong structure, especially in terms of private hospital management. In this context, it can be said that the results of the studies conducted in Cuba and Iceland show parallelism with the results of our study.

In their study, Kim et al. (2003) examined how the economic crisis in South Korea had an impact on the country's health system. As a result of the study, it was determined that the rate of use of outpatient and inpatient treatment services decreased (Kim et al., 2013). In our study, it was determined that the number of visits to the physician, the number of hospitalized patients and the number of days hospitalized during the crisis in 2016 decreased during the crisis compared to the pre-crisis period. In this respect, the results of the two studies seem to support each other.

When similar studies conducted at the national level are examined; First of all, in Çıraklı's (2017) doctoral thesis in which he analyzed the effects of economic crises originating in Turkey on health, it was

concluded that the effects of crises in general are variable and that they can have positive or negative effects on the stakeholders of the health field. This bidirectional effect was also seen in our study. In fact, it was determined that the country's health system was not affected much by the crisis in 2008, but the negative effects were determined in the crisis in 2016. Therefore, it has been understood that the effect level of the emerging crises is variable, that is, it varies positively or negatively depending on different factors. In addition, in our study, it was observed that the number of physicians, the number of qualified beds, the total number of operations, the number of inpatients, the number of days hospitalized, the number of visits to the physician decreased in some crisis periods (2016 crisis year) and increased in some crisis periods (2008 crisis year). These findings are in line with the results of Çıraklı's study. Çıraklı (2017) recommends that health expenditures should be increased especially during crisis periods in order to prevent the possible negative effects of economic crises on health in Turkey (Çıraklı, 2017)).

Gider (2011) conducted a study from the perspective of financial performance to determine how private hospitals were affected by this process in times of economic crisis. Accordingly, it was concluded that a private hospital group in Turkey was adversely affected by an economic crisis in the country, but this negativity did not continue in the following years (Gider, 2011). In our study; eight of the parameters examined (the number of physicians, the number of qualified beds, the number of imaging, the total number of surgeries, the number of inpatients, the number of days hospitalized, the number of visits to the physician and the bed turnover rate) during the 2016 crisis period decreased compared to the year before the crisis, but after the crisis, it was observed that there was an improvement in these parameters after the crisis. When we examine the results of our own study together with the study of Gider; it is seen that the results of the two studies have similarities. In a study conducted by Bulduklı et al. in 2017, it was found that health tourism is an industry that is not affected by the crisis (Bulduklu and Karaçor, 2017). In this context, it shows that private hospitals operating in our country should focus more on health tourism in order to prevent or minimize the negative effects of possible crises.

CONCLUSION AND RECOMMENDATIONS

In this study, which examines the effects of economic crises on private hospitals, the crises experienced in Turkey after 2000 were evaluated over fourteen selected parameters. When we look at the history of Turkey, there were three crises after 2000. However, since the health data of 2001 were insufficient, its effects could not be evaluated. Although the 2008 crisis had serious economic effects in our country and many other countries, no negative effects were found in the parameters of private hospitals that we examined. The factors that may cause this can be listed as follows;

- At the beginning of the 2000s, public hospitals remained behind in competition with private hospitals, preventing demand from shifting to the public,

- Positive effects of incentives to private hospitals,

- The growth trend of the health sector with the implementation of the health transformation program after 2003,

- The increase in the number of corporate private hospitals operating in the country,

- Private hospitals to focus on health tourism,

- Private hospitals appeal to a wider patient population through contracts with the Social Security Institution.

Unlike the previous crisis, the 2016 crisis had a negative impact on most of the analyzed parameters. Among the reasons for this, in addition to the economic crisis, are internal conflicts, street incidents, terrorist incidents, suicide bombings and the "July 15 Coup Attempt". All these have caused a long-lasting crisis, both sociologically and economically. For this reason, this crisis year also negatively affected private hospitals. In order to see the effects of the crises more clearly, other parameters should also be evaluated.

However, it was determined that the 2016 crisis had negative effects on the eight parameters examined. Negatively affected parameters; the number of physicians, the number of qualified beds, the number of imaging, the total number of surgery, the number of inpatients, the number of days hospitalized, the number of visits to the physician, the bed turnover rate. The unaffected parameters are; the number of private hospitals, the total number of beds, the number of intensive care beds, the number of medical devices, the bed occupancy rate and the patient satisfaction rate. When the parameters determined for the decrease are examined, the highest decrease in 2016 crisis year compared to the previous year was the number of applications to the physician with a rate of %7.8. Second was the total number of surgeries with a maximum rate of %6.5 and the third was the number of imaging with %5.8. Other parameters that decreased in the crisis year were the number of inpatients with %4.5, the number of days hospitalized with %2.6, the number of physicians with %1.9, the number of qualified beds with %1.5 and finally the bed turnover rate with %0.7. When these parameters are examined for 2017, it is seen that all of them increased at different rates. At the beginning of the parameters with the highest increase in 2017, the number of intensive care beds is %9.7. Secondly,

there is the number of imaging with an increase of %6.6, the number of days hospitalized with +%6.4 in the third place, the number of physicians with an increase of %6, the number of beds with %4.4 and the number of qualified beds with %3.6. The increase in other parameters was below %3. When the health data are examined, it has been determined that the number of private hospitals has increased every year, regardless of the crisis. Depending on the increase in the number of hospitals, it is seen that the total number of beds, the number of intensive care beds and the number of medical devices also increased independently of the crisis. In addition, it was determined that the bed occupancy rate and patient satisfaction rate increased in the crisis year. In 2017, the year following the crisis, there was an increase in twelve parameters, including the mentioned parameters. There are two variables that decreased in 2017 compared to the crisis year: bed turnover rate and patient satisfaction rate. The decrease in the bed turnover rate is due to the increase in the number of inpatients and the number of visits to the physician. It would be more correct to further investigate the reasons for the decrease in the satisfaction rate separately. For this reason, this crisis year also negatively affected private hospitals. In order to see the effects of the crises more clearly, other parameters should also be evaluated.

The authors declare that they have no conflict of interest.

Ethical Approval (Must be answered):

Our study does not include any application on humans or animals. In our study, a document review was made. For this reason, no ethical committee decision was taken.

REFERENCES

1. Aktan, C.C., Şen, H. (2001). Economic crisis: causes and solutions New Turkey. Economic Crisis Special Issue, 42(2):1-9.
2. American Hospital, https://www.americanhospital.org/ history, Date of Access: 12/05/2020.
3. Apak, S., Ataç, A. (2009). Global crises, chronological evaluation and analysis. Avcıol Publishing, İstanbul.
4. Bulduklu, Y., Karaçor, S. (2017). Crisis communication and new media in health services. Atatürk Communication Journal,14(1):279-296.
5. Can, E., Eroğlu, S. (2016). Model proposal on global market entry strategies for private hospitals in Turkey. International Health Management and Strategies Research Journal, 2(3):31-44.
6. Çaman, Ö. (2009). Economic crises and their effects on health. Community Medicine, 28(2):1-11.
7. Çıraklı, Ü. (2017). The effects of economic crises on health: The case of Turkey, Hacettepe University, PhD Thesis.
8. Davras, G., Aktel, M. (2018). Reflections of the 2015-2016 crisis on the Turkish economy. Journal of Süleyman Demirel University Visionary , 9(21):27-38.
9. De Vos, P., Garcia, P., Pena, MS., Stuff, P.V. (2010). Public hospital management in times of crisis: lessons learned from Cienfuegos, Cuba (1996–2008). Health Policy, 96 (1): 64-71.
10. Dömbekci, H., Yılmaz, F., Özata, M. (2018). Current situation of private hospital management and its future: The case of Konya. Hacettepe Health Administration Journal, 21(4): 675-697.
11. Gider, Ö. (2011).The effects of economic crisis periods on private hospitals: A view on the financial performance of a private hospital using ratio analysis method. Recommendation Journal 36(9).87-103.
12. Hanefeld J, Mayhew S, Quigley HL, Martineau1 F, Karanikolos M, Blanchet K, Liverani M, Mokuwa EY, McKay G, Balabanova D. *Towards an understanding of resilience: responding to health systems shocks*, Health Policy and Planning, 33(3), 2018.
13. Hoştut, S. (2019). Illustrating scientific trends in crisis management: analysis of graduate theses. Journal of Erciyes Communication, 6(1):607-624.
14. Karagül, E.T.(2016). July 15 coup attempt and Turkish economy. Adam Akademi, 6(2):37-50.
15. Kentikelenis, A., Papanicolas, I. (2011). Economic crisis, austerity and the Greek public health system. European Journal of Public Health, 22 (1): 4–5.
16. Kıral, B. (2020). Document as a qualitative data analysis method analysis. Journal Of Social Sciences Institute, 15(1):1-20.
17. Kıyan, H.A. (2019).The effect of the economic crisis on the expenditures on the health sector in Turkey. Master Thesis, Erciyes University.
18. Kim, H., Chung, W.J., Song, Y.J., Kang, D.R., Yi, J.J., Nam, C.M. (2003). Changes in morbidity and medical care utilization after the recent economic crisis in the Republic Of Korea. Bulletin of the World Health Organization, 81 (8): 567-572.
19. Memişoğlu, D., Durgun, A. (2011). 2008 economic crisis and its effects on the health sector in Turkey. Süleyman Demirel University Journal of Social Sciences Institute, 13(1):81-100.
20. Olafsdottir, A.E., Allotey, P., Reıdpath, D. (2013). A health system in economic crises: a case study from Iceland. Scandinavian Journal Of Public Health, 41(1):198-205.
21. Rachiotis. G., Kourousis, C., Hadjichristodoulou, C. (2014). Medical supplies shortages and burnout among Greek health care workers during economic crisis: a pilot study. International Journal of Medical Sciences, 11(5): 442-447.
22. Sancak, E., Demirbaş, E. (2011). The global economic crisis and its effects on the Turkish housing sector. Journal of the Faculty of Economics and Administrative Sciences of Süleyman Demirel University, 6(3):171-190.
23. T.R. Ministry of Health Health Statistics Yearbook 2019, https://www.health. gov.tr/TR,62400/health-statistics-yearbook-2019- Date of access: 10.05.2021.
24. T.R. Ministry of Health Health Statistics Yearbook 2020, https://www.health.gov.tr/TR,62400/health-statistics-yearbook-2020. Date of acces: 27.07.2022.
25. TSI Health Expenditures Statistics, http://www.tuik.gov.tr/PreTablo.do?alt_id=1084, Date of access:12.05.2020.
26. TSI Health Tourism Statistics, http://www.tuik.gov.tr/PreTablo.do?alt_id=1072, Date of access: 12/05/2020.
27. Watts, J. (2016). Brazils Health System woes worsen in economic crisis. The Lancet, 387 (10028), 1603-1604.
28. Yıldırım, S. (2010). The effects of the 2008 global economic crisis on the world and Turkish economy. KMU Journal of Social and Economic Research, 12 (18):47-55.
29. Zavros, D., Tsiantou, V., Pavi, E., Mylona, K., Kyriopoulos, J. (2013). Impact of economic crisis and other demographic and socio-economic factors on self-rated health in Greece. European Journal of Public Health, 23 (2): 206–210

Digital Technology Use in Turkey and The Need For New eHealth Literacy Measurement Tools.

Rojan GÜMÜŞ[1], Murat ÇETIN[2]

Corresponding Author

Rojan GÜMÜŞ

DOİ

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ABSTRACT

Aim of the study: Digital health technologies, which cause the reshaping of today's patient-health relationship have been reflected in every field of health services. In a setting where the patient-health relationship is so dependent on the use of digital tools and the internet, it has become one of the most important elements for the development of their health for users to have the necessary digital skills and eliminate false and unnecessary information and data and acquire their health needs. Thus, measuring the digital health literacy of consumers became a necessity. The aim of this study is to clarify the need for developing or adopting new digital health literacy measurement tools in Turkey.

Materials and Methods: For the purpose to reveal the state of digital health literacy in Turkey the reports announced by different international and national institutes were searched in this descriptive research. The prevalence of the use of social media, the increase in the number of internet users and mobile devices in recent years, individuals' reasons for using the internet, and the ratio of searching health issues in this data were compiled. Additionally, the digital/eHealth literacy scales developed or adopted in Turkish by researchers were searched from databases.

Results: The results showed that the adaptation of Turkey and its people to e-health is very high and Turkish people take the lead the way in terms of accessing health-related information, integrating with the health system, and using health-related applications. So, the need for digital health literacy scales and their potential use in Turkey was reported in this study. According to the results of the study only one measurement tool, developed by Norman and Skinner (2006) was adopted in Turkish and used by Turkish researchers. This study mostly used ten digital/eHealth literacy instruments were introduced and the gap in this area was argued. Although there are many digital/eHealth literacy scales adopted in various countries, in Turkey researchers stay behind in that situation. The need for developing or adopting new digital/eHealth literacy scales is obvious.

[1] Assoc.Prof.Dr., Atatürk Vocational School of Health Services, Dicle University, Diyarbakır/Turkiye. gumusrojan@gmail.com, Orcid Number: https://orcid.org/0000-0001-8113-6193

[2] Faculty of Economics and Administrative Sciences, Dep.of Health Management, Dicle University, Diyarbakır/Turkiye. Murat.Cetin@gsb.gov.tr, Orcid Number: https://orcid.org/0000-0002-3437-8445

INTRODUCTION

Digitization/digital transformation, which permeates every aspect of life has also taken its place in health services and it has been a necessity to keep up with technological developments in today's world. Especially with the use of digital technologies in health services, a new process has started. Internet technologies are at the forefront of these technologies. The internet offers rich information on many subjects and its prevalence in daily life has become a common source of information for many users. Thanks to the internet, the opportunity to access information has increased and almost all the services that people need are started to be provided from digital media. Digital health technologies, which cause the reshaping of today's patient-health relationship, have been reflected in every field of health services (Gümüş, 2018; Ekinci et al., 2021).

Digital transformations in health services repulsion people who provide health services and those who receive health services from different sources to make their lives easier. One of these quests is to provide digitalization in health in order to reduce the costs of health services, to have more equipped information about health, and to offer healthcare more effectively, efficiently and with quality come among others. Both web-enabling and social media-based information and communication technologies have reshaped today's patient-health relationship. In a setting where the patient-health relationship is so dependent on the use of digital tools and the internet, it has become one of the most important elements for the development of their health for users to have the necessary digital skills and eliminate false and unnecessary information and data. In addition, it has been seen in previous research that individuals with high digital literacy levels are more conscious about healthy living (conscious eating, exercise, and developing healthy lifestyle behaviors), and this has a positive relationship with staying healthy throughout life (Balay et al.,2021; Gümüş & Sönmez, 2020).

Digital applications and tools that we encounter in many areas have also led up to extraordinary developments in health and health services. When choosing a doctor or a hospital, a patient has the opportunity to review the hospital web pages beforehand, to send his wishes and complaints directly to the hospital authorities, to be examined from his home thanks to telemedicine, and follow the health institution and health worker's media. This situation has increased both the awareness level of patients and the competition between health institutions. In addition to accessing health services, consumers can also access diet lists, exercise programs, and healthy eating and drinking habits from paid or free platforms on the other hand heap of information creates confusion and usually causes valuable information and guidance to be overlooked. Especially during epidemics in the last two years, the importance of reaching accurate health information and benefiting from health services has been understood once again. Thus, it is vital that users who provide health information from the internet have a set of digital skills and understand this information in order to improve their health (Aba et al, 2019; Bostan & Yalçın, 2016).

Research has shown that having high digital health literacy is associated with a variety of positive health outcomes throughout the lifespan. Adequate health literacy enables individuals to make informed decisions concerning health care services, prevention of diseases, and health promotion. Inadequate health literacy causes less use of preventive health services, delay in seeking health care in the symptomatic period, inability to understand the individual's medical condition and adherence to medical instructions, increase in health care costs, and increase in mortality. Looking at the previous studies, a positive relationship was found between health literacy and health-promoting behaviors. Alcohol and cigarette use have been found more common in groups with low health literacy. Considering the individual rates who detect cancer at an early stage and have knowledge about the disease, it is seen that individuals with high health literacy are more common than those with low health literacy. As seen in many studies, there is a positive relationship between digital/e-health literacy, health-promoting lifestyle behaviors, and maintaining a better quality of life in groups with chronic diseases (Biçer et al. 2020; Balay et al, 2021). In addition, high e-health literacy is important for young groups to avoid harmful diets and habits and engage in physical activity. In particular during epidemics, since most of the information is accessed online, it has been observed that those with high digital literacy struggle more positively in these periods (Britt et al., 2017; Do et al.,2020; Doğan et al., 2012; Duong et al., 2020; Şen et al, 2017).

1.1. Health Literacy and Digital Health Literacy

The way to be a healthy individual is thanks to healthy habits and behaviors. In today's world, surrounded by an endless amount of true and false information, the way to acquire correct information about our health and develop correct behaviors is thanks to good health literacy. Healthcare literacy is expressed as the mental and social skills necessary for people to access health-related information, understand this information and use it in health-related decisions. Health literacy skills enable patients to take control of their own well-being by making sound healthcare choices, improving communication with physicians, and giving them the information they need to advocate

for themselves in a medical setting. However, it strengthens the competence of individuals on their own and public health by ensuring the correct use of resources and shaping quality conditions in health services (European Commission, 2019). In order to receive a quality health service, firstly, patients must understand and express their complaints and symptoms correctly. The difference between health literacy and literacy is that health literacy requires some additional skills, for example; adequate health-related vocabulary and skills such as consistently finding, evaluating, and using health information from a variety of contexts are required. Being able to understand medical education brochures, instructions about prescribed drugs, and doctors' explanations, evaluate consent forms in hospitals and overcome complex health systems are all essential for health literacy.

According to the results of some studies investigating the importance of health literacy, a positive relationship has been found between adequate health literacy and health status, utilization of health services, and preventive health services (Liu et al., 2018). On the other hand, individuals with low levels of health literacy are more likely to be hospitalized and have higher health expenditures (Davis, 1996). Moreover, people with low health literacy are less likely to be vaccinated against diseases and understand medical labels and instructions compared to adults with high health literacy (Biçer et al., 2020).

When the literature is searched, scales that measure the health literacy of health care users are frequently encountered. Rapid Estimation of Adult Literacy in Medicine (REALM), Adult Functional Health Literacy Test (TOFHLA), Health Activities Literacy Scale (HALS), Health Literacy Skills Scale (HLSI), and Adult Health Literacy Scale (AHLS) scales are the most common (Liu et al., 2018). Current health literacy scales have been adapted to many languages in different countries. These scales consist of questionnaires and fill-in-the-blank questions, evaluate the health literacy level of individuals as adequate, limited, or insufficient as a result of scoring, and measure the ability of people to read and understand health-related texts(Parker et al., 1995; Davis et al., 1993)

The concept of “digital or e-health literacy “ is expressed as people's searching for finding, understanding, and evaluating health information from electronic sources that emerged as a result of technological developments, and the information obtained as a result of these, addressing and solving any health problem. Digital health literacy combines different aspects of different literacy skills and applies them to e-health. Digital healthcare literacy consists of six different literacy components as digital literacy, health literacy, information literacy, scientific literacy, media literacy, and computer literacy. All these concepts express the combination of digital skills and health literacy skills of individuals in this age where we are witnessing great changes in technology (ALB,2017). Digital health literacy includes developing user skills through education and training, as well as designing and tailoring digital health approaches to individual needs, particularly for older users, those living in socioeconomically disadvantaged conditions, and those with lower digital literacy levels in general. As a result of the rapid changes in the health sector, from time to time, patients and sometimes health workers cannot benefit enough from all these events and cannot follow these developments due to the fact that they do not have enough education and knowledge in the fields of information and health technologies (EuroHealthNet,2021). At this point, it is essential for people to benefit from digital communication channels as much as possible. It should be aimed to increase the digital health literacy level of individuals with solutions such as interpreting, evaluating, understanding, and benefiting from the needed content of health information that can be easily accessed through digital communication channels. Thus, measuring digital health literacy levels of health service consumers’ becomes vital in order to determine the incapacity or demands of the consumers and to set policy in the health sector.

Digital health literacy is required for all individuals in terms of reading and understanding health information on the internet, accessing health services, and benefiting from and presenting personal digital data (UNESCO, 2011; Who,2018). Therefore, measuring digital health literacy is important for healthcare providers and consumers. When the previous data was searched it is seen that only one eHealth scale was adopted in Turkish (Norman & Skinner, 2006). The aim of this study is to clarify the need for developing or adopting new digital health literacy measurement tools in Turkey. For this purpose to reveal the state of digital health literacy in Turkey the reports announced by different international and national institutes were searched. The prevalence of use of social media, the increase in the number of internet users and mobile devices in recent years, individuals’ reasons for using the internet, and the ratio of searching health issues in this data were compiled. The digital health literacy scales developed or adopted in Turkish by researchers were searched from databases. The need for digital health literacy scales and their potential use in Turkey was reported in this study.

MATERIALS AND METHODS

In this study, the descriptive research method is used. Descriptive documentary research was used to compile the reports regarding digital health technology use in Turkey and the world. The reports announced by governments or private institutes were analyzed to obtain the data of internet users over time in Turkey, primary reasons why internet users utilize the internet, digital health applications use and time spent on the internet. Additionally, an increase in the number of eNabız and HES (Life Fits Home) users were analyzed. Turkish Ministry of Health, TUIK, Data Reportal, Kepios, and Internet World Stats portals were used to gain the data for 2021.

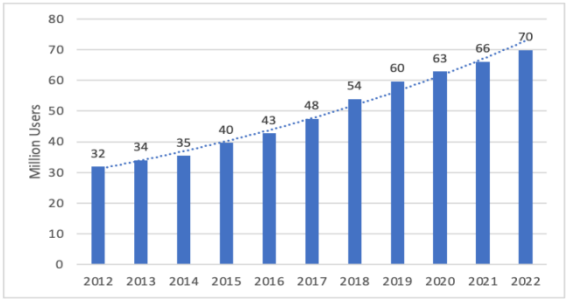
Then in order to access the digital/ e-health literacy scales developed by researchers a search was done. Databases such as Index Medicus/Medline/ Pubmed/PMC, PsychNet, EMBASE, CINAHL, Web of Science, Dergipark, and Google Academic were searched in February 2022. The studies were eligible for inclusion if they included the words "eHealth literacy, digital health literacy, scale, measurement". The original peer-reviewed articles which developed a digital/eHealth literacy scale were validated and tested by other studies many times and referred by various studies and were included in the study for analysis.

RESULTS

3.1. Digital Health Technology use in Turkey and the World

The increase in the prevalence of the internet and the reduction in the costs of technological devices have allowed people to access health services with computers, smart mobile phones, and tablets without being physically present. With the development of digital platforms, individuals can easily perform many transactions such as obtaining information about health, nutrition, exercise, and other healthy lifestyle behaviors. Moreover, data and document transactions, membership, and purchasing health-related issues are becoming more common day by day.

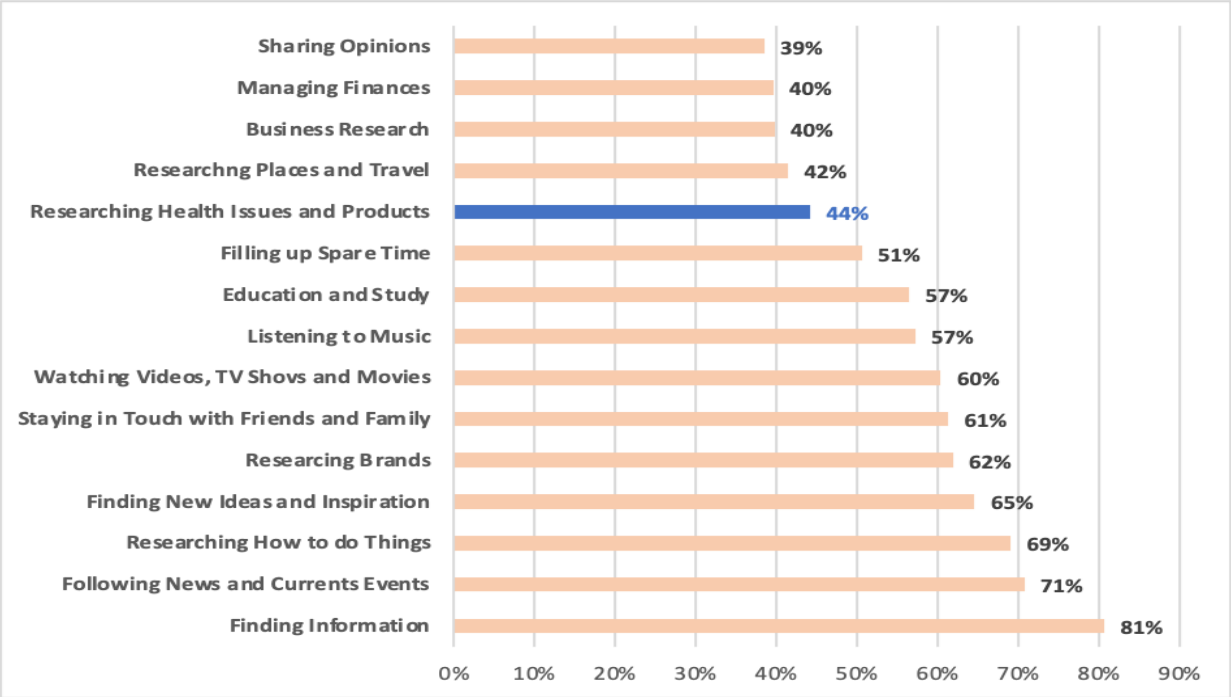
While talking about the use of digital health platforms, it is necessary to take a look at the usage rates in Turkey. Glance the rates in Turkey, the total number of internet users is close to 70 million and its ratio to the total population is 82% (TUIK, 2021; Data Reportal, 2022). The number of internet users and year-on-year change between Jan 2012 and Jan 2022 can be followed in Figure 1 (Kepios, 2022; Internet World Stats, 2022; 42Matters, 2022). Internet users in Turkey increased by 6% between 2021 and 2022. 95% of these users connect to the internet with mobile phones. The average time spent by Turkish people on the Internet is 7 hours and 54 minutes per day. When we look at the languages of the websites where the most content is produced in the world, Turkish is in the 4th place. 71% of Turkey's population uses social media. On average, 2 hours and 57 minutes are spent on social media per day. Considering these rates, Turkey, with its young and dynamic population, has adapted to technology to a great extent and has become one of the societies that are at the heart of the digital world.



Source: Datareportal, Kepios, Internet Word Stats, TUIK

Figure 1. Internet users over time in Turkey.

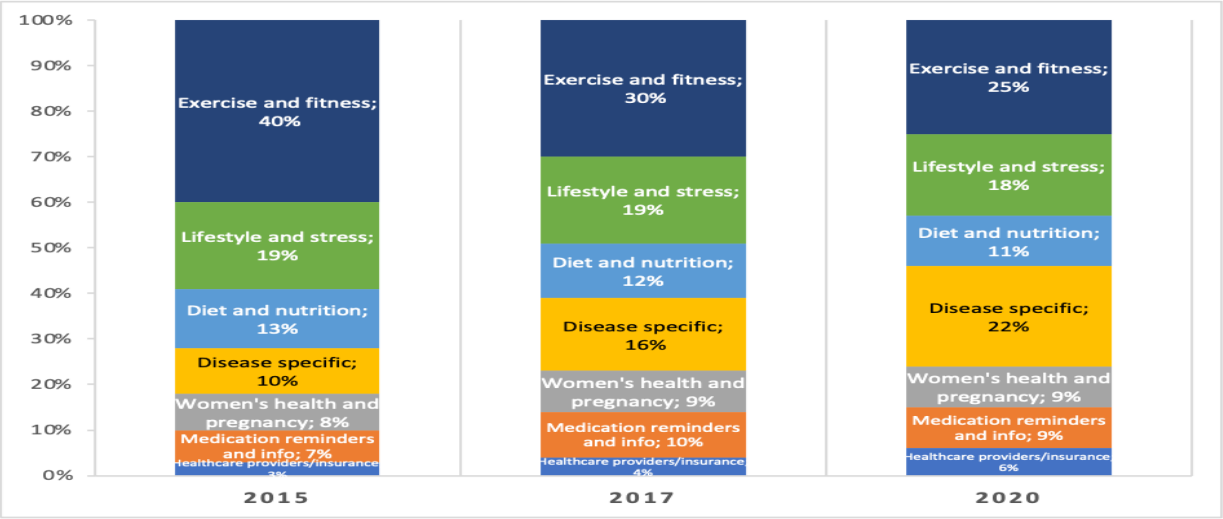
The main results for using the internet can be followed in Figure 2 (Data Reportal, 2022; Kepios, 2022; Internet World Stats, 2022). When primary reasons why internet users aged 16 to 64 utilize the internet comes to accounts researching health issues and products (44%) is among most common reasons. Information scanning (87.6%) takes the first place among the reasons for using the internet in Turkey. Surely if the content of that information could be investigated a serious proportion of it might have been about health issues, especially during the epidemic period. In other words, when we look at the health side of the business, the rate of obtaining health-related information and making searches among the reasons for using the internet is noteworthy.



Source: Datareportal, Kepios, Internet Word Stats, TUIK

Figure 2. Main reasons for using the internet

When the most widely used digital health applications by consumers in 2015-2021 were analyzed two categories to understand the current landscape of digital health apps were determined (42Matters, 2022; Aitken &Nass, 2021). Across the patient journey, digital health apps were divided into two main categories: those focused on "wellness management (exercise and fitness, lifestyle and stress, diet and nutrition) and those which specifically focus on "health condition management (information on diseases and conditions, access to care, and aid treatment such as through medication reminders). To conduct an analysis of global health application trends, data taken from health applications from both Google Play and the Apple Application Store. In addition, free application analysis tools are used to access data on patient health apps. Healthcare applications in the Medical and Health and Fitness categories are sorted according to downloads. Digital Health Applications by category and yearly change are shown in Figure 3 (42Matters, 2022; Aitken &Nass, 2021).

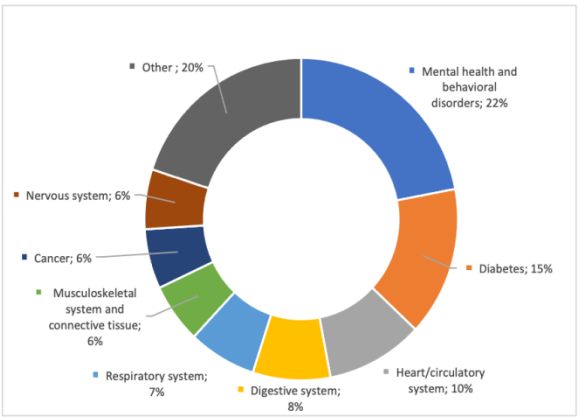


Source: 42 Matters, Jun 2021 and Jul 2017, Jun 2015; IQVIA Institute, Jun 2021

Figure 3. Digital Health Applications by category and yearly change

It can be seen from the analysis of the results that, disease-specific applications have shifted since 2015, with 22 up from 10% in 2020. This trend shows that users are now using more specific health applications.

According to 2020 data, the largest categories continue to focus on chronic conditions when 2580 disease-specific applications are examined. When the distribution of diseases comes into account mental health and behavioral disorders, diabetes, heart and circulatory systems, digestive systems, and respiratory systems diseases take the lead. The results can be followed in Figure 4 (Aitken &Nass, 2021).



Source: IQVIA AppScript App Database, Jun 2021; IQVIA Institute, Jun 2021; Disease specific n=2580 apps.

Figure 4. Disease Specific Applications' Categories in 2020.

3.2. HES (Life Fits Home) and eNabız users in Turkey

Adaptation of Turkey and its people to e-health applications is very high and Turkish people take the lead the way in terms of accessing health-related information, integrating with the health system, and using health-related applications. During the Covid 19 epidemic, the HES application, which also serves to monitor health services such as vaccine applications, ranked 6th among all mobile applications in terms of the number of active users. The number of users of e-Nabız, an important health portal in Turkey, is more than 60 million, and the number of users of HES (Life Fits Home) is over 75 million. When all these developments are followed, it is seen how important digital health literacy is for healthcare service users. Digital health literacy is essential for all individuals in terms of reading and understanding health information on the internet, accessing health services, and benefiting from and presenting personal digital data (eNabız, 2021, memurlar.net, 2022).

3.3. Digital/e Health Literacy Scales and Their Utilization in Turkey

Different researchers have developed several scales to measure digital health literacy levels of health care users. When the digital/eHealth literacy scales used in studies in Turkey were examined, it was seen that only one of them (Norman & Skinner,2006) was translated, validated, and adapted to Turkish by Coşkun and Bebiş in 2015 and according to the research of this study, a new scale has not been adapted to Turkish since then. During the last ten years, a lot of changes emerged in health technologies and new digital health literacy scales compatible with these changes have been developed. The digital/eHealth scales developed by different researchers in different countries are as follows.

When the eHealth literacy scales are investigated it can be seen that eHeals is a pioneering instrument measuring eHealth literacy and was original with a single factor structure developed by Norman and Skinner in Canada in 2006. Norman and Skinner's eHeals is still the earliest work measuring e-Health literacy. eHeals is a scale consisting of 1 scale (traditional literacy, health literacy, information literacy, scientific literacy, media literacy, computer literacy, and 2 questions for internet use) and 8 items 1 to 5 Likert type. Coşkun and Bebiş adopted the scale in Turkish in 2015. Since 2015 researchers from Turkey tested the scale on different samples (Korkmaz et al, 2021; Uskun et al., 2021; Nakas, 2020)

Then in 2014, another quantitative research was conducted by researchers from Taiwan (Hsu et al.,2014). eHls/The eHealth Literacy Scale was a measurement tool consisting of 3 scales (functional e-health literacy; interactive e-health literacy and critical e-health literacy) and 19 items. In the same year, another e-health measurement tool PRE HIT was developed by Koopman(2014) in the USA and new concepts came to the agenda such as internet privacy concerns and anxiety about the security of data of consumers. Also, online health information need, computer/internet experience, computer anxiety, relationship with the doctor, and cell phone expertise were included in 6 factors 28 items 1 to 4 Likert type scale.

By 2015 EHLA/Ehealth literacy Assessment Toolkit was tested by Furstrand and Kayser in Denmark. This quantitative 6 scales (computer familiarity, confidence, incentive, and performance as well as functional health literacy, health literacy self-assessment, and health literacy performance) and 42 items 1 to 5 Likert type questionnaire were conducted on adolescent health service users.

By Kayser et al. in Denmark in 2015 another measurement tool named eHLQ (The eHealth Literacy Questionnaire) emerged. That was the most common tool used by different researchers from various countries after Norman and Skinners' eHeals instrument. The scale focused on new digital health services and their utilization of them by consumers. The scale consisted of 7 factors (using technology to process health information, understanding of health concepts and language, ability to actively engage with digital services feeling safe and in control, motivated

to engage with digital services, access to digital services that work, digital services that suit individual needs), 35 Items 1 to 4 Likert Type.

In 2016 Seçkin et al. in the USA developed a new scale, EHLS (Electronic Health Literacy). In that quantitative study, a questionnaire with three factors; communication, trust, and action with 19 Items 1 to 5-point Likert scale was tested and validated by the researchers. Another tool measuring operational skills, navigation skills, information teaching, evaluation reliability, determining relevance, adding content, and protecting the privacy of health service consumers became popular among digital/eHealth literacy scales. That measurement tool consisting of 6 scales and 19 items 1 to 4 point Likert type was developed by Van Der Vaart and Drosseart in Holland in 2017 and spread all over the world. In 2019 Paige et al. developed another tool named TMeHL(Transactional Model of eHealth Literacy in the USA. It consisted of 4 factors (functional, communicative, critical, translational) and 18 items 1 to 4 Likert type.

After 2020 new tools were developed by several researchers. Liu, et al. developed eHLS Web 3.0 (eHealth Literacy Scale) in China in 2021. It consisted of 3 scales (acquisition, verification, and application) and 24 items 1 to 5 Likert type. Yoon et al. developed DHTL-AQ (Digital Health Technology) in South Korea in 2022. It consisted of 4 scales (ICT-related terms, ability to use an application, knowing of ICT icons, evaluating the reliability and relevance of digital health) and 34 items 1 to 5 Likert type. These scales were more compatible with technological progress, furthermore, new ICT uses and applications were the focus of the research. The recently developed scales were not tested by different researchers in different countries. So their reliability and validity of them have not been checked by different researchers. On the other hand, some of these scales developed before 2020 were used by many researchers and adopted in many languages. Although there are many digital/eHealth literacy scales adopted in various countries, in Turkey researchers stay behind in that situation. The need for developing or adopting new scales is obvious.

DISCUSSION

As can be followed from the results of the study technological changes in the world and in our country are very rapid and the people in our country keep pace with these improvements. Thus to acquire true and accurate data and utilize the digital health technologies efficiently digital/eHealth literacy scales gain importance. When the digital/eHealth literacy scales developed by various researchers came into account, it was seen that various measurement tools were referred to many times in various studies and their reliability and validity were tested by different researchers from different countries among different demographic groups. On the other hand, only one measurement tool eHEALS (The eHealth Literacy Scale), developed by Norman and Skinner (2006) was adopted in Turkish and used by Turkish researchers.

In previous literature some researchers reviewed e-health literacy instruments and reported that although eHEALS (The eHealth Literacy Scale) had been used in various studies, it measured a narrow scope of health literacy (Lee et al.,2021; Monkman & Kushniruk, 2015; Norgaard et al., 2015). While it met the needs for measuring eHealth literacy of individuals in 2006, eHEALS (The eHealth Literacy Scale) has some disadvantages besides its advantages. First eHEALS has only one dimension with ten (8+2) questions and measures consumers' perceived skills and comfort with eHealth, not the skills directly. On the other hand new generation eHealth literacy scales have sub dimensions measuring users' operational and navigational skills, (DHLI/Digital Health Literacy Scale), confidence, incentive, and performance (EHLA), evaluating the reliability and relevance of digital health (DHTL-AQ), interactive ehealth literacy (eHls/The eHealth Literacy Scale), access to digital services that work (eHLQ) and users relationship with doctor by cell phone (PRE-HIT). As it can be seen, the new eHealth literacy scales measure the health service consumers literacy multidirectional.

Although eHeals is very popular in many countries it was developed years ago and since that time, a lot of changes in technology, the internet, and the computer world have emerged. Along with the evolution of interactive communication technologies on the internet development of second-generation instruments has emerged. By the increase in the number of internet users and occurrence of the pandemics in recent years, digitization accelerated the use of digital tools, mobile phones, tele medicine, web services and online health services. Thus, while measuring eHealth literacy confidence, privacy, and consciousness of the users during using internet and computer should be asked. New generation eHealth literacy scales attach importance to this issue and include sub dimensions regarding determining relevance, adding content, protecting privacy (DHL), confidence of personal data (EHLA), accessing reliable data (DHTL-AQ), feeling safe and in control for digital services (eHLQ), internet privacy concerns (PRE-HIT) and trust (EHLS). As use of health applications, smart devices and online health services have increased in recent years, questions regarding that issue should be added in scales. Some new age eHealth literacy scales have subdimensions as ability to use health applications (DHTL-AQ), digital services that suit individual online health needs (eHLQ) which meet the need for measuring actual

internet and computer use problems or facilities during using mobile health applications or smart devices.

The most important criteria for determining the eHealth literacy scales proposed in this study was being tested with regards of reliability and validity many times by different researchers in different countries and in different populations. Certainly, they have various sub dimensions and wide variety content. In findings section the scales mentioned in this study were explained on behalf of their origin, their methods, and factors. The researchers who want to adopt new tools for measuring the eHealth literacy can utilize the data given in this study and investigate the tools in detail. On the other hand to develop the most appropriate scale to Turkey population, new scales can be developed by new researchers.

When the previous literature come to account it was seen that the relation between health literacy and health status, utilization of health services, and preventive health services was significant. As digital health technology use in Turkey and the world is increasing, new generation eHealth measuring instruments is essential. Since multiple different approaches began to be applied in determining the correlation between successful and effective use of information technology, digital/eHealth literacy, and its usability, they recommend further psychometric studies of the second-generation eHealth literacy instruments conducted in different samples. In considering where and how concepts related to eHealth literacy can be applied to improve healthcare applications and systems it is better to adopt new generation e-health literacy tools or developing new ones (Lee et al.,2021; Monkman & Kushniruk, 2015; Norgaard et al., 2015).

CONCLUSION AND RECOMMENDATIONS

The extraordinary situations that the world has been through in the last few years have shown us that it is impossible to escape from technology. During the Covid 19 pandemic period, the world has increased the speed of digitalization in an inestimable way and there have been 10 years of development in almost two years. While societies are experiencing rapid digital transformation in areas such as education, finance, commerce, and travel, the field of health has also received its share of this change. As the world moves towards more digital-based technologies thanks to the great development in technology, the occasion, and challenges of disseminating health content over the internet to web browsers and mobile devices are also more understood. When emphasizing the importance of reaching the right and necessary information, it has been seen that the spread of wrong and incomplete information will lead societies to disasters. In this case, the importance of digital health literacy has been re-understood.

Digital health literacy is generally seen as a fundamental necessity for the democratic and patient-centered digitization of the health system. The benefits of digital health technology are the capabilities and resources individuals need to use and benefit from digital health resources. When digital health technology access and participation increase in a fair way among health service users they take the advantage of competition between health institutes and service providers. By this means, consumers have the chance to receive the best service with the best facilities. On the other hand, the use of digital health technologies in the provision of health services is one of the priority areas for application and research. The enterprise of protective mechanisms depending on the level of digital health literacy of health-related platforms, which also contain many security risks, may reduce the possibility of harm from misuse of health information with the help of digital health literacy measures.

From time to time, the consciousness and awareness levels of societies on this subject have been measured by studies in which health researchers have investigated the relationship between digital health literacy and other behaviors and attitudes in different groups in different regions. Testing the validity and reliability of digital health literacy scales developed by different researchers mentioned in this study in the Turkish population will enable us to fill an important gap in the field. With the application of these scales, the deficiencies and mistakes of individuals can be revealed by measuring the level of digital health literacy in different groups of the society, deficiency, and difficulties in the use of government and private sector digital health systems can be identified so individuals can better benefit from digital health applications.

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The authors declare that they have no conflict of interest.

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REFERENCES

42 Matters (2022), "Store Stats for Mobile Apps", [Internet] https://42matters.com/stats (accessed Feb 16, 2022).

Aba, G., Gümüş, R., & Çakır, Y. N. (2019). Sağlık Çalışanlarının Medikal Turizme Yönelik Algılarının İncelenmesi: Özel Hastane Örneği. Yönetim ve Ekonomi Araştırmaları Dergisi, 17(3): 93-105.

American Library Association. Welcome, ALAs Lit Clgh; (2017). Digital Literacy [Internet] https://literacy.ala.org/digital-literacy/ (accessed Jan 11, 2022)

Balay-Odao, E. M., Alquwez, N., Alsolami, F., Tork, H. M., Al Otaibi, K., & Al Thobaity, A. (2021). COVID-19 crisis: Influence of eHealth literacy on mental health promotion among Saudi nursing students. Journal of Taibah University Medical Sciences, 16(6): 906-913.

Biçer, İ., Çakmak, C., Demir, H., & Kurt, M. E. (2020). Koronavirüs anksiyete ölçeği kısa formu: Türkçe geçerlik ve güvenirlik çalışması. Anatolian Clinic the Journal of Medical Sciences, 25(Special Issue on COVID 19): 216-225

Bostan, S, Yalçın B., (2016). Sağlık Turistlerinin Medikal Destinasyon Seçimini Etkileyen Faktörler. Journal of International Social Research, 9(43).

Britt, R. K., Collins, W. B., Wilson, K., Linnemeier, G., & Englebert, A. M. (2017). eHealth literacy and health behaviors affecting modern college students: a pilot study of issues identified by the American College Health Association. Journal of medical Internet research, 19(12): e3100.

Coşkun, S., & Bebiş, H. (2015). Adolesanlarda e-sağlık okuryazarlığı ölçeği: Türkçe geçerlilik ve güvenirlik çalışması. Gülhane Tıp Dergisi, 57: 378-434. https://doi.org/10.5455/gulhane.157832

DataReportal (2022), "Digital 2022: Turkey", [Internet] https://datareportal.com/reports/digital-2022-turkey (accessed Feb 14, 2022)

Davis, T. C., Arnold, C., Berkel, H. J., Nandy, I., Jackson, R. H., & Glass, J. (1996). Knowledge and attitude on screening mammography among low-literate, low-income women. Cancer: Interdisciplinary International Journal of the American Cancer Society, 78(9): 1912-1920.

Davis, T. C., Long, S. W., Jackson, R. H., Mayeaux, E. J., George, R. B., Murphy, P. W., & Crouch, M. A. (1993). Rapid estimate of adult literacy in medicine (REALM): a shortened screening instrument. Family medicine, 25(6): 391-395.

Do, B. N., Tran, T. V., Phan, D. T., Nguyen, H. C., Nguyen, T. T., Nguyen, H. C., ... & Van Duong, T. (2020). Health literacy, ehealth literacy, adherence to infection prevention and control procedures, lifestyle changes, and suspected COVID-19 symptoms among health care workers during lockdown: online survey. Journal of medical Internet research, 22(11): e22894.

Doğan Çetinkaya, Erciyes Pelikan JM, Röthlın F, Ganahl K. HLS-EU CONSORTIUM (2012): Comparative Report of Health Literacy in Eight EU Member States. The European Health Literacy Survey HLS-EU, Online Publication: http://www.health-literacy.eu (accessed June 14, 2022)

Duong, T. V., Pham, K. M., Do, B. N., Kim, G. B., Dam, H. T., Le, V. T. T., & Yang, S. H. (2020). Digital healthy diet literacy and self-perceived eating behavior change during COVID-19 pandemic among undergraduate nursing and medical students: A rapid online survey. International journal of environmental research and public health, 17(19): 7185.

e-Nabız (2022), Turkish Ministry of Health,[Internet] https://enabiz.gov.tr/ (accessed Feb 21, 2022)

e-Nabız on Twitter (2022), [Internet] https://twitter.com/enabizsistemi (accessed May 20, 2022)

Ekinci, Y., Tutgun-Ünal, A., & Tarhan, N. (2021). Dijital Sağlık Okuryazarlığı Üzerine Bir Alanyazın İncelemesi. Bayterek Uluslararası Akademik Araştırmalar Dergisi, 4(2): 148-165.

EuroHealthNet (2021). Digital Health Literacy: how new skills can help improve health, equity, and Sustainability. [Internet] https://eurohealthnet.eu/publication/digital-health-literacy-how-new-skills-can-help-improve-health-equity-and-sustainability (accessed Jan 18, 2021)

European Commission. (2019). EU-funded Research & Innovation in the field of ICT for Health, Wellbeing & Ageing - An Overview.[Internet] https://ec.europa.eu/digital-single-market/en/news/eu-funded-research-and-innovation-field-ict-health-wellbeing-and-ageing-overview (accessed Feb 12, 2022)

Furstrand, D., & Kayser, L. (2015). Development of the eHealth literacy assessment toolkit, eHLA. In MEDINFO 2015: eHealth-enabled Health : 971-971.

Gümüş, R. (2018). Pazarlama faaliyetlerinin sağlık sektörüne uygulanması: Bir literatür incelemesi. Bulletin of Economic Theory and Analysis, 3(4): 217-235.

Gümüş, R., & Sönmez, Y. (2020). Quality of online communication tools at hospitals and their effects on health service consumers' preferences. International Journal of Healthcare Management, 13(1):35-44. https://doi.org/10.1080/20479700.2018.1470816

Hsu, W., Chiang, C., & Yang, S. (2014). The effect of individual factors on health behaviors among college students: the mediating effects of eHealth literacy. Journal of medical Internet research, 16(12): e3542.

Internet World Stats (2022), "Turkey Internet usage and market report", [Internet] https://www.internetworldstats.com/eu/tr.htm (accessed Feb 15, 2022)

Kayser, L., Karnoe, A., Furstrand, D., Batterham, R., Christensen, K. B., Elsworth, G., & Osborne, R. H. (2018). A multidimensional tool based on the eHealth literacy framework: development and initial validity testing of the eHealth literacy questionnaire (eHLQ). Journal of medical Internet research, 20(2): e8371.

Kepios (2022), "Global Digital Reports", [Internet] https://kepios.com/reports (accessed Feb 14, 2022)

Koopman RJ, Petroski GF, Canfield SM, Stuppy JA, Mehr DR. Development of the PRE-HIT instrument: patient readiness to engage in health information technology. BMC Fam Pract. 28:15-18. doi: 10.1186/1471-2296-15-18.

Korkmaz Aslan, G., Kartal, A., Turan, T., Taşdemir Yiğitoğlu, G., & Kocakabak, C. (2021). Association of electronic health literacy with health-promoting behaviours in adolescents. International Journal of Nursing Practice, 27(2): e12921.

Lee, J., Lee, E. H., & Chae, D. (2021). eHealth literacy instruments: Systematic review of measurement properties. Journal of medical Internet research, 23(11): e30644.

Liu, H. X., Chow, B. C., Liang, W., Hassel, H., & Huang, Y. W. (2021). Measuring a broad spectrum of eHealth skills in the Web 3.0 context using an eHealth Literacy Scale: Development and validation study. Journal of Medical Internet Research, 23(9): e31627.

Liu, H., Zeng, H., Shen, Y., Zhang, F., Sharma, M., Lai, W., & Zhao, Y. (2018). Assessment tools for health literacy among the general population: a systematic review. International journal of environmental research and public health, 15(8): 1711.

Memurlar.net (2022). HES uygulamasını indiren kullanıcı sayısı açıklandı. [Internet] https://www.memurlar.net/haber/999097/hes-uygulamasini-indiren-kullanici-sayisi-aciklandi.html (accessed May 20, 2022)

Monkman, H., & Kushniruk, A. W. (2015). eHealth literacy issues, constructs, models, and methods for health information technology design and evaluation. Knowledge Management & E-Learning: An International Journal, 7(4): 541-549

Murray Aitken, Deanna Nass, (2021). Digital Health Trends 2021: Innovation, Evidence, Regulation, and Adoption. IQVIA Institute, NJ, USA

Nakas, D. (2020). e-Health Literacy Levels of University Students in Turkey and Affecting Factors. International Journal of Caring Sciences, 13(3): 2149-2159.

Norgaard, O., Furstrand, D., Klokker, L., Karnoe, A., Batterham, R., Kayser, L., & Osborne, R. H. (2015). The e-health literacy framework: a conceptual framework for characterizing e-health users and their interaction with e-health systems. Knowledge Management & E-Learning: An International Journal, 7(4): 522-540.

Norman, C. D. & Skinner, H. A. (2006). eHEALS: the eHealth literacy scale. Journal of medical Internet research, 8(4): e507.

Paige, S. R., Stellefson, M., Krieger, J. L., Miller, M. D., Cheong, J., & Anderson-Lewis, C. (2019). Transactional eHealth literacy: Developing and testing a multi-dimensional instrument. Journal of Health Communication, 24(10): 737-748.

Parker RM, Baker DW, Williams MV, Nurss JR. The test of functional health literacy in adults: a new instrument (TOFHLA) for measuring patients' literacy skills. J Gen Intern Med. 1995 Oct;10(10):537-41. doi: 10.1007/BF02640361.

Seçkin G, Yeatts D, Hughes S, Hudson C, Bell V. Being an Informed Consumer of Health Information and Assessment of Electronic Health Literacy in a National Sample of Internet Users: Validity and Reliability of the e-HLS Instrument. J Med Internet Res. 11;18(7):e161. doi: 10.2196/jmir.5496.

Şen, M. A., Ceylan, A., Kurt, M. E., Palancı, Y., & Adın, C. (2017). Sağlık hizmetleri meslek yüksekokulu öğrencilerinin sağlıklı yaşam biçimi davranışları ve etkileyen faktörler. Dicle Tıp Dergisi, 44(1): 1-12.

Tuik (2021). Hanehalkı bilişim teknolojileri kullanım araştırması. [Internet] https://data.tuik.gov.tr/Bulten/Index?p=Hanehalki-Bilisim-Teknolojileri-(BT)-Kullanim-Arastirmasi-2021-37437 (accessed Feb 19, 2022)

UNESCO (United Nations Educational Scientific and Cultural Organization)(2011). Digital literacy in education [Internet]. https://iite.unesco.org/pics/publications/en/files/3214688.pdf (accessed Jan 24, 2022)

Uskun, E., Doğan, E., & Kişioğlu, A. N.(2022) e-Health Literacy Scale: Turkish validity and reliability study for adults over 45. Turkish Bulletin of Hygiene and Experimental Biology, (Ahead of Print). doi: 10.5505/TurkHijyen.2022.75608.

Van Der Vaart, R., & Drossaert, C. (2017). Development of the digital health literacy instrument: measuring a broad spectrum of health 1.0 and health 2.0 skills. Journal of medical Internet research, 19(1): e6709.

World Health Organization (2018). Health literacy and health behaviour. [Internet]. https://www.who.int/healthpromotion/conferences/7gchp/track2/en/ (accessed Jan 25, 2022)

Yoon, J., Lee, M., Ahn, J. S., Oh, D., Shin, S. Y., Chang, Y. J., & Cho, J. (2022). Development and Validation of Digital Health Technology Literacy Assessment Questionnaire. Journal of medical systems, 46(2): 1-11.

The Role of Personal Knowledge Management on the Effects of Self-Leadership to Transformational Leadership: A Study on the Public Healthcare Managers

İpek EROĞLU[1], *Nüket SARACEL*[2]

Corresponding Author

İpek EROĞLU

DOİ

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ABSTRACT

In the present era called the information age, also known as the digital age, healthcare managers have to deal with many challenges besides trying to adapt to the rapidly changing micro and macro-environment affected by the pandemic. Currently, digitalization and hybrid work ecosystems are on the rise requiring healthcare managers to effectively use self-knowledge management tools to lead themselves and be able to lead their staff members by inspiring, encouraging, and motivating them transforming their staff members creating value for all. However, there is insufficient research on the relationship of leadership styles and personal knowledge management. This study aims to evaluate the mediating role of personal knowledge management in the effect of self-leadership on transformational leadership. The study was carried out with scales of self-leadership, transformational leadership, and personal knowledge management. Scales were validated by factor analysis. Structural equation modeling was performed to test the relationships. The research universe consisted of public healthcare managers working in Istanbul. It was found that the validity and reliability of the research scales were high. The self-leadership and transformational leadership perceptions of healthcare managers working in public institutions are high. The results indicated a partial mediation effect of personal knowledge management on the positive impact of self-leadership on transformational leadership. The conceptual model and the findings in this study provide a new contribution to the current literature.

This study is derived from 10262972 numbered, "The Role of Personal Knowledge Management on the Effects of Self-Leadership to Transformational Leadership: A Study on the Public Healthcare Managers" titled doctorate thesis of İpek Eroğlu under the supervision of Prof. Dr. Nüket Saracel defended on 30.06.2021 in the 2020-2021 academic year at the Business Administration Department of the Graduate School of the Institute of Graduate Studies of Doğuş University.

[1] *Dr., İstanbul Medipol University, Faculty of Pharmacy, Department of Pharmacy Business Administration, ipekeroglu@gmail.com. Orcid: 0000-0002-6980-4192*

[2] *Prof. Dr., Doğuş University, Faculty of Economics and Administrative Sciences, nsaracel@dogus.edu.tr. Orcid: 0000-0002-7156-8088*

INTRODUCTION

In the present era called the information age, also known as the digital age, healthcare managers have to deal with many challenges besides trying to adapt to the rapidly changing micro and macro-environment affected by the pandemic. Currently, digitalization and hybrid work ecosystem are on the rise requiring healthcare managers to effectively use self knowledge management tools to lead themselves and be able to lead their staff members by inspiring, encouraging and motivating them transforming their staff members creating value for all.

Academic studies on leadership and leadership behaviors have been going on for centuries. In the past, as in today's organizations, leadership was and is a prominent concept in the organizational structure created by human communities and onwards. The characteristics of an individual play the major role in being accepted as a leader. Some of these features are innate; some are acquired and developed later. A leader can be defined as a person who can gather individuals in his reach around a goal, whose ideas and actions are followed by others, who can direct his followers, who can mobilize people, who unite and influence others. Leadership is shaped in an endless process consisting of individual work, education, learning and the accumulation of relevant experience (Bass & Riggio, 2006).

It is possible to classify the contemporary leadership theories from three perspectives: Leadership as a process; leadership as a combination of personality traits; leadership as specific behaviors or, more commonly, leadership skills. Leadership is not a “one size fits all” phenomenon. It is important to consider and adapt the most matching leadership style for the sake of organizations, situations, groups and individuals. Amongst the many leadership styles the concept of self-leadership defines the practices and development steps in the process of gaining personal vision by influencing people to control their own thoughts and actions. In its simplest definition, self-leadership is the process of influencing oneself, not the others. In the self-leadership approach, the individual manages his or her own behavior to reach the current standards and goals. Evaluating the standards, setting new standards or editing or changing the existing ones are behaviors peculiar to such leaders (Vansandt & Neck, 2003). The concept of self-leadership, which was presented as an alternative to traditional leadership styles by Manz and Sims in their article published in 1980, was developed by Charles Manz (1986) in the following years. This approach argues that although it has been shown that leadership behavior is often influenced by external forces, actions are controlled by internal rather than external forces (Manz, 1986). The self-leadership approach is defined as a process of self-influence in which the individual acts to perform the behavior, action or task he/she aims by providing the necessary direction and motivation on his/her own (Manz, 1986).

In today's world, where access to information is almost unlimited with the possibilities offered by advanced technology both the individuals and the institutions can achieve their self-leadership gains by making use of their ability to manage their personal or institutional knowledge in order to pave the way for change and development at the stage of strategic decision-making by the help of transformational leaders within the scope of the unpredictability that appears as an output of the current chaotic environment (Toduk, 2014). The term transformational leadership was first used by sociologist JV Downton (1973) in his book "Rebel Leadership: Commitment and Charisma in a Revolutionary Process". The definition of transformational leadership with its political and ethical elements beyond Weber's (1947) charismatic leadership concept was in the book "Leadership" by political scientist James MacGregor Burns (1978). According to Burns, transformational leadership is the situation where leaders get results in a dynamic interaction process that motivates each other with their followers in line with common needs and goals. Bass (1985) put forward a measurable model based on Burns (1978)'s concept of transformational leadership and suggested the Multidimensional Leadership Scale as a measurement tool. The Multidimensional Leadership Scale is an inventory prepared to measure different leadership styles, different leadership behaviors and their results. On the measurement of transformational leadership behaviors and practices, the scales of Posner and Kouzes (1990) and Podsakoff et al. (1990) have been used in research for many years. Since it is a widely used measurement tool, the Multidimensional Leadership Scale, which was reconsidered by Bass and Avolio (1990), has also been developed in different versions with long and short forms, in which the leader evaluates himself and the followers evaluate the leader (Bass and Avolio, 1995). Transformational leadership is to inspire followers to stick to a common vision and common goals for a business or a unit, encouraging them to become innovative problem solvers through coaching and mentoring; it is also addressed in a framework that encompasses developing followers' leadership capacities through both challenge and support. It was stated by Bass and Avolio (1990) that transformational leadership consists of four main dimensions: idealized influence, inspirational motivation, intellectual stimulation, and personalized attention. The Multidimensional Leadership Scale has 5 different versions containing 36, 45, 50 or 90 items used to measure leadership style and behaviors.

Answering these forms requires a long time and effort. In order to overcome this difficulty, Carless, Wearing and Mann (2000) developed a new scale called Global Transformational Leadership Scale (GTL) based on the transformational leadership study of Podsakoff et al. (1990). However there are a limited number of studies using these scales in the healthcare sector although personal contribution, personal knowledge management and leadership are vital components of the tasks and duties often requiring case specific performances.

The term of "personal knowledge" was first used by Polanyi (1958) and the term "Personal Knowledge Management" (PKM) was first used by Frand and Hixon (1999) in a study. Although PKM has been in the background of knowledge management since the early days, the relationship between personal and organizational effectiveness has long been overlooked. One of the most well-known predecessors of PKM is Personal Information Management (PIM) (Jones & Teevan, 2007), which comes from research in librarianship and document management, as well as information tools and software for personal productivity. Contemporary PKM, on the other hand, focuses on how individuals can become productive knowledge workers. PKM is a general structured process for consciously managing data and transforming it into useful information (Avery et al., 2001). Personal Knowledge Management processes have been defined by many authors. Frand and Hixon (1999) search/find; naming/classification; review/evaluation; and integration/association. Efimova (2005) developed the competency model that includes three processes: ideas, individuals and communities/networks. Wright (2005) developed the PKM competencies model that includes four processes: cognitive competencies, information competencies, social competencies, and learning and development competencies. Zuber- Skerritt (2005) developed a model of PKM values and actions that includes seven processes; advancement of learning and knowledge, cooperation, trust, respect and honesty, imagination and a vision of excellence, openness, non-positivistic beliefs and success. Avery et al. (2001) introduced the PKM skills model consisting of seven basic skills: information acquisition, information evaluation, information organization, cooperation around information, information analysis, information presentation, and information security.

Thus the quality of the public healthcare services are closely related to the professional knowledge workers in each and every organization. Public health services have a multi-stakeholder structure that includes preventive health services, curative health services, rehabilitative health services and health promotion services critical for human life. In this multi-stakeholder structure, many public and private institutions and organizations play a role in the production and delivery of services in the health system. In our country the umbrella organization of this structure is the Ministry of Health. The main task in the planning, organization, direction and supervision of health services in Turkey belongs to the Ministry of Health. Ministry of Health is also the most comprehensive health services provider in our country. The Ministry of Health fulfills its administrative duty at the provincial level through Provincial Health Directorates. Provincial Health Directorates are responsible for the effective and efficient execution of the Ministry's provincial level services. Provincial Health Directorates and District Health Directorates operating under the Provincial Health Directorate in each province are responsible for ensuring that all public and private health institutions and organizations provide and supervise the delivery of health services in line with the plans of the Ministry, and the execution of health-related works and procedures. Thus, as each healthcare professional has strategic importance for the ongoing healthcare activities at all levels each individual healthcare knowledge worker has to lead oneself and gain the knowledge to lead others.

Although there has been an increasing interest in leadership and knowledge management in the academic community in recent years, the studies conducted are on the dimensions of leader, follower and organizational relationship. As a result of the literature review done in academic databases, it has found that the relationship between self-leadership and transformational leadership or personal knowledge management was researched in separate studies and there was no publication in the field of healthcare services. Thus, this study being the first research on the topic will set an example and contribute to further research.

The research was carried out with the aim of determining the relationship between self-leadership perceptions and transformational leadership perceptions of employees working in managerial positions in the public healthcare sector and to reveal the mediator role of personal knowledge management in the effect of self-leadership on transformational leadership.

MATERIALS AND METHODS

2.1. Study Design

This research is a relational survey model to examine the mediating role of personal knowledge management in the relationship between self-leadership and transformational leadership perceptions in healthcare professionals. Relational screening model is a model that describes and determines the pattern or the relationship between two or more variables shows the degree of relationship between the variables and the effect of the variables on each other (Creswell, 2018; Karasar, 2018). In the study, transformational leadership was determined as the dependent variable, self-leadership as the independent variable and personal knowledge management as the mediator variable. Structural equation modeling (SEM) is used to test the relationships between variables defined as dependent, independent and mediator and the accuracy of the model created based on the theoretical framework.

The Ethics Committee of Doğuş University has granted 02.09.2019 dated and 22716164-050.06/15 numbered ethical approval for this research study.

2.2. Study Population

The universe of the research consisted of managers working in the public healthcare sector within the borders of Istanbul between the years 2019 and 2021. This study was carried out with the executive staff of 39 District Health Directorates, 11 Presidency and 75 Public Hospitals affiliated to the Istanbul Provincial Health Directorate who gave consent to participate in the study. Since it was possible to reach the entire population, a sample population was not selected.

The population of the research consisted of the managers of public health institutions in Istanbul. The Research Ethics Committees of each public health institution in İstanbul evaluated the proposal of this research study and reported back to the Provincial Health Directorate of İstanbul. The Provincial Health Directorate of İstanbul has granted 17.12.2019 dated and E.1964 numbered approval for this research study. It was assumed that the main population to be contacted in line with the research is suitable for the research universe and that the submitted data collection forms are answered honestly and impartially.

2.3. Data Collection

Research data were collected from the primary data source through a questionnaire as a quantitative data collection tool. Three parts of the questionnaire used in the research include the scale statements created with the inventories adapted into Turkish, and the fourth part includes questions for collecting demographic information. The sections of the questionnaire are categorized as follows: demographic information form, self-leadership inventory, transformational leadership inventory, and personal knowledge management inventory.

On the demographic information form, there are eleven statements that the participants were expected to answer which are gender, age, marital status, education status, total length of service in the current position, working years with present colleagues, service time in the health sector, total length of employment, profession, position title and the number of people managed.

In this study, Abbreviated Self-Leadership Scale (ASLQ) is used to determine the self-leadership perception levels of healthcare managers. Houghton and Neck (2002) carried out confirmatory studies of the Self-Leadership Scale (SLQ), developed by Anderson and Prussia (1997), and the Revised Self-Leadership Scale (RSLQ) version was created. The scale, which was originally in English, was translated and adapted into Turkish by Tabak (2013). Houghton et al. (2012) developed a short version of the RSLQ, which includes 35 statements, called the Abbreviated Self-Leadership Scale (ASLQ), which consists of 9 statements, for ease of application. Cronbach's alpha coefficient of ASLQ indicates the reliability level of the scale as 0.73 (Houghton et al., 2012). The scale, which was originally in English, was translated and adapted into Turkish by Şahin (2015). Likert-type scaled inventory which is a one to five point scale prepared for this study was used. Based on the transformational leadership study of Podsakoff et al. in 1990, the Transformational Leadership Scale named Global Transformational Leadership Scale (GTL) prepared by Carless et al. (2000) as a short form consisting of 7 statements is used. Cronbach's alpha coefficient of GTL indicates the reliability level of the scale of 0.93 (Carless et al., 2000). Likert-type scaled inventory which is a one to five point scale prepared for this study was used. A Personal Knowledge Management Inventory Scale developed from the studies and scales of Muhammed et al. (2011) and Tseng and Fan (2011) is used. The Cronbach's alpha coefficients of the dimensions of both scales are above 0.80, indicating the level of reliability of the scale (Muhammed et al., 2011; Tseng & Fan, 2011). The scale developed for the study includes information sharing, information gathering, information production, information application and information storage dimensions of Personal Knowledge Management. In order to evaluate the 5 sub-dimensions of Personal Knowledge Management with 9 statements, the Likert-type scaled inventory, which is a one to five point scale prepared for this study, was used.

2.4. Data Analysis

After obtaining permission from the researchers who developed the Self-Leadership Scale and Transformational Leadership Scale, language, content

and construct validity studies were carried out by creating Turkish versions. The Personal Knowledge Management Scale was newly created for this study, using two different external studies in English. After the necessary permissions obtained from the researchers who developed the original scales the Turkish version of PKM Scale has developed.

The original Transformational Leadership scale, which was in the structure of the evaluation of others scale, was converted into a self-assessment format and validated. The original Self-Leadership and Personal Knowledge Management scales, which were in the forms of self-evaluation scales, were converted into an assessment format for others and validated.

Validation studies of scale language compatibility, content validity, time consistency and self-other evaluation scales of this research were carried out successfully. The analysis of the research data was made with the SPSS 26 program and it was studied with a confidence level of 95%. Frequency (n) and percentage (%) for categorical (qualitative) variables, mean (x), standard deviation (ss), minimum and maximum statistics for numerical (quantitative) variables are given. For the validity of the scales, exploratory and confirmatory factor analyzes were performed and their reliabilities calculated. Pearson correlation (Spearman correlation test-retest analysis), independent groups t test, one-way ANOVA, Wilcoxon test, Kendall W coefficient were used in the study. In addition, Structural Equation Modeling was used to test the model.

This study is limited to the questionnaire form prepared to collect information and the literature related to the subject available to the researcher. The findings obtained from the research are limited to the public healthcare professionals of the province of Istanbul. Research data is limited to the time frame of the study. Research data is limited to the data obtained from employees in public healthcare institutions during the study period. The data of the research is limited to the opinions of the research participants. The findings of the research are limited to the scope of the scales used in the research.

RESULTS

The findings of the study are presented below in the form of tables, figures and interpretations.

57.3% of the respondents are female, 76.0% are married, 43.5% are 40-50 years old, 65.9% are graduate students, 98% of them are managers of 1-20 people. 47.2% of the respondents have been working with their colleagues for 2-5 years, 78.2% have been working for 0-10 years, 52.9% have been working for 0-10 years in total, 47.1% have been working with their colleagues for 0-10 years. In the distribution of occupations and job status it is seen that most of the respondents are physicians with 32.8% and nurses with 18.7% as the second largest occupational group. Employees who were in charge of the units participated in the survey at the highest rate (78.7%). Self-evaluation of Self-Leadership, Transformational Leadership scales are found to be highly reliable, Personal Knowledge Management scale is very reliable. Evaluating the managers' Self-Leadership, Transformational Leadership, Personal Knowledge Management scales are highly reliable. In total, self-evaluation and manager-evaluation total scales are highly reliable. Descriptive statistics of the scores calculated from the scales are given in Table 1.

Table 1. Reliability Analysis Results

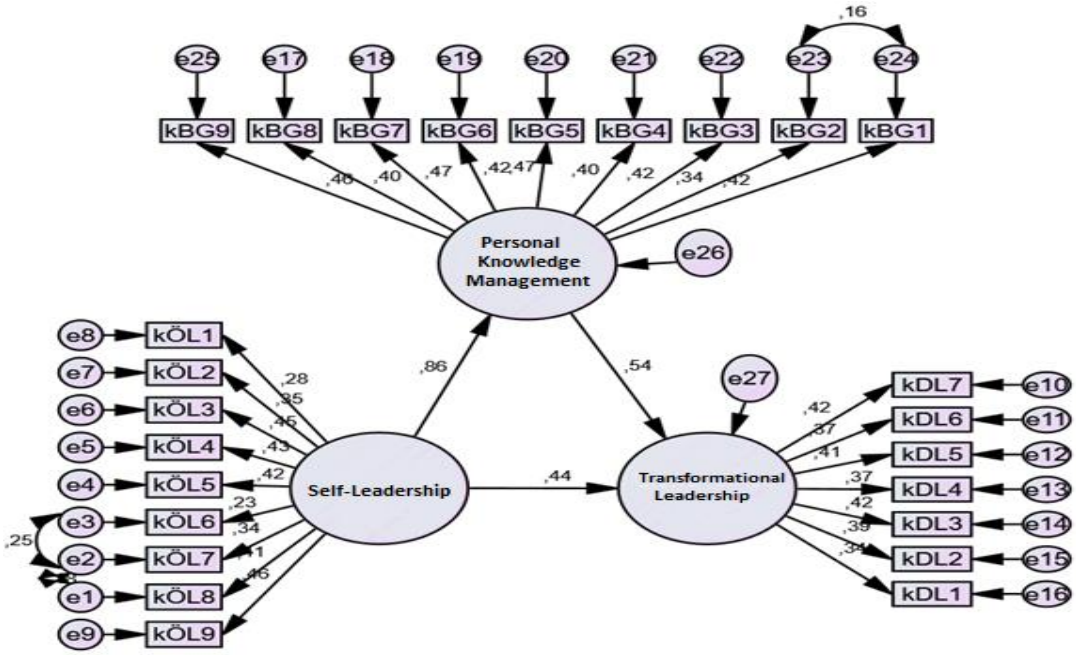
DİMENSİON	Number of Items	Cronbach Alfa
Self-Leadership (Self)	9	0,655
Self-Leadership (Manager)	9	0,818
Transformational Leadership (Self)	7	0,683
Transformational Leadership (Manager)	7	0,858
Personal Knowledge Management (Self)	9	0,855
Personal Knowledge Management (Manager)	9	0,910
Self Evaluation (Total)	25	0,857
Evaluation of the Manager (Total)	25	0,935

The skewness and kurtosis coefficients provided the reference range (+3:-3). There is a positive and statistically significant relationship between Self-Leadership (Self) score and Self-Leadership (Manager), Transformational Leadership (Self), Transformational Leadership (Manager), Personal Knowledge Management (Self), Personal Knowledge Management (Manager) scores ($p<0.05$). There is a positive, statistically significant relationship between Self-Leadership (Manager) score and Transformational Leadership (Self), Transformational Leadership (Manager), Personal Knowledge Management (Self), Personal Knowledge Management (Manager) scores ($p<0.05$). There is a positive, statistically significant relationship between Transformational Leadership (Self) scores and Transformational Leadership (Manager), Personal Knowledge Management (Self), Personal Knowledge Management (Manager) scores ($p<0.05$). There is a

positive, statistically significant relationship between the Transformational Leadership (Manager) score and Personal Knowledge Management (Self) and Personal Knowledge Management (Manager) scores ($p<0.05$). There is a positive, statistically significant relationship between Personal Knowledge Management (Self) score and Personal Knowledge Management (Manager) scores ($p<0.05$).

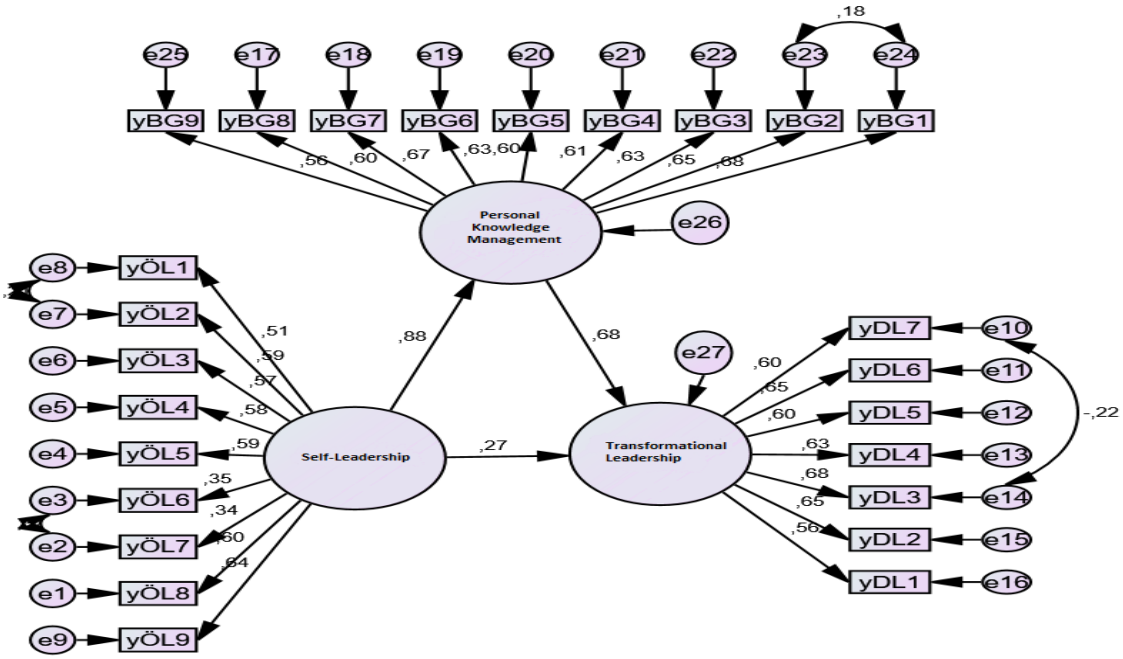
In the study, the mediation analysis was done with Bootsrap analysis on SEM. Indirect, direct and total effects were examined. For the mediation effect, the indirect effect must be significant. The working model was tested with AMOS 21.0. According to the results of the SEM analysis, all of the acceptable fit criteria of the model established in self-evaluation and the manager were met. No items were removed from the scales. Research Model found to be compatible with data.

Figure 1. Self-Assessment Model Path Diagram



Self-Leadership in self-evaluation ($\beta=0.856$) affects Personal Knowledge Management positively and is statistically significant ($p<0.05$). Personal Knowledge Management ($\beta=0,542$) has a positive and statistically significant effect on Transformational Leadership ($p<0.05$). The indirect effect of Self-Leadership ($\beta=0.464$) on Transformational Leadership is positive and statistically significant ($p<0.05$). One of the methods used for a mediation effect is the VAF (Variance Accounted For) value. This value is expressed as $VAF<0.20$ no mediation, $0.20\leq VAF\leq 0.80$ partial mediation, and $VAF\geq 0.80$ full mediation (Chang, et al., 2019; Yang, et al., 2019; Sarstedt , et al., 2014; Klarner, et al., 2013). Accordingly, the calculated VAF value for the model is 0.512. According to this result, Personal Knowledge Management partially mediates the effect of Self-Leadership on Transformational Leadership as shown on the Self-Assessment Model Path Diagram in Figure 1.

Figure 2. Other-Assessment (executive /manager evaluation) Model Path Diagram



Self-Leadership (β=0,879) affects Personal Knowledge Management positively and is statistically significant (p<0.05). Personal Knowledge Management (β=0.694) has a positive and statistically significant effect on Transformational Leadership (p<0.05). The indirect effect of Self-Leadership (β=0.598) on Transformational Leadership is positive and statistically significant (p<0.05). One of the methods used to talk about a mediation effect is the VAF (Variance Accounted For) value. This value is expressed as VAF<0.20 no mediation, 0.20≤VAF≤0.80 partial mediation, and VAF≥0.80 full mediation (Chang, et al., 2019; Yang, et al., 2019; Sarstedt , et al., 2014; Klarner, et al., 2013). Accordingly, the calculated VAF value for the model is 0.690. According to this result, Personal Knowledge Management partially mediates the effect of Self-Leadership on Transformational Leadership as shown on the Other-Assessment (executive /manager evaluation) Model Path Diagram in Figure 2.

DISCUSSION

In this study, it was set out with the foresight that personal knowledge management might have the power to activate transformational leadership, a leadership style built on the need to give meaning to people's lives. From this point of view, the determination of self-leadership of the healthcare professionals in Istanbul, the determination of the effect of self-leadership on transformational leadership, exploring the partial mediator role of personal knowledge management in the managers who shape the future of the health sector, which is one of the leading sectors of strategic importance for the sustainability of human life have been a remarkable discovery.

In this research study, it was determined that the self-leadership and transformational leadership perceptions of healthcare managers working in public institutions are high and that personal knowledge management has a partial mediator effect on the positive effect of self-leadership on transformational leadership. The data obtained from this study is important because it provides inferences as source information for the future training plans of managers who have the potential to show high performance in the management levels of healthcare institutions. Thus it is anticipated that positive reflections of self-leadership on transformational leadership through personal knowledge management will also have positive reflections on corporate culture, organizational climate, work motivation and individual and organizational productivity.

CONCLUSION AND RECOMMENDATIONS

According to the results of this study, it has been shown to have a positive relationship between the leadership styles of managers in public healthcare institutions and their personal knowledge management. For this reason, this study will be a basis for further studies to be conducted in the future, in which the relationship between leadership, personal and organizational knowledge management and performance will be evaluated. The research is also important because it empirically proves the existence of the theoretical relationship between personal knowledge management and self-leadership and transformational leadership, and provides a general applicable model that has not been addressed in previous studies for public and private sector managers who want to improve themselves in the healthcare management.

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Conflict of Interest:

The authors declare that they have no conflict of interest.

Ethical Approval:

The Ethics Committee of Doğuş University has granted 02.09.2019 dated and 22716164-050.06/15 numbered ethical approval for this research study. This study is derived from 10262972 numbered, " The Role of Personal Knowledge Management on the Effects of Self-Leadership to Transformational Leadership: A Study on the Public Healthcare Managers" titled doctorate thesis of İpek Eroğlu under the supervision of Prof. Dr. Nüket Saracel defended on 30.06.2021 in the 2020-2021 academic year at the Business Administration Department of the Graduate School of the Institute of Graduate Studies of Doğuş University.

The Research Ethics Committees of public health institutions in İstanbul evaluated the proposal of this research study and reported back to the Provincial Health Directorate of İstanbul. The Provincial Health Directorate of İstanbul has granted 17.12.2019 dated and E.1964 numbered approval for this research study.

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REFERENCES

Anderson, J. S., & Prussia, G. E. (1997). The self-leadership questionnaire: Peliminary assessment of construct validity. *The Journal of Leadership Studies, 4*(2), 119-143.

Avery, S., Brooks, J., Brown, J., Dorsey, P., & O'Conner, M. (2001). Personal Knowledge Management: Framework for Integration and Partnerships. *ASCUE Proceedings Book*.

Bass, B. M. (1985). *Leadership and performance beyond expectations.* New York, NY: Free Press.

Bass, B. M., & Avolio, B. J. (1990). Developing Transformational Leadership Beyond. *Journal of European Insdustrial Training* (5), 21-27.

Bass, B., & Riggio, R. (2006). *Transformational Leadership.* Mahwah, New Jersey: Lawrence Erlbaum Associates.

Burns, J. M. (1978). *Leadership.* New York: Harper and Row.

Carless, S. A., Wearing, A. J., & Mann, L. (2000). A Short Measure of Transformational Leadership. *Journal of Business and Psychology, 14*(3), 389-405.

Chang, S. H., Shu, Y., Lin, Y. H. ve Wang, C. L. (2019). "I Believe", "I Think", Then "I Will"? Investigating the mediator role of ethical judgment between internet ethical self-efficacy and ethical behavioral intention. *Computers in Human Behavior, 101,* 387-393.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: qualitative, quantitative, and mixed methods approaches.* Fifth edition. Thousand Oaks, California: SAGE Publications, Inc.

Downton, J. V. Jr. (1973). *Rebel Leadership*. New York, NY: Free Press.

Efimova, L. (2005). *Understanding Personal knowledge management: A Weblog case.* Enschede: Telematica Instituut.

Frand, J., & Hixon, C. (1999). *Personal Knowledge Management: Who, What, Why, When, Where, How?*

Houghton, J. D., & Neck, C. P. (2002). The revised self-leadership questionnaire: Testing a hierarchical factor structure for self-leadership. *Journal of Managerial Psychology, 18*(2), 31-41.

Houghton, J. D., Dawley, D., & DiLiello, T. C. (2012). The Abbreviated Self-Leadership Questionnaire (ASLQ): A More Concise Measure of Self-Leadership. *International Journal of Leadership Studies, 7*(2), 216 – 232.

Jones, W., & Teevan, J. (2007). *Personal information management.* University of Seattle, WA: Washington Press.

Karasar, N. (2018). *Bilimsel Araştırma Yöntemi* (31. b.). Ankara: Nobel Yayınevi.

Klarner, P., Sarstedt, M., Hoeck, M. & Ringle, C. M. (2013). Disentangling the effects of team competences, team adaptability, and client communication on the performance of management consulting teams. *Long Range Planning, 46*(3), 258-286.

Manz, C. C. (1986). Self-leadership: Toward an expanded theory of self-influence processes in organizations. *Academy of Management Review,* (11), 585-600.

Muhammed, S., Doll, W. J., & Deng, X. (2011). Impact of Knowledge Management Practices on Task Knowledge: An Individual Level Study. *International Journal of Knowledge Management 7*(4), 1-21.

Podsakoff, P., MacKenzie, S., Moorman, S., & Fetter, R. (1990). Transformational leader behaviors and their effects on followers'

trust in leader, satisfaction, and organizational citizenship behaviors. *Leadership Quarterly*, *1*(2), 107-142.

Polanyi, M. (1958). *Personal Knowledge: Towards a Post Critical Philosophy*. London: Routledge & Kegan Paul Ltd.

Posner, B. Z., & Kouzes, J. M. (1990). *Leadership Practices: An Alternative to the Psychological Perspective.* Measures of Leadership. Ed. Clark, K. E. & Clark M. B., West Orange, NJ: Leadership Library of America, 205-15.

Şahin, F. (2015). Kendi Kendine Liderlik Ölçeği Kısa Formunun Benzeşim, Ayrışım ve Yordayıcı Geçerliliği. *İş ve İnsan Dergisi*, *2*(2), 91-104.

Sarstedt, M., Ringle, C. M., Smith, D., Reams, R. ve Hair Jr, J. F. (2014). Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers. *Journal of Family Business Strategy*, *5*(1), 105-115.

Tabak, A. S. (2013). Öz-Liderlik Ölçeğinin Türkçeye Uyarlanması Çalışması. *Bilig*, *67*, 213-246.

Toduk, Y. (2014). *2023 Lideri Dijital Çağın Liderlik Sırları.* İstanbul: Doğan Yayıncılık.

Tseng, F., & Fan, Y. (2011). Exploring the Influence of Organizational Ethical Climate on Knowledge Management. *Journal of Business Ethics*(101), 325-342.

VanSandt, C. V., & Neck, C. P. (2003). Bridging Ethics and Self-Leadership: Overcoming Ethical Discrepancies Between Employee and Organizational Standards. *Journal of Business Ethics*, *43*, 363-387.

Weber, M. (1947). *The theory of social and economic organization*. New York: Free Press.

Wright, K. (2005). Personal knowledge management: supporting individual knowledge worker performance. *Knowledge Management Research & Practise*, *3*(3), 156.

Yang, Z., Tian, Y., Fan, Y., Liu, L., Luo, Y., Zhou, L. ve Yu, H. (2019). The mediating roles of caregiver social support and self-efficacy on caregiver burden in parkinson's disease. *Journal of Affective Disorders*, *256*, 302-308.

Zuber-Skerritt, O. (2005). A Model of Values and Actions for Personal Knowledge Management. *Journal of Workplace Learning*, *17*(1/2), 49-64.

Evaluation of Aggression Management Training for Nursing Students: A Quasi-Experimental Study

Elvan Emine ATA[1], Emel BAHADIR YILMAZ[2]

Corresponding Author

Elvan Emine ATA

DOİ

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Nurse Practitioners, Student, Aggression Management.

ABSTRACT

Background: Aggression is a significant problem for nurses in clinical settings. Purpose: To determine the effects of the education given to nursing students on the management of aggressive individuals.Method: This quasi-experimental study was carried out using a nonrandomized, controlled pretest/posttest design with a 3-month follow-up. The study sample comprised 180 students who volunteered to participate in the study. The experimental group participated in an aggression management training program. The Perception of Aggression Scale (PAS) and knowledge of aggression management tests were applied before and after the intervention (immediately and at 3 months). Results: Most of the participants in the experimental group (65.2%) and the control group (54.1%) were aged 19-21 years and most were female. Nearly all of the participants in the experimental group (96.6%) and most of the control group (83.6%) reported having cared for aggressive patients; 49.4% of the participants in the experimental group and 39.3% of those in the control group stated that they had difficulty caring for aggressive patients due to lack of relevant information. The mean post-test PAS functional subscale score was significantly higher in the experimental group than in the control group ($p < .05$). The training significantly improved aggression management knowledge test scores in the experimental group ($p < .05$). Conclusion: Aggression management training helped nursing students perceive aggression as a more acceptable response and increase their knowledge of aggression management. However, training alone was not effective in changing how students would intervene in aggression, their ability to recognize signs of aggression, and their perceptions of aggression as dysfunctional/unacceptable.

[1] *Ph.D., Asst. Prof. University of Health Sciences, Hamidiye Faculty of Nursing, Department of Psychiatric Nursing, Selimiye Neighborhood Tıbbiye Street No:36 34668, Istanbul, Turkey. e-mail: elvanhenden@gmail.com, Orcid Number: https://orcid.org/0000-0002-5920-8207*

[2] *PhD, Assoc. Prof., Giresun University, Faculty of Healty Science, Nursing Department, Piraziz/Giresun, Turkey. E-mail: ebahadiryilmaz@yahoo.com, Orcid Number: https://orcid.org/0000-0003-1785-3539*

INTRODUCTION

Violence and aggression have increased in healthcare settings in recent years and impact both healthcare personnel and students who share the same working environment (Hopkins et al., 2018). Nursing students are exposed to the aggressive behavior of patients and their relatives during clinical practice. For example, Hallet et al. (2021) investigated nursing students' experiences of violence and aggression and reported that most nursing students experienced non-physical aggression in the past year (81%), over half had experienced physical aggression (56%), and more than one in three had experienced sexual harassment (40%). Many students do not know what to do when confronted with aggression (Nau et al., 2009; Keser Özcan et al., 2014). To avoid the potential adverse physical and psychological effects of these experiences, nursing students must develop their aggression management skills (Keser Özcan et al., 2014; Bilgin et al., 2016; Hallet et al. 2021). In the literature, there are limited studies on improving students' ability to manage aggression in the clinical setting. Addressing this problem early may help prevent burnout, quitting, and physical and mental traumas that may occur during nurses' professional lives (Ridley and Leitch, 2019). Therefore, in this study we aimed to determine whether an aggression management training program would be effective in improving Turkish nursing students' perception of aggression, level of knowledge on aggression management, and aggression management skills.

Illness and hospitalization disrupt an individual's life, removing them from their roles and thus reducing their self-esteem. Problems such as dependence, pain, body alteration, loss of autonomy, separation from family, being in a foreign and often mechanical environment, and disconnection from daily life are threats to the patient's biological, psychological, and social well-being. The perception of this threat can lead to feelings of anger in the patient and their close relatives, and anger that is not appropriately expressed can result in aggressive behavior (Machingura and Lloyd, 2019; Heckemann et al., 2015). This behavior can manifest indirectly (e.g., harming one's possessions) or directly as physical (e.g., punching) or psychological (e.g., verbal insults) aggression (Kazdin, 2000). Studies on health professions have indicated that nurses are at especially high risk in terms of anger and aggression (Magnavita and Heponiemi, 2012; Spector et al., 2014). Nursing students in clinical practice, who spend nearly as much time with patients and their relatives as nurses, are also exposed to this anger and aggression (Taylor, 2000; Beech, 2008; Nau et al., 2007; Keser Özcan et al., 2014; Hallet et al. 2021).

Numerous studies on this issue have clearly demonstrated the scale of this problem for nursing students. Zeller et al. (2006) reported that 26% of student nurses were exposed to aggressive behaviors once a week, 37% felt threatened one or more times, 27% had encountered aggressive patient behavior, and 87% had been subjected to verbal attacks by patients. A study evaluating aggression management among nursing students trained at different clinics in Germany also showed that students experienced stress and had difficulty managing aggressive behaviors when confronted with them (Nau et al., 2007). In a study investigating nursing students' experiences of violence during clinical practice, Tee et al. (2016) determined that the students felt worried, angry, inadequate, humiliated, and embarrassed after these experiences. Magnavita and Heponiemi (2011) found that verbal violence experienced by nursing students leads to psychological problems such as anger, anxiety, irritation, humiliation, helplessness, and dissatisfaction. Budden et al. (2017) found that anxiety and depression were experienced by 71.5% and 53.6% of students, respectively after exposure to such events. In the same study, 32.8% of the students reported a lower quality of care and said they were reluctant to provide care and considered leaving the profession. The results obtained from these studies clearly show that exposure to aggressive behavior from patients and their relatives is not only a problem for nurses working in clinics. In addition to leading to feelings of anger, anxiety, fear, and self-blame and increasing the risk of problems such as depression and post-traumatic stress disorder, somatic and mental health problems in nurses and students exposed to aggressive and angry behavior are directly reflected in patient care due to nurse exhaustion, decreased performance, and reduced quality of care (Needham, Abderhalden, Halfens, et al., 2005; Tee et al., 2016). This may contribute to burnout syndrome and cause new nurses to become alienated from the profession (de Looff et al., 2019).

It has been emphasized in numerous studies that nurses' aggression management skills should be improved to prevent adverse effects both in patients and nurses (Keser Özcan et al., 2014; Bilgin et al., 2016; Hallet et al. 2021). Participation in aggression management training to increase theoretical and practical knowledge both improves knowledge and leads to changes in attitudes toward aggression (Calabro et al., 2002, Beech, 2008). Aggression management training programs have been shown to be effective in promoting positive attitudes towards patient aggression (Jansen et al., 2005; Hahn et al., 2006), and several groups have suggested that skills to manage aggressive individuals should be developed during nursing education (Nau et al., 2007; Heckemann et al., 2015; Hallet et al., 2021).

MATERIALS AND METHODS

Design

This quasi-experimental study was carried out using a nonrandomized, controlled pretest/posttest design with 3-month follow-up.

Setting and sample

The population of the study consisted of 128 second-year students, 121 third-year students, and 83 fourth-year students enrolled in the undergraduate nursing program in the Faculty of Health Sciences at a state university located in the Black Sea region of Turkey. The study sample comprised 180 students who volunteered to participate in the study. Inclusion criteria were being an undergraduate nursing student and volunteering to participate in the study. Exclusion criteria were not being employed in health care, presence of any chronic mental illness, and failure to complete the training and all assessments.

After performing the pretest assessment, the students were assigned to the experimental (n = 90) and control (n = 90) groups by matching for age, gender, and pretest scores. The experimental group then participated in the aggression management training program. The post-test was performed 3 months later.

One of the students in the experimental group was excluded because they did not attend all training program sessions (n = 89) and 29 students in the control group were excluded because they did not fully complete the assessments (n = 61). In addition, the fourth-year students could not be included in the 3-month follow-up because they graduated. Therefore, the study was completed with 64 students in the experimental group and 42 students in the control group.

Ethical considerations

Written approval to conduct this study was obtained from the School of Nursing and from the ethics committee. The purpose of the study was explained to the students and their verbal and written consent was obtained. Students were informed that they had the right to choose not to participate and were free to withdraw from the study at any point, even after the training program had started.

Data collection tools

Personal information form: We prepared this form based on the relevant literature and it consists of questions including the nurse's age, year of study, whether they had encountered angry or aggressive behavior, and the effects they experienced.

Perception of Aggression Scale (PAS): Jansen et al. developed this tool in 1997 and the Turkish psychometric evaluation was conducted by Bilgin, Tülek, and Özcan. The scale includes 29 items with a 5-point Likert-type rating system from strongly disagree (1) to strongly agree (5). The items are divided into two subgroups, functional (acceptable/healthy reaction) and dysfunctional (unacceptable/undesirable aggressiveness) reactions. The average of the item scores is calculated for each subscale. A higher functional subscale score indicates that aggression is perceived as functional/acceptable, while a higher dysfunctional subscale score indicates that aggression is perceived as dysfunctional/unacceptable. In our study, the Cronbach's alpha coefficient of reliability for the scale in the pretest was 0.70 in the experimental group and 0.74 in the control group.

Knowledge of aggression management test: Authors prepared this test based on a review of the literature. The test consists of 10 multiple-choice questions, each with five response options. The questions are related to definitions and types of aggressive behavior, mental illnesses related to aggression, the characteristics of aggressive individuals, theories explaining the etiology of aggression, communicating with aggressive individuals, the approach to patients who pose a risk of violence towards others, the approach to aggressive patients, and nursing diagnoses. In order to understand whether the prepared test is a valid and reliable measurement tool, opinions about the measurement tool were taken from three nursing department teachers who are experts in this field. The test was finalized in line with the feedback received. Afterwards, a pilot study was conducted with 10 students to evaluate whether the questions were understandable. Incomprehensible expressions were rearranged and the test was given its final form.

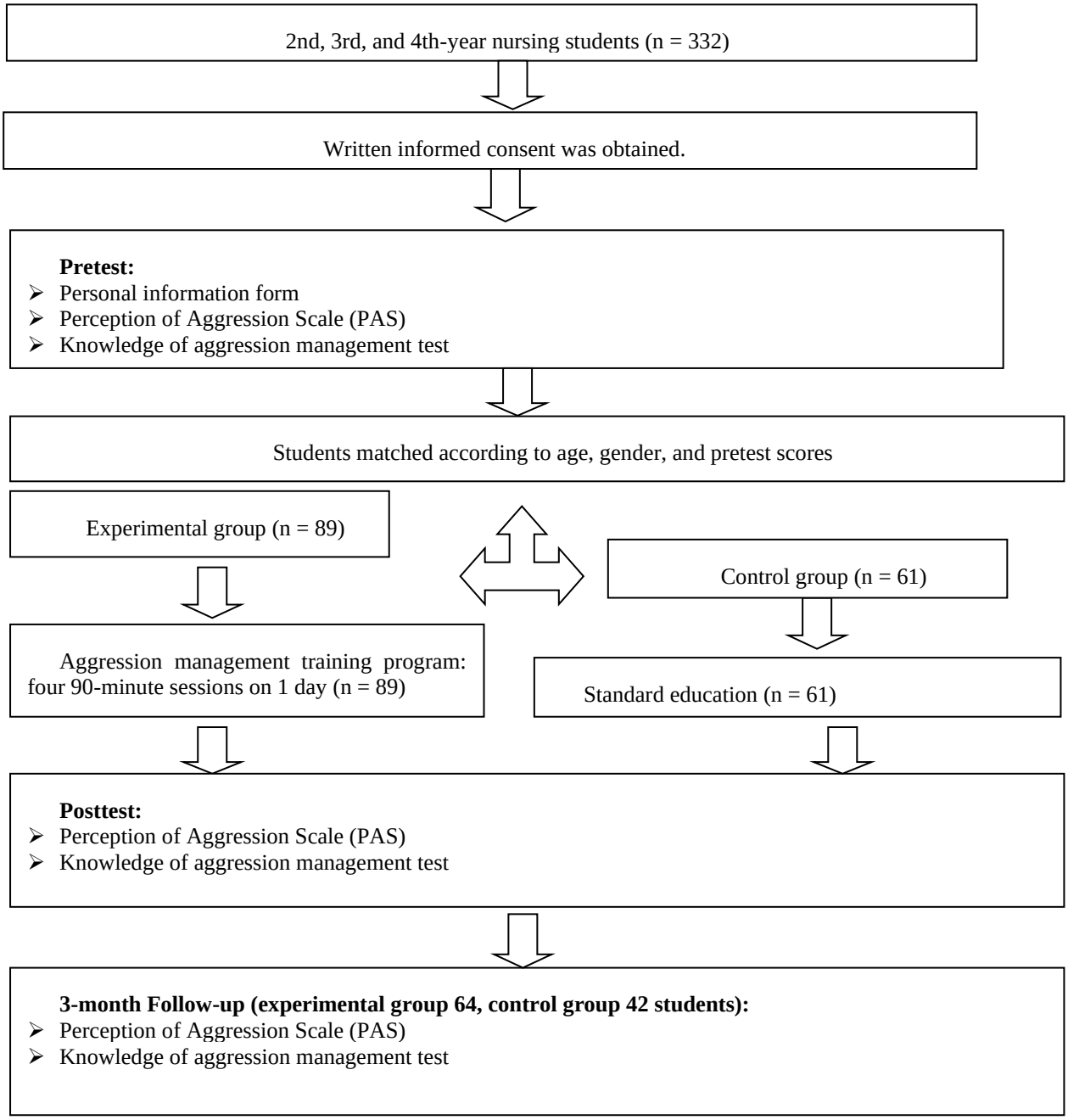

Figure 1. Study process flowchart

Data collection and intervention

The pretest was conducted with all participants. The participants were then assigned to the experimental (n = 90) and control (n = 90) groups by matching for age, gender, and pretest scores (Fig. 1). The aggression management training program was presented to the participants in the experimental group in four 90-minute sessions held on the same day. The training program was presented in the classroom setting and was repeated with groups limited to 30 students per group to encourage student participation in the sessions. Students who completed the training program received a certificate of participation. Posttests were performed with participants in both the experimental and control groups immediately after the intervention and again after 3 months.

The contents of the training program were determined in light of the relevant literature and are described in detail in Figure 2.

Contents of the aggression management training program

Contents	Methods	Objectives
Session 1		
The concepts of anger and aggression Theories explaining the concept of anger and aggression Symptoms of anger and aggression	Instruction Question and answer Brainstorming Discussion Game	Participants will be able to: 1. explain the concept of anger 2. explain the concept of aggression 3. recognize the signs of anger and aggression 4. recognize that anger is a normal reaction
Session 2		
Causes of anger and aggression, Development stages of anger and aggression Approaches according to the development stage of anger and aggression	Instruction Question and answer Brainstorming Discussion Game	Participants will be able to: 1. explain the factors that cause anger and aggression 2. recognize the stages anger and aggression development 3. explain interventions appropriate for different stages of anger and aggression
Session 3		
Evaluation of risk of anger and aggression Nursing diagnoses related to anger and aggression Nurses' approaches when faced with anger and aggression	Instruction Question and answer Discussion Case study Group study Role-play	Participants will be able to: 1. evaluate the risk of anger and aggression 2. identify nursing diagnoses for individuals displaying aggression 3. explain the approach to take when confronted with anger and aggression
Session 4		
Anger and aggression intervention strategies Anger and aggression prevention strategies Evaluation of sessions	Instruction Question and answer Brainstorming Discussion Role-play Game	Participants will be able to: 1. identify interventions that can prevent anger and aggression 2. explain the importance of strategies to prevent the emergence of anger and aggression 3. list anger and aggression intervention strategies

Figure 2. Contents of the aggression management training program

Data analysis

The study data were analyzed using SPSS (Statistical Package for Social Sciences) version 16.0 package program. P value < 0.05 was accepted as statistically significant in all statistical tests. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used in the analysis of sociodemographic characteristics. Normally distributed data were analyzed using analysis of variance (ANOVA) and paired-samples t-test for repeated measures. For non-normally distributed data, the Mann-Whitney U test, Friedman test, and Wilcoxon test were used for analyses and one-way ANOVA with Bonferroni correction was used for repeated measures.

RESULTS

Table 1. Socio-demographic characteristics of students

	Experimental group (n=89)		Control group (n=61)		
	N	%	N	%	Test
Age					
19-21	58	65,2	33	54,1	x^2=1,559
22-24	31	34,8	28	45,9	p=0,212
Gender					
Female	78	87,6	56	91,8	x^2=0,658
Male	11	12,4	5	8,2	p=0,417
Family type					
Nuclear Family	74	83,2	52	85,2	
Extended family	13	14,6	8	13,1	x^2=0,143
Fragmented family	2	2,2	1	1,6	p=0,931
Year					
2. Year	34	38,2	19	31,1	
3. Year	30	33,7	23	37,7	x^2=0,789
4. Year	25	28,1	19	31,1	p=0,674
Income status					
Income equals expense	71	79,8	54	88,5	
Income less than expenses	9	10,1	4	6,6	x^2=2,081
Income more than expenses	9	10,1	3	4,9	p=0,353
Living place					
Province	39	43,8	31	50,8	
Town	34	38,2	15	24,6	x^2=3,199
Village	16	18,0	15	24,6	p=0,202

Most of the participants in the experimental group (65.2%) and the control group (54.1%) were aged 19 to 21 years and most were female (87.6% and 91.8%, respectively). The distribution of second-, third-, and fourth-year students was 38.2%, 33.7%, and 28.1% in the experimental group and 37.7%, 31.1%, and 31.1% in the control group. The participants in both groups were similar in terms of sociodemographic variables ($p > 0.05$) (Table 1).

Table 2. Comparison of mean PAS functional and dysfunctional subscale scores in the experimental and control groups

		Pretest	Posttest	Follow-up		
Group	**n**	**Mean ± SD**	**Mean ± SD**	**n**	**Mean ± SD**	**Test**
Functional						
Experimental	89	3.13 ± 0.59	3.19 ± 0.67	64	2.94 ± 0.70	F = 2.381 p = 0.097
Control	61	2.96 ± 0.52	2.81 ± 0.69	42	2.89 ± 0.54	F = 1.987 p = 0.144
Test		t = 1.726 p = 0.086	t = 3.325 p = **0.001**		t = 0.452 p = 0.652	
Dysfunctional						
Experimental	89	2.61 ± 0.72	3.72 ± 0.44	64	3.61 ± 0.48	F = 50.438 p < **0.001**
Control	61	2.53 ± 0.65	3.68 ± 0.53	42	3.49 ± 0.52	F = 46.814 p < **0.001**
Test		t = 0.681 p = 0.497	t = 0.499 p = 0.619		t = 1.214 p = 0.228	

Nearly all the participants in the experimental group (96.6%) and most of the control group (83.6%) reported having cared for aggressive patients, and smaller proportions (7.9% and 6.6%, respectively) reported being exposed to anger from patients or their relatives. In addition, 49.4% of the participants in the experimental group and 39.3% of those in the control group stated that they had difficulty caring for aggressive patients due to a lack of relevant information.

A comparison of pretest, post-test, and follow-up PAS functional and dysfunctional subscale scores in the experimental group revealed a statistically significant change in dysfunctional subscale scores ($p < 0.05$). Post-hoc comparisons indicated that the posttest and follow-up scores were significantly higher than the

pretest score ($p < 0.001$ for both). There was also a significant difference in pretest, posttest, and follow-up PAS dysfunctional subscale scores in the control group ($p < 0.05$). Similarly, posthoc comparisons showed a significant increase from pretest to posttest ($p < 0.001$) and pre-test to follow-up score ($p = 0.006$) (Table 2).

Table 3. Comparison of total scores on the knowledge of aggression management test in the experimental and control groups

		Pretest	**Posttest**	**Follow-up**		
Group	**n**	**Mean ± SD**	**Mean ± SD**	**n**	**Mean ± SD**	**Test**
Experimental	89	5.97 ± 1.44	7.34 ± 1.21	64	6.78 ± 1.25	F = 20.600 p < **0.001**
Control	61	5.72 ± 1.77	5.55 ± 2.28	42	6.07 ± 1.55	F = 6.898 p = 0.032
Test		MU = 2.537 p = 0.488	MU = 1.097 p < **0.001**		MU = 999.50 p = **0.022**	

The comparison of pretest, posttest and follow-up scores on the knowledge of aggression management test in the experimental and control groups is shown in Table 3. Pretest scores were similar between the groups ($p = 0.488$). In the experimental group, this score increased significantly from pretest to posttest ($p < 0.001$) and decreased significantly between posttest and 3-month follow-up ($p = 0.020$) but remained significantly higher at 3-month follow-up compared to the pretest ($p = 0.003$). In the control group, there was a significant increase from posttest to follow-up ($p = 0.006$). The experimental group had significantly higher scores in the post-test and at the 3-month follow-up when compared with the control group ($p < 0.001$ and $p = 0.022$, respectively).

DISCUSSION

Nursing students spend their practice hours in the hospital and often witness or themselves are involved in aggression toward nurses. Many students do not know how to intervene in such situations and express feelings of helplessness. To address this gap in knowledge, in this study we aimed to evaluate the effectiveness of an anger and aggression management training program for undergraduate nursing students. In our study, 7.9% of the students in the experimental group and 6.6% of the students in the control group stated that they were exposed to anger from patients or relatives. In many studies, nursing students reported experiencing violence and aggression during clinical practice but often did not report it and were affected negatively by these events (Hopkins et al. 2014; Çelebioğlu et al. 2010; Bilgin et al. 2016; Magnavita and Heponiemi, 2011; Hallet et al. 2021).

When the mean PAS functional subscale scores of the students in the experimental group were compared before, after, and 3 months after training, the difference between them was found to be statistically insignificant ($p > 0.05$). The reason for this may stem from the training provided to the students in the experimental group, which involved more theoretical information, the difficulty in transferring theoretical knowledge into practice, and the lack of a mentor in the field. Studies on anger/aggression management suggest that theoretical knowledge alone is insufficient to change perceptions and that seeing examples of good practice is also necessary (Nau et al., 2010; Needham, Abderhalden, Halfens, et al., 2005). It can be said that the training program in our study may have helped students perceive aggression as an acceptable response but was not enough to completely change their perceptions. Similar to our study, Needham et al. (2005) found that there was no significant difference between the experimental group and the control group with respect to aggression management and although the mean score for the PAS functional subscale significantly increased in the experimental group, there was no significant difference compared with the control group. The reason proposed for this was that the scale used lacked sensitivity to measure the change in perception (Needham, Abderhalden, Zeller, et al., 2005).

In our study, PAS functional subscale scores did not differ significantly between the experimental and control groups at pretest or follow-up ($p > 0.05$) but was significantly higher in the experimental group in the posttest ($p < 0.05$). This finding suggests that education on anger and aggression management may not be sufficient to improve positive perceptions of aggression and there may be other factors affecting perception. Indeed, similar results were reported in other studies on nurses' management of aggressive patients. Follow-up tests conducted at different times after training have demonstrated problems in perceptions of aggression, attitudes toward aggression, and emotional coping with aggression, suggesting that training alone was not effective in the long-term improvement of these areas (Heckemann et al., 2015; Needham, Abderhalden, Zeller, et al., 2005). In their

study, Heckenmann et al. (2016) emphasized that providing theoretical knowledge alone is not enough and that learning should be transformed into practice. They also recommended including students' attitudes toward aggressive patient behavior, management of emotions toward aggressive behavior, and skills to cope with aggression in the content of aggression management training programs. In another study of nursing students, Nau et al. (2009) reported that after theoretical and practical training, the students felt competent in dealing with physical aggression from patients but did not feel adequately able to identify the potential for aggression in patients, address psychological aggression, limit aggressive patient behavior, determine methods to use to limit aggressive patients, determine the needs of an aggressive patient, and physically protect themselves from aggressive behavior.

In our study, both the experimental and control groups showed significant increases in mean PAS dysfunctional subscale scores, although there was no significant difference between the groups in any of the tests. The parallel increase in both the experimental and control group may have been due to repeated measurements increasing the students' awareness of this issue and leading to a negative perception of this situation. Similar to our study, Price et al. (2015) conducted a systematic review of 38 studies evaluating the effectiveness of aggression management training and found that training did not have an impact on the development of positive attitudes toward aggression or aggressive patients, that the studies were not adequately strong, and that methods other than education were needed to establish attitude change. Gerdtz et al. (2013) found that aggression management training provided to health workers was effective in providing theoretical information but that staff members were still indecisive regarding patient management after the training. In an intervention study, nursing students were found to have reduced respect for their patients and belief in patients' rights despite anti-aggression training (Beech, 2008).

In our study, nursing students in the experimental group demonstrated improved knowledge of aggression management after training compared to the control group. This finding supports previous studies showing that training on aggression increased nurses' knowledge of aggression management (Heckemann et al., 2015, Heckemann et al., 2016, Nau et al., 2009, Needham, Abderhalden, Zeller, et al., 2005). However, comparison of mean scores in the aggression management interventions test showed that the students in the experimental group had increased knowledge of signs of aggression and intervention skills after training but their scores were not significantly higher than those in the control group. This may be because knowledge alone is not sufficient for skill development. It has been emphasized in many studies that practicing anger/aggression management is necessary to develop these skills (Beech, 2008; Price et al., 2015; Ramacciati et al., 2016). It is encouraging that the students in the experimental group showed improved knowledge regarding intervening with aggressive individuals and recognizing the signs of aggression after the training. A possible explanation for the similar improvement observed in the control group is that the students in the control and experimental groups share the same school environment and may have shared information on this topic. Another possibility is that re-administration of the tests may have led to heightened interest in and research on the subject and increased recall in students in the control group. The results of a review study indicated that the evidence obtained from studies on this subject is weak and that it is necessary to organize the training content, implement interventions with a high level of evidence, and create a safe working environment in order for training to be more effective (Ramacciati et al., 2016). In another similar study, there was a very weak relationship between aggression management training and nurses' sense of competence in managing and coping with aggressive behavior (Hills, 2014).

CONCLUSION AND RECOMMENDATIONS

Training on the management of aggressive individuals helped nursing students perceive aggression as a more acceptable response and increase their knowledge of aggression management. However, training alone was not effective in changing how students would intervene in aggression, their ability to recognize signs of aggression, and their perceptions of aggression as dysfunctional/unacceptable. More comprehensive training programs including both theoretical information and opportunities to practice learned knowledge are needed to influence students' perceptions of aggression and develop their skills in recognizing the signs of aggression and intervening when faced with aggressive behavior.

Violence has become an important problem for the health sector in recent years. It is very important for nursing education institutions to graduate students with the ability to manage violence that they may encounter in their professional lives. In this sense, it is important to teach students the skills of managing aggression. Thus, a possible aggression situation can both be prevented and nurses who encounter these events are not harmed.

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Conflict of Interest:

The authors declare that they have no conflict of interest.

Ethical Approval (Must be answered):

Written approvals from the management of Giresun University Faculty of Health Sciences, Nursing Department, and the Clinical Research Ethics Committee of XX University were received. By the Declaration of Helsinki, participants were informed about the aim of the study, and the study included participants who gave written, informed consent, and they were also informed that they could leave the study at any time.

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REFERENCES

Beech, B., 2008. Aggression prevention training for student nurses: differential responses to training and the interaction between theory and practice. Nurse Educ. Pract. Mar; 8(2),94-102. https://doi.org/10.1016/j.nepr.2007.04.004

Bilgin, H., Keser, Özcan N., Tulek, Z., Kaya, F., Boyacioglu, N.E., Erol, O., Arguvanli Coban, S., Pazvantoglu, O., Gümüş, K., 2016. Student nurses' perceptions of aggression: An exploratory study of defensive styles, aggression experiences, and demographic factors. Nurs Health Sci. 18(2),216-22. https://doi.org/10.1111/nhs.12255

Budden, L. M., Birks, M., Cant, R., Bagley, T., Park, T., 2017. Australian nursing students' experience of bullying and/or harassment during clinical placement. Collegian 24(2),125-133. https://doi.org/10.1016/j.colegn.2015.11.004

Calabro, K., Mackey, T.A, Williams, S., 2002. Evaluation of training designed to prevent and manage patient violence. Issues Ment Health Nurs. 23,3–15. https://doi.org/10.1080/01612840252825446

Çelebioğlu, A., Akpinar, R.B., Küçükoglu, S., Engin, R., 2010. Violence experienced by Turkish nursing students in clinical settings: Theire motions and behaviors. Nurse Education Today 30, 687–691. https://doi.org/10.1016/j.nedt.2010.01.006

De Looff, P., Didden, R., Embregts, P., & Nijman, H., 2019. Burnout symptoms in forensic mental health nurses: Results from a longitudinal study. International Journal Of Mental Health Nursing 28(1), 306-317. https://doi.org/10.1111/inm.12536

Gerdtz, M.F., Daniel, C., Dearie, V., Prematunga, R., Bamert, M., Duxbury, J., 2013. The outcome of a rapid training program on nurses' attitudes regarding the prevention of aggression in emergency departments: a multi-site evaluation. Int J Nurs Stud. 50(11), 1434-45. https://doi.org/10.1016/j.ijnurstu.2013.01.007

Hahn, S., Needham, I., Abderhalden, C., Duxbury, J.A.D., Halfens, R.J.G., 2006. The Effect of an training course on mental health nurses' attitudes on the reason of patient aggression and its management. J. Psychiatr Ment. Health Nurs. 13, 197-204. https://doi.org/10.1111/j.1365-2850.2006.00941.x

Heckemann, B., Breimaier, H.E., Halfens, R.J., Schols, J.M., Hahn, S., 2016. The participant's perspective: learning from an aggression management training course for nurses.Insights from a qualitative interview study. Scand. J. Caring Sci. 30(3), 574-85. https://doi.org/10.1111/scs.12281

Heckemann, B., Zeller, A., Hahn, S., Dassen, T., Schols, J.M.G.A., 2015. The effect of aggression management training programmes for nursing staff and students working in an acute hospital setting. A narrative review of current literature. Nurse Education Today 35(1), 212 – 219. https://doi.org/10.1016/j.nedt.2014.08.003

Hills, D., 2008. Relationships between aggression management training, perceived self-efficacy and rural general hospital nurses' experiences of patient aggression. Contemporary Nurse 31(1), 20-31. https://doi.org/10.5172/conu.673.31.1.20

Hopkins, M., Fetherston, C.M., and Morrison, P., 2014. Prevalence and characteristics of aggression and violence experienced by Western Australian nursing students during clinical practice. Contemporary Nurse 5026–5046.

Hopkins, M., Fetherston, C.M., and Morrison, P., 2018. Aggression and violence in healthcare and its impact on nursing students: A narrative review of the literatüre. Nurse Education Today, 62, 158-163. https://doi.org/10.1016/j.nedt.2017.12.019

Jansen, G.J., Dassen, W.N., Jebbink, G.G., 2005. Staff attitudes towards aggression in healthcare: a review of the literature. J. Psychiatr. Ment. Health Nurs. 12, 3–13. https://doi.org/10.1111/j.1365-2850.2004.00772.x

Kazdin, A.E., 2000. Encyclopedia of psychology. American Psychological Association (Ed.). Washington, DC: American Psychological Association.

Keser Özcan, N., Bilgin, H., Tülek, Z., Boyacıoğlu, N., 2014. Nursing Students' Experiences of Violence: A Questionnaire Survey. Journal Of Psychiatric Nursing 5(1), 49-56. https://doi.org/10.5505/phd.2014.91886

Machingura, T., Lloyd, C., 2019. What Causes Patient Aggressive Behaviours in Healthcare Settings?. Psychol. Behav. Sci. Int. J. 10(5), 555796. https://doi.org/ 10.19080/PBSIJ.2019.10.555796.

Magnavita, N., Heponiemi, T., 2012. Violence towards health care workers in a Public Health Care Facility in Italy: a repeated cross-sectional study. BMC health services research. 12(1), 1-9. https://doi.org/10.1186/1472-6963-12-108

Magnavita, N., Heponiemi, T., 2011. Workplace violence against nursing students and nurses: an Italian experience. J Nurs Scholarsh. 43(2), 203-10. https://doi.org/10.1111/j.1547-5069.2011.01392.x

Nau, J., Dassen, T., Halfens, R., Needham, I., 2007. Nursing students' experiences in managing patient aggression. Nurse Education Today 27(8),:933-46. https://doi.org/10.1016/j.nedt.2007.01.007

Nau, J., Dassen, T., Needham, I., Halfens, R., 2009. The development and testing of a training course in aggression for nursing students: A pre- and post-test study. Nurse Education Today 29,196–207. https://doi.org/10.1016/j.nedt.2008.08.011

Nau, J., Halfens, R., Needham, I., Dassen, T., 2010. Student nurses' de-escalation of patient aggression: a pretest-posttest intervention study. Int. J. Nurs. Stud. 47(6),699-708. https://doi.org/10.1016/j.ijnurstu.2009.11.011

Needham, I., Abderhalden, C., Halfens, R., Fischer, J.E., Dassen, T., 2005. Non-somatic effects of patient aggression on nurses: a systematic review. Journal of Advanced Nursing 49, 283–296. https://doi.org/10.1111/j.1365-2648.2004.03286.x

Needham, I., Abderhalden, C., Zeller, A., Dassen, T., Haug, H.J., Fischer, J.E., & Halfens, R.J., 2005. The effect of a training course on nursing students' attitudes toward, perceptions of, and confidence in managing patient aggression. The Journal of Nursing Education, 44(9), 415–420. https://doi.org/10.3928/01484834-20050901-06

Price, O., Baker, J., Bee, P., Lovell, K., 2015. Learning and performance outcomes of mental health staff training in de-escalation techniques for the management of violence and

aggression. Br. J. Psychiatry. 206(6),447-55. https://doi.org/10.1192/bjp.bp.114.144576

Ramacciati, N., Ceccagnoli, A., Addey, B., Lumini, E., Rasero, L., 2016. Interventions to reduce the risk of violence toward emergency department staff: current approaches. Open Access Emerg. Med. 21(8)17-27. https://doi.org/10.2147/OAEM.S69976

Ridley, J., Leitch, S., 2019. Restraint reduction network: Training standards. Ethical training standards to protect human rights and minimise restrictive practices. BILD Publications, Birmingham.

Spector, P. E., Zhou, Z. E., Che, X. X., 2014. Nurse exposure to physical and nonphysical violence, bullying, and sexual harassment: a quantitative review. International journal of nursing studies 51(1), 72-84. https://doi.org/10.1016/j.ijnurstu.2013.01.010

Taylor, D., 2000. Student preparation in managing violence and aggression. Nursing Standard: official newspaper of the Royal College of Nursing 14 (30), 39–41. https://doi.org/10.7748/ns2000.04.14.30.39.c2815

Tee, S., Üzar Özçetin, Y.S., Russell-Westhead, M., 2016. Workplace violence experienced by nursing students: A UK survey. Nurse Education Today 41, 30-5. https://doi.org/10.1016/j.nedt.2016.03.014

Smoking Cessation Struggle in Online Communities: A Netnographic Analysis of Kadinlarkulubu.com

Mehmet Salih GÜRAN[1], Gizem Mercimek[2]

Corresponding Author

Elvan Emine ATA

DOİ

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ABSTRACT

Online communities are social networks that are shaped around computer-mediated communication, where individuals can discuss and share various topics of interest, and at the same time, social support exchanges are provided in an online environment. Today, these online communities are very important for every individual to express themselves by participating. This research has observed, using a Netnographic method, the social support exchanges of women members for quitting smoking through an online community, Kadinlarkulubu.com. The research was first observed by the researcher unattended for about two months and was examined by becoming a member of the online community between 01.12.2019-01.01.2020. The research data were coded by the researcher in NVivo 10 program.

According to the findings of the research, community members not only demand social support from each other but also provide social support. This social support exchange has been examined in two dimensions. While the first one creates informational messages for the members to obtain and provide information with each other, the second is the encouragement and motivational messages that the members receive and provide from each other. Informative messages of the members; seeking information, history of meeting with smoking, current status in the smoking cessation process, smoking cessation situations, smoking cessation stories were classified as giving advice. Another dimension of the social support exchange that members gain from each other and provide each other within the community includes the dimension of encouragement and motivation. In this dimension, especially members; direct support requests, messages of encouragement, messages of comfort, to check. Meditation has been observed as intimidation. Finally, regardless of other dimensions, it creates wishes for success, celebration of success and thank you messages for each other.

It was observed that the research members were quite willing to request and provide social support in the community. They sincerely share this information, encouragement and motivational support with each other. It has been determined that there is no expert in the community and that social support is provided only by community members.

This paper is derived from the master thesis conducted by Gizem MERCİMEK in 2021 at the Institute of Social Sciences of the Gumushane University under the guidance of Assoc. Professor Mehmet Salih GÜRAN msguran@yahoo.com, Gumushane University School of Communications.

[1] *Assoc. Prof., School of Communications, Gümüshane University, Gümüşhane, msguran@yahoo.com, Orcid Number: 0000-0002-3357-7231*

[2]*Master of Science, Bayburt. gizem_6993@hotmail.com,Orcid Number: 0000-0002-1580*

INTRODUCTION

Community help for smoking cessation has its roots in the beginnings of the internet. Schneider and Tooley were the first (1986) who studied a bulletin board system conference based on *behavioural intervention* (White and Dorman, 2001: 696). They concluded that the bulletin board self-help group played a beneficial role on those members who quit smoking (Winzelberg, 1997: 397). To achieve more defined results, Schneider et. al. (1990) compared two behavioural therapy based smoking cessation programs. One consisted of traditional behavioural intervention while the other included in addition an online discussion forum. The authors stated that the added forum increased cessation success of this group (White and Dorman, 2001: 696).

Hwang et. al., (2010) studied an online community about weight loss for assessing the social support that was perceived by community members. They complemented a user survey with content analysis of the shared messages and as a result, classified the main social support themes as encouragement and motivation in addition to information and experience sharing. They found that the members expressed community adherence and family feelings.

The research on health related online communities continued with Coulson et. al. (2007) who analysed messaging content between members of a Huntington's Disease social support community and found as most frequent requests, information request, emotional support, social network support, appreciation support, financial support. Coursaris and Liu (2009) analysed the social support exchanges in online HIV self-help groups, Algtevi et. al. (2015) analysed messaging exchanges in an online support group for head and neck cancers. All three of the above mentioned studies along with most similar studies used the typology developed by Cutrona and Suhr (1992) for social support communities.

Yılmaz and Candan (2016) represented Turkish research on the field with their study on a *Facebook* support community for kidney transplants.

While there are online intervention programmes that are founded and monitored by professionals, our study is focused only on volunteer online support/self-help communities whose main purpose is to engage in social communication. Online support communities do not necessarily replace any real life relationship nor interfere much with the procedures of any other intervention. But as social interaction frameworks, they can help to get the best of all approaches by complementing them into informed individualised mixes aided by a healthy measure of social control/support. Content analysis of online communities studied behaviour change interactions, social support (Wang and Kraut, 2015), and emotional coping. Because communication an integral part of the human ecosystem, effects of low-intervention social processes is elusive, yet negative effects of it's absence is evident (Eysenbach et. al, 2004).

Some authors (Shelby and Ernst, 2013) have noted that powerful information effects might also entail negative effects of misinformation which is a hazardous affair in most healthcare situations. Online communication can empower anecdotal instances into seemingly factual statistics with immense power of persuasion. As an example, the risks that may come with smoking related communication are not comparable with the enormous risks that have arisen from online anti-vaccine communities.

Yet it is believed that, different from other online groups, the virtual society that is formed by the interaction of established online communities has the membership resources, sensitivity, responsibility, awareness and most plenty of all, accumulated information that is systematized with time (Betsch et. al., 2012). We believe that the online community has less barriers to interaction than face-to-face communities thus online communities that have come of age, are themselves able to alleviate inevitable negative aspects.

The objective of this study is to explore the social-psychological interaction dynamics of virtual communities in the context of smoking cessation related interaction in the case of a general virtual community in Turkey, www.kadinlarkulubu.com, founded for women by volunteering women. The method used for acquiring information from online communication flows is called Netnography, implicating the application of ethnographical information gathering methods to assessing social interaction on online networks.

The study's importance is based on findings addressing the social dynamics in virtual communities and also has practical implications in relation to online self-help processes.

1. The concept of virtual community

The dawn of the Internet age established a virtual world where past and future formed together a wider sense of present time and transcended local boundaries to give precedence to shared contexts and cultures in the formation of online communities (Sayımer, 2012: 3).

A global study by Forrester Research suggested that even at it's early stages, the world wide web hosted 400 thousand online communities and 27 % of all online users adhered to some online community (Yeygel, 2006: 38). A later study by Pew Internet and American Life stated that 84 % of all internet users were in some kind of relationship with some online

community and the study also stated that 23 million users maintained communication a couple of times weekly with other online community members by e-mail (Yeygel, 2006: 38).

While it can be argued that modern society encourages a mass society where any kind of social power that was traditionally yielded by local communities is claimed by the mass media, some approaches still contend that the individual is naturally more inclined to adhere to some kind of communal organisation as an intermediary subsidisation to the nation as a mass society (Dechert, 1980: 41). More, the cyberspace has relatively freed the virtual settlement beyond the restrictions of place and time (Buhrmann, 2003: 2) which were deemed essential in traditional concepts of community.

Actual definitions of communities that include virtual existence, emphasize the shared mental, cultural, relational aspects of the online community which is established around an intense interaction dynamism (Güçdemir, 2015: 64). As Rheingold (1993: 6) put it from the beginning, virtual communities are "social groups that are founded on the internet by personal relationships of sufficient amount of individuals with the aim of establishing relationships, with sufficiently felt engagement, for a sufficiently long time".

2.1. Elements and features of virtual communities

While not every virtual or online grouping should be named as a community (Jones, 1997), Blanchard and Markus (2004: 71) make the *community feeling* and *relationships* that are developed in the cyberspace of the online community a requirement of a virtual community from other cyber-groupings.

Hummel and Lechner (2002: 172) determined and detailed four fundamental dimensions for the establishment of virtual communities. Virtual communities have to be:

> *"Clearly defined groups* by clear limitations, related by references to real communities, entry rules, primary authorization, rules of treatment, sanctions for misconduct. They have to be bound to a *common place* by archives of past interactions and members, by analysis of participants, by voluntary work, rituals, and role of members.
>
> *Interaction* is maintained by chats/forums, possibility for own postings, screening of contributions, active organization, events, regard to recent events.
>
> *Bonding* is established and maintained by privacy protection, individualizing, sub-community, user-friendliness, identification of organizer, identification of members"

2.2. Classification of virtual community members

While Preece et. al. (2004: 2007) introduced a starting classification for online community membership in dividing members by visibility, namely *hidden* members who while taking advantage of the community do not or not yet able to contribute to the virtual community, and the *overt members* who as long-time regulars are involved with other members and the propagation of culture of the community. Kozinets (1999: 255) on the other hand classified memberships of virtual communities of consumption along the relationships in his interest focus of marketing as *tourists, insiders, devotees, and minglers,*

Although hidden members are less interactive in virtual communities, nevertheless they possess the community feeling and actually may even consist the majority of a virtual community (Blanchard and Markus, 2004: 77). Attending to the communication of more active members is also participation and communicating.

Various membership specifications may differ with various online platforms, issues, leadership and engagement histories, cultural-social-political views that may or may not be present in the relationships of members.

3. The Concept of Social Support and Virtual Communities

Various categories of social support utilise on the one hand expectations, perceptions, quality of support, quantity of supporting interactions, on the other hand the abstract features of supporting persons, behaviours, relations, or social systems which results in almost every interaction as being deemed as social support (Hupcey, 1998: 1231).

Social support can help resolve stressful crises firstly by making sense of the stressful situation and thus can achieve difference in the reaction. This aspect of social support is crucial for sustaining the life and health of the individual (Erzurum, 2017: 362).

Ardahan (2006: 69), asserts that social support can be categorised into main categories of *material support* that includes financially supporting individuals who are not able to care for their immediate needs, *emotional support* with directing feelings of love, appreciation, interest, trust to someone who feels adherence to the community. And *intellectual support* which includes exchanges of information, experience, advice and example. While face-to-face social support may include parents, spouses, lovers, friends, teachers, relations and experts (Yıldırım, 2004: 20), in one's social circle of relations, actions meant for social support to an individual may end up counterproductive by becoming restrictive, coercive, destructive etc.

3.1. Virtual support communities

As of December 2002, according to a research by the Pew Research Center's Internet and American Life Project, 54% or 63 million internet users in the U.S. used virtual support communities for various medical conditions and/or personal problems (Coursaris and Liu, 2009: 911).

Virtual communities can exert influence on life style changes of members and thus can affect their health positively and ultimately can help attain health awareness in society in general (Koçak and Bulduklu, 2010: 8). According to studies (Bradford et. al., 2017: 9-10) traditional face-to-face social support communities are decreasing in numbers while online communities are growing in numbers. Beyond being mere a consumption point, virtual communities can achieve essential help and understanding and thus can constitute an ideal connection place for those individuals with goals to pursue (Bradford et. al., 2017: 11).

3.2 Advantages and Disadvantages of support virtual communities

Advantages: Non-synchronous communication enables members to engage 7 days and 24 hours in virtual communities, in their preferred time window. As an important result of this members can compile their messages with greater care according their own pace which is of greater help to individuals with time constraints, nursing commitments, mobility and accessibility restrictions (White and Dorman, 2001: 693). Particularly for the elderly and/or disabled individuals meeting online can be of greater value. Thus, health related virtual support communities are characterised as self-help communities that function with high levels of emotional support and understanding (Pfeil and Zaphiris, 2010: 3). Aside from this, virtual support communities may enrich the view points and attitudes with unknown experiences and insight into other's personal worlds (Braithwaite et. al., 1999: 4). Anonymity is a great help when members are feeling embarrassed, ashamed, guilty, when they are anxious of being negatively judged (Coulson et. al., 2007: 5). Not only HIV patients or cancer patients, (Roffeei et. al., 2015: 337), but also addicts, alcoholics (Wellman and Gulia, 1999: 171) can turn without hesitating to "their" virtual communities for help. While not entirely absent, the notions of social control, social status and social pressure have different meanings in these places. With passing time, for members who sought friendship, social support, and relation. many virtual communities have taken a central place in their lives (Wellman and Gulia, 1999: 171).

Disadvantages: Because participation in many virtual support communities is open to all, there is little control on who should be allowed to participate, regularity of member participation, duration, the accuracy of information and feedback given to community members. Discordant members may disrupt the communication process and may cause the diversion of the communication into unfruitful courses. Unfavourable events in the community may impede trust of community members. Another disadvantage and particularly crucial in health related communities is the dissemination of false and potentially harmful information can be accepted as true by community members before an intervention by expert healthcare professionals among the membership, if there would be any. There is the possibility that many community members would not read the corrective feedback messages (Winzelberg, 1997: 396-397). Not only conflicting and false information but also true knowledge in inappropriate conditions can be harmful even can lead to death (Çetin and Özhanlı, 2018: 48). Doubts about the accuracy of information in a virtual community can cause members to leave the community.

Members of support communities mostly believe that their participation and messages would stay anonymous. While this is true for most situations, there are instances when sensitive personal information was leaked which proved harmful for many afflicted participants (Winzelberg, 1997:397).

As the leading cause of preventable death, smoking is a global public health issue. Diseases that affect the respiratory system together with the cardiovascular system make smoking the major risk factor for heart attacks, strokes, chronic respiratory ailments, and also a heightened risk for various cancer types. According to Jha and Peto (2014), tobacco will likely kill about 1 billion humans in the 21st century, % 50 of these before 70, if current smoking habits cannot be disrupted.

Smokers who quitted before the age 40 evade more than 90% of the illness that would come with smoking and even those quit at 50 would be freed from half of the ordeal that would torment them in their later years (Doll et. al., 2004). Most smokers try for the first time to quit without medical assistance. Yet, this produces only a 3-6% rate of long-term success in this group (Rigotti, 2012). While some quitters had to try it up to 30 times before final success, combinations of all available help like Behavioural counselling, medications, support groups etc., have shown to be more effective than any intervention alone (Stead et. al., 2016). Quitting smoking can lead to withdrawal symptoms such as cravings, anxiety, irritability, depression, weight gain (Benowitz, 2010) which are responsible for making quitting a hard endeavour to engage, and necessitate all kinds of help one can put together. In the U.S., the rate of unassisted cessation attempts in 1986 was 91%, which fell to 52% in 2009 (Edwards et. al. 2014). Increased accessibility of information via emerging online communities might have informed quitters to reconsider their options. 44.2% of smokers in the U.S. attempt to quit smoking annually (Centers for Disease Control and Prevention,

2006) of whom an estimated 1-2% were able to succeed unassisted (Stoddard et. al., 2008). 10% of all adults of this nation have searched online for related information (Cokkinides et. al., 2005) compared with the only 1.3% who sought behavioural counselling (Ossip-Klein and McIntosh, 2003).

MATERIALS AND METHODS

The objective of the study was to define the characteristics and functions of the members who were guiding the online community of *www.Kadinlarkulubu.com-"Womens'club",* and were setting the topics and themes for the communication in relation to social support exchange in the context of each members' struggle to quit smoking.

Two research questions have been defined for the study:

Research question 1: What are the defining the online community member typologies and their functions of *www.Kadinlarkulubu.com?*

Research question 2: How is the social support exchange between members of the *www.Kadinlarkulubu.com* established*?*

The qualitative method of the study is coined Netnography by Kozinets (1997: 470), an approach that tries to apply the research tools of ethnography on digital communication data that is found abundant on bulletin boards, e-mail servers, online chat rooms, online forums, social media, personal webpages, institutional web pages, institutional communication servers and other online communication platforms. Netnography was first used as a marketing research technique to "determine and understand the needs and decision influences in related online consumer groups" (Kozinets, 2002: 62). As with traditional face-to-face ethnography, Netnography aims to gain view into the norms, interaction processes, culture that is used in communication in online communities. Compared with traditional face-to-face ethnography, Netnography is much less time consuming and offers more detailed data.

The main differences from face to face field ethnography is the anonymity of the researcher which is less obtrusive and interventional to the community, but because of lesser communicational cues and more cultural diversity between online communities, it requires more of the researchers' interpretation for general application while makes it easier to access past data (Kozinets, 2002: 62).

Messages that have been communicated between the online community members between 01.12.2019-01.012020 on the online forum of Kadinlarkulubu.com under the forum chapter of "Step-by-step health" under the sub-chapter of smoking cessation. With 10.663 messages under 144 message topics that had been viewed a total of 1.586.989 times, the issue was the most frequent visited section of the whole online forum which had set up to be a general forum for women. Some messages have been excluded from the sample like advertisement related messages, sole tags, meaningless sharings, out-of-context sharings etc..

NVivo 10 has been used for the analysis of this qualitative study. After the data was obtained from the website, it was controlled and manually coded by the researcher.

The social support/self-help dimension in virtual communities has not been yet widely studied in the Turkish literature of related research and is still an ongoing focus of interest in the English language healthcare research. The communication processes involved in social support/self-help communities have various social, psychological, cultural even political aspects that are important for many disciplines and fields. Also, the site being a women focused established online community may involve sociological insights from the view of women that could be useful in healthcare campaigns and for future research.

RESULTS

1. The study established the following member categories in the smoking cessation virtual community of *Kadinlarkulubu.com*.

Addicts; are described as members who have been smoking for a long time and have established a close relationship with smoking. While they may be aware of the harm that smoking has on them, they don't feel any need to quit smoking.

Flakers; excuse makers appear as wanting to quit smoking but they are not sufficiently motivated. They never take action and are notorious for postponing.

Social smokers; do not think of quitting to smoke as a hardship, because these members are not addicted to nicotine and quitting is a piece of cake for them. Their relationship to smoking is to accompany friends and relatives during an enjoyable chat.

Family members; are unhappy and worried from the condition of their beloved ones. Their concern is not for themselves, it is for the health of their kin. They joined the virtual community to represent their afflicted family members.

Former smokers, victorious members, strong-willed quitters who did not relapse.

Eager members; who feel the needed resolution to quit smoking.

Critics; are members who have no relation to the issue but nevertheless tag along within the community. These members are the least able to develop empathy with other members.

Failed members who have tried once or more times to quit smoking, yet lost their motivation in the process. They failed to maintain their motivation and willpower in the struggle and success evaded them.

2. Findings of Social Support Relations between Community Members

The sharing of social support interactions between members have been studied along two dimensions: messages of information sharing and messages of encouragement and motivation.

2.1. Findings about the Information Interaction among Community Members

Information messages include both information finding and giving. It has been found that the most basic interaction mode amongst members were information sharing. Shared information between members included particularly their histories of making the "acquaintance" with smoking, their struggle for quitting, advice for coping with bouts and the their actual situation in the quitting process.

2.1.1. Search for Information

Searches about wanted benefiting from the experiences of the other members, as to hear of the duration of their quitting period, getting evaluation about a particular situation, to overcome a bout, duration of a bout, learning of alternatives about any topic, information about a product, specific questions about weight issues.

- *Learning from the experiences of the community*

New members express their desire to quit smoking and want to hear from the experiences of the "older" members.

- *Duration of the cessation period.*
- *Members are anxious to hear from other members about the duration of the cessation process.*
- *Situational evaluation*

Members share their particular situations like the circumstances of a quitting or not quitting spouse and ask other members to share particulars of their related experiences.

- *Help for overcoming the cravings*

A member requests help by advice from other members or at least support for overcoming the cravings.

- *Information request about the duration of the cravings*
  Members ask how long this ordeal will last.
- *Searching for a substitute to smoking during the cravings*
- *Searching product info that can be used to mitigate withdrawal effects during the cravings.*
- *Weight issues: Members are concerned whether quitting smoking makes one gain weight.*

3. Sharing of personal history and reasons for getting "acquainted" with smoking

3.1. Emulating examples:

- *Mother: Members complain from ending up like their mothers in spite of not liking smoking.*
- *Friends and peers; the most frequent reason for starting.*

4. Sharing actual personal conditions during the cessation process with fellow members

Fellow members are informed about personal actualities related to the cessation process like the personal gains the sharing member obtained, problems that were encountered, the commitment level etc.

4.1 Benefits

4.1.1. Physical benefits that are obtained,

- *Health benefits*
- *Beauty benefits*
- *Cleanliness benefits*
- *Financial benefits, making savings*

4.1.2. Social benefits: becoming an envied and admired person.

4.2. Problems that were encountered during the cessation process

4.2.1 Physical problems

Dizziness, nausea.
Skin related problems.
Gaining weight.

4.2.2. Psychological problems

Losing temper and/or fits of crying.
Being unable to focus.
Sleep problems.
Feeling lonely.
Fixated on smoking: thinking continuously about smoking.

4.2.3. Social Problems

Lack of support:
Not quitting spouse.
Not quitting friend.

The social circle does not believe in the individual.

4.2.4 Personality related problems

Facing the power of addiction.
Facing the personal lack of will power.

4.3. Shared feelings related to the actual state of the cessation process

Feelings of success.
Feelings of regret.
Feelings of despair.

4.4. Quitting Stories-Reasons that are shared between community members

4.4.1. Quitting because of fear

Fearing illness.
Fearing death.
Pregnancy: protecting the unborn child.
Children: who will care for them?
Spouse: a not smoking spouse is an important quitting reason for women.

4.5. Shared advice for battling cravings

Herbal support.
Social activity, in particular with family and friends will distract from the cravings.
Psychotherapy and counselling support.
Directing towards experts, particularly smoking cessation clinics of the state hospitals.
Electronic cigarettes are recommended.
Other professional medical therapy, like bio-resonance etc.
Video, book and seminar resources.
Cessation medication.
Making new friends who do not smoke in order to stay away from smoking friends. It is an uphill battle if your best friends smoke.

4.6. Findings in relation to encouragement and motivation exchange between community members

4.6.1. As with information exchange, help pleas for encouragement and motivation is expressed mutually in forms of

request for direct support,
want to break off from the habit,
need of a quitting mate.

Simultaneously, encouragement and motivation were enacted in particular with messages of

encouragement,
cooperation,
seeking comfort,
controlling,
empathy,
suggestions for relief,
celebration,
frightening,
indoctrinating self-confidence,
expressing the belief in the fellow member,
trying to mobilise the fellow member,
demonstrating resolution,
trying together,
comforting,
normalisation of a state,
directing towards a forum for passing time in a controlled social environment,
allowing time for things to settle,
recognising every success,
presenting alternatives,
staying tough,
trying again,
showing empathy.

4.6.2. Messages of Control: Shared messages of *mutual controlling* were found aiming to *maintaining continuity of the progress, monitoring the carving struggles of a member.*

4.6.3. Appeals of fear, were enacted by scaring with sickness, invoking an unborn child, threatening with religious consequences.

4.6.4. Good luck wishes, as the start of a collective voyage.

4.6.5. Celebrating collectively the event of success.

4.6.6. Thanking the community and showing appreciation of the collective support after a successful struggle, and also after unsuccessful trials. Unsuccessful closures prompted "never give up, let's try again" messages that showed the resolution and readiness of the community to never give up.

DISCUSSION

Virtual online communities are more than only information gathering and sharing platforms, they are social environments where persons can seek and provide various social support. This study explored the functionality and interaction modalities of a typical forum, "Kadinlarkulubu.com/ Women's club" by providing social support interaction in the topic of "quitting smoking" and leadership personalities who give direction to the community.

The study is the first in Turkey which uses Netnography to explore the social interaction of social support in a virtual community founded largely by women for a personal crisis of quitting to smoke but is also a general healthcare problem.

The member typology for this study has been defined according the typology that Kozinets (2002) has established for Netnography for virtual communities. The users of the virtual community have been classified in relation to their engagement to smoking

cessation into eight basic member types. Those members called as *addicts*, are smoking since ages and have established an important bond with smoking. While they are aware of the harms that smoking does to them, they do not have a wish to quit smoking. They see smoking as an indispensable friend particularly in company of coffee and tea, feel sympathy towards it and find a life without smoking meaningless. Quitting smoking comes not into their minds which translates for weak relationships with other members of the community and a neutral stance in seeking and providing social support. Another member type which affects the direction of the community are the *flakers*, persons who pretend wanting to quit smoking but do not have sufficient motivation. They never get into any action and continuously postpone quitting smoking into another time. In seeking and providing social support, these members show a similar behaviour like the *addicts.* Another member of the community are the *hobbyists*, who don't experience the hardships of quitting smoking, because they are not addict smokers yet but they enjoy smoking as a recreation among friends and believe they can part ways anytime they wish. These members are supporting others in the community by cheering them up with well-wishing and prayers. Another member type of the community are *family members*. They feel sad, anxious, and concerned over the related situation of someone in the family. Although they didn't join for themselves, they worry for the health of the family member they represent. These members are quite friendly and sympathetic towards other community members and cheer them up in their fight for quitting of smoking. The community member type who is enviously admired is the *ex-smoker*. These strong-willed veterans who have passed one or more years without relapsing to smoking, support the members who want to quit smoking by sharing their past experiences and practical advice. Another member type in the community are the *eagers.* These are the members who feel the inner motivation to quit and consist the majority of the community members. *Eagers* are actively engaged in seeking social support and also in providing it. An important member type is the *unsuccessful.* Those are the members who tried to quit smoking over and over again but could not muster the required motivation and willpower. They are again seeking support from the community for their purpose. At last come the *critics*, members who are not personally concerned like those family members but happen to co-exist as a member of the community. They are the members with the least empathy capabilities.

The social support relationships between members have been studies in two dimensions. The messages between members consist of knowledge and information sharing messages and cheering and encouragement messages. Knowledge and information messages can either seek information or either provide it. An important feature of virtual communities is that you can ask questions which you could hesitate to ask real-life acquaintances. The most frequent and thus important questions were about experience for smoking cessation, the timespan for cessation to conclude, situational evaluation. New members want to learn first-hand experience, how long it takes to get clean, whether their circumstances are normal for the go or not. They also ask how they could cope with tobacco cravings, how long cravings would last, tobacco alternatives, information on various products and also weight gaining issues.

Most frequent shared personal histories of addiction beginnings have been found as imitating the mother or imitating peers in teen friendship circles.

The actual daily situation of members during cessation; the physical benefits they acquired in this process, being healthy, being beautiful, cleanness, financial gains, savings, personal gains, being admired, all these are frequently shared motivational feelings which are quite important by the members.

Most frequent shared complaints and wails during cessation were bodily problems of dizziness, nausea, skin problems, gaining weight and psychological problems of anger/crying, being not able to focus, sleeplessness, feeling lonely, can't stop thinking about it. On the other hand, social problems were, not getting support in particular, spouse not quitting together smoking, friend not quitting together. Personal issues were habits related to addiction, weak willpower. Encountered personal problems complicated the cessation process. The members shared their last actual situations like emotions of success, regretting, and despairing. Members who persevered and maintained their struggle shared their feelings like those who bemoaned their regrets over their failure to keep on. On the other hand, there are also those who share their despair with their community companions.

A community feature are the shared personal smoking quitting stories of members. Quitting stories revolved around children, pregnancy, fearing illness, fearing death, and spouses. Ex-smokers were asked by those wanting to quit to detail their personal quitting stories. For women members, wanting children, getting pregnant were noticeable among cessation motives. Also illness in their close relations, and experienced own health problems were influential in the decision to quit. Another cessation motive was the discomfort of the spouse. Successful members who fought and overcame their problems gave information and motivation support by sharing their past mostly negative experiences with those in distress. Most frequent cited motivations in particular were severe illnesses of close relatives, sorrow, stress and fears were more severe to them than the hardships of quitting.

Practical advices were sought and shared for aids including herbs, social activities, and various therapies, experts, gadgets, medical therapy, video/book, medication, starting relationship.

The most dramatic situation is those of struggling with the onset of tobacco cravings. Craving members are despairing for their willpower and are getting answers by devoted members. While messages may vary in their seriousness, all messages are concluded with a warning to consult a health professional. Additional sources like book and video are recommended for those members who seek self-help. The members noted that medical therapy and medication in hospital were included in the healthcare system. Electronic cigarettes were suggested as a first step solution. Another important notice was for the person's friends' group. Friendships providing support for quitting and not tempting smoking were found very important.

It has been observed that community members lose their motivation with time, in addition to information needs, they wanted to continue to lifestyle changes, get rid of errors, and overcome hurdles. By this means, other community members were able to form relationships that could provide hope confidence and encouragement, they didn't want to leave them to themselves, and they wanted to witness their experiences, efforts, successes without judging them. The emotional support that bonded *"quitting buddies"* together has been in the forms of encouragement, instilling self-confidence, believe, activate, show determination, try it together, comforting, normalize, directing to the forums, give time, acknowledge the success, show options, stay strong, trying again and empathy. Control modes have been observed as continuity, monitoring the craving situation. This shared communication was important to fighting community members beyond everything. By this motivation assistance, they could overcome various problems and motivation loss. Many members who came to a point of belief exhaustion have been persuaded by other community members to go on. Other members who lost their belief and failed in their struggle were not judged negatively and were prevented from feeling worse.

Not all members were able to convey empathy successfully and appropriately. Some members underrated the conditions of other members and talked about frightening issues occasionally. On the other hand, encouragement and motivation has been done in particular by *critics*, not only by positive appeals but also by fear messages which included mentioning illness, unborn baby, and religious beliefs. The empathy deficit by the *critics* makes them judgmental to other members but in spite of their negativity, their rational arguments worked as eye opener to some members. When new members begin seriously considering to quit smoking, or when a quitter begins to lose heart, *the critics* begin the work of reminding them their illnesses, families, and religious beliefs to instil some resistance. They were particularly good in making them feel guilty by accusing them with being inconsiderate of their own conditions and of their family members who would be left alone. Last but not least, they tried to persuade them by reminding them that it was a religious obligation to realize the harms they did to their bodies and health which were entrusted to them.

Besides those, independent from each other, members were wishing success, were congratulating on success, and were thanking other members all times. All efforts and successes were deemed important and appreciated for sustaining the community motivation and applauded accordingly. Congratulations were accompanied with wishes for lasting success.

While it is arguable whether virtual communities can fully replace face-to-face support communities of "real-life society", but they are surely helpful to give guidance by sharing precious knowledge and information and also emotionally guaranteeing that nobody is left alone. The observation of social interaction amongst community members showed that giving social support was more prevalent than seeking it.

While community members were not experts in the related issues, and were not geographically close to each other, they were committed to be there for help and support.

REFERENCES

Algtewi, E. E., Owens, J., and Baker, S. R. (2015). Analysing people with head and neck cancers use of online support groups. Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 9(4), 1-15. https://doi.org/10.5817/CP2015-4-6

Ardahan, M. (2006). Sosyal destek ve hemşirelik. Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi, 9, 68-75. January 6, 2020 https://dergipark.org.tr/en/download/article-file/29313

Benowitz NL (June 2010). "Nicotine addiction". The New England Journal of Medicine. 362 (24): 2295–303. doi:10.1056/NEJMra0809890. PMC 2928221. PMID 20554984.

Betsch, Cornelia, et al. "Opportunities and challenges of Web 2.0 for vaccination decisions." Vaccines. Vol. 30, Issue 25, 28 May 2012, 3727–3733.

Blanchard, Anita L., and M. Lynne Markus (2004). "The experienced" sense" of a virtual community: Characteristics and processes." ACM Sigmis Database: the database for advances in information systems 35.1 (2004): 64-79.

Bradford, T.W., Grier, S. A. and Henderson, G. R. (2017). Weight loss through virtual support communities: A role for identity-based motivation in public commitment. Journal of Interactive Marketing, 40, 9-23. https://doi.org/10.1016/j.intmar.2017.06.002

Braithwaite, D. O., Waldron, V. R., and Finn J. (1999). Communication of social support in computer-mediated groups for people with disabilities. Health Communication, 11, 123–151. https://doi.org/10.1207/s15327027hc1102_2

Buhrmann, C.H. (2003). Virtual communities: İmplications for companies. South African Journal of Information Management.

5(4), 1-13. https://pdfs.semanticscholar.org/8a78/9b1d3de45ba292865975033c5fbd264fb60a.pdf

Centers for Disease Control and Prevention (CDC. "Tobacco use among adults--United States, 2005." MMWR. Morbidity and mortality weekly report 55.42 (2006): 1145-1148.

Cokkinides Vilma E, Ward Elizabeth, Jemal Ahmedin, Thun Michael J. Under-use of smoking-cessation treatments: results from the National Health Interview Survey, 2000. Am J Prev Med. 2005 Jan;28(1):119–22. doi: 10.1016/j.amepre.2004.09.007.S0749-3797(04)00246-6

COULSON, Neil S.; BUCHANAN, Heather; AUBEELUCK, Aimee (2007). Social support in cyberspace: a content analysis of communication within a Huntington's disease online support group. Patient education and counseling, 2007, 68.2: 173-178.

Coursaris, C. K. and Liu, M. (2009). An analysis of social support exchanges in online HIV/AIDS selfhelp groups. Computers in Human Behavior, 25, 911-918. https://doi.org/10.1016/j.chb.2009.03.006

CUTRONA, Carolyn E.; SUHR, Julie A. (1992) Controllability of stressful events and satisfaction with spouse support behaviors. *Communication research*, 1992, 19.2: 154-174.

ÇETİN, İbrahim, and Yasemin ÖZHANLI (2018). "Cerrahi hastalarının sağlık bilgisine ulaşmada internet kullanım özellikleri." Kocaeli Üniversitesi Sağlık Bilimleri Dergisi 4.2 (2018): 44-49.

Dechert, Charles R. (1980), "Subsidiarity and Voluntarism in Mass Society." Social Thought 6.1 (1980): 41-57.

Doll R, Peto R, Boreham J, Sutherland I. (2004) Mortality in relation to smoking: 50 years' observations on male British doctors. BMJ 2004;328:1519-33.).

Edwards SA, Bondy SJ, Callaghan RC, Mann RE (March 2014). "Prevalence of unassisted quit attempts in population-based studies: a systematic review of the literature". Addictive Behaviors. 39 (3): 512–9. doi:10.1016/j.addbeh.2013.10.036. PMID 24333037

Erzurum, F. (2017, Kasım). Paylaşmak hafifletir mı? Kanser hastalarının YouTube paylaşımları. Uluslararası Sağlık İletişimi Sempozyumu, 362-382. 24 August 2019 https://www.researchgate.net/profile/Yunus_Tunc2/publication/323551954_SAGLIK_HIZMETLERI_MESLEK_YUKSEKOKULU_OGRENCILERININ_ILETISIM_BECERILERI_IGDIR_UNIVERSITESI_ORNEGI/links/5a9d2875aca2721e3f326f73/SAGLIK-HIZMETLERI-MESLEK-YUeKSEKOKULU-OeGRENCILERININ-ILETISIM-BECERILERI-IGDIR-UeNIVERSITESI-OeRNEGI.pdf#page=394

Eysenbach, Gunther, Powell, J., Englesakis, M., Rizo, C., & Stern, A. (2004). Health related virtual communities and electronic support groups: systematic review of the effects of online peer to peer interactions. Bmj, 328(7449), 1166.

Güçdemir, Y. (2015) Sanal ortamda iletişim bir halkla ilişkiler perspektifi. İstanbul: Derin Yayınları.

Hummel, J. and Lechner, U. (2002). Social profiles of virtual communities. Proceedings of the 35th Hawaii International Conference on System Sciences, 10, 2245-2254. 13 Aralık 2019 tarihinde, https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=994154

Hupcey, J.E. (1998). Clarifying the social support theory research linkage. Leading Global Nursing Research, 27(6), 1231-1241. https://doi.org/10.1046/j.1365-2648.1998.01231.x

Hwang, K. O., Ottenbacher, J., Green, A. P., Cannon-diehl, M. R., Richardson, O., Bernstam, E. V., Thomas, E. J. (2010). Social support in an internet weight loss community. International Journal of Medical Informatics, 79(1), 5–13. https://doi.org/10.1016/j.ijmedinf.2009.10.003

Jha, Prabhat, and Peto, Richard (2014). "Global effects of smoking, of quitting, and of taxing tobacco." New England Journal of Medicine 370.1 (2014): 60-68.

Jones, Q. (1997). Virtual communities, virtual settlements and cyber archaeology: A theoretical outline. Journal of Computer Mediated Communication, 3(3),0-0. https://doi.org/10.1111/j.1083-6101.1997.tb00075.x

Koçak, A. and Bulduklu, Y. (2010). Sağlık iletişimi: Yaşlıların televizyonda yayınlanan sağlık programlarını izleme motivasyonları. Selçuk Üniversitesi İletişim Fakültesi Akademik Dergisi, 6(3), 5-17. 18 June 2019 https://dergipark.org.tr/tr/pub/josc/issue/19021/200613

Kozinets, R. (1999). E-tribalized marketing? The strategic ımplications of virtual communities of consumption. European Management Journal, 17(3), 252-264. https://doi.org/10.1016/S0263-2373(99)00004-3

Kozinets, Robert V. (2002) "The field behind the screen: Using netnography for marketing research in online communities." Journal of marketing research 39.1 (2002): 61-72.

Muniz, A. M. and O'Guinn, T. (2001). Brand community. Journal of Consumer Research, 27(4), 412-432. 3 Eylül 2019 tarihinde, https://www.jstor.org/stable/pdf/10.1086/319618?casa_token=v-_Aw5zYnmIAAAAA:2xB0tXM289zpXsx6zPPwTaMRE2f_EYBAEmZ1tWG8dWPwK-17Zudy4XYkzCoXwUgx_5m4YYXz_KkRXAbFgPOvuSkSuujAIna5Rhj-hB-9WeExJCyosms adresinden erişildi.

Ossip-Klein Deborah J, McIntosh Scott (2003). Quitlines in North America: evidence base and applications. Am J Med Sci. 2003 Oct;326(4):201–5. doi: 10.1097/00000441-200310000-00010.

Pfeil, Ulrike, and Panayiotis Zaphiris (2010). "Applying qualitative content analysis to study online support communities." Universal access in the information society 9.1 (2010): 1-16.

Preece, J. (2000). Online communities: Designing usability, supporting sociability. Chichester, England: John Wiley and Sons.

Rheingold, H. (1993). The virtual community: Homesteading on the electronic frontier. Toronto, Canada: Addison-Wesley.

Rigotti, Nancy A. (2012). "Strategies to help a smoker who is struggling to quit." Jama 308.15: 1573-1580. Oct 17, 2012. Copyright © 2012, American Medical Association

Roffeei, Siti Hajar Mohd, Noorhidawati Abdullah, and Siti Khairatul Razifah Basar (2015). "Seeking social support on Facebook for children with Autism Spectrum Disorders (ASDs)." International journal of medical informatics 84.5 (2015): 375-385.

Sayımer, İ. (2012). Sanal Ortamda Halkla İlişkiler. İstanbul: Beta Yayınları.

Schneider, Sid J., and Jay Tooley (1986). "Self-help computer conferencing." Computers and Biomedical Research 19.3 (1986): 274-281.

Schneider, Sid J., Robert Walter, and Richard O'Donnell (1990). "Computerized communication as a medium for behavioral smoking cessation treatment: Controlled evaluation." Computers in human behavior 6.2 (1990): 141-151.

Shelby, Ashley & Ernst, Karen (2013). Story and science, Human Vaccine & Immunotherapeutics, 9:8, 1795-1801, DOI: 10.4161/hv.24828

Stead, L. F., Koilpillai, P., Fanshawe, T. R., & Lancaster, T. (2016). Combined pharmacotherapy and behavioural interventions for smoking cessation. Cochrane database of systematic reviews, (3).

Stoddard, Jacqueline, Erik Augustson, and Rick Moser (2008). "Effect of adding a virtual community (bulletin board) to smokefree. gov: randomized controlled trial." Journal of medical Internet research 10.5 (2008): e1124.

Wang Y, Kraut RE, Levine JM. (2015) Eliciting and receiving online support: using computer-aided content analysis to examine

the dynamics of online social support. J Med Internet Res 2015; 17(4):e99 [FREE Full text] [doi: 10.2196/jmir.3558] [Medline: 25896033]

Wellman, B. and Gulia, M. (1999). Virtual communities as communities: Net-surfers don't ride alone. P. Kollock ve M. Smith (Der.), Communities and cyberspace (ss. 167-194). New York: Routledge

White, M. and Dorman, S.M. (2001). Receiving social support online: implications for health education. Health Education Research, 16(6), 693-707. https://doi.org/10.1093/her/16.6.693

Winzelberg, A. (1997). The analysis of an electronic support group for ındividuals with eating disorders. Computers in Human Behavior, 13(3), 393-407. https://doi.org/10.1016/S0747-5632(97)00016-2

Yeygel Çakır, S. (2006). Postmodern toplumsal yapının pazarlamaya getirdiği yeni boyut topluluk pazarlaması tribal marketing. Bilig, 197-228. 3 Ocak 2021 tarihinde,https://www.researchgate.net/publication/228469480_Postmodern_Toplumsal_Yapinin_Pazarlamaya_Getirdigi_Yeni_Boyut_Topluluk_Pazarlamasi_Tribal_Marketing.

YILDIRIM, İbrahim (2004). "Algılanan sosyal destek ölçeğinin revizyonu." Eurasian Journal of Educational Research 17 (2004): 221-236.

Yılmaz, M. and Candan, F. (2016). Sağlık iletişimi çerçevesinde çevrim içi destek grubu işlevi: Böbrekle hayat bulanlar. ODÜ Sosyal Bilimler Araştırmaları Dergisi, 6 (3), 20 March 2019 https://dergipark.org.tr/tr/pub/odusobiad/issue/26332/280102

Effect of Coronavirus Disease (COVID-19) Pandemic on Different Aspects of Human Life: A Review Article

Amira Y. Boshra[1], Sharifa M. Alasiry[2], Elsadig Y. Mohamed[3], Sawsan M. Abdalla[4], Mehrunnisha Ahmed[5], Faizan Zaffar Kashoo[6]

Corresponding Author

Amira Y. Boshra

DOİ

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ABSTRACT

The COVID-19 pandemic is a major health crisis that has affected the lives of millions worldwide. This article aimed to assess the effects of the COVID-19 pandemic on the different aspects of human life. Throughout the pandemic, the worldwide lockdown has led to economic crises in many nations, resulting in a huge number of people losing their jobs and livelihoods. Social communication decreased and mental status was affected; as fear of the pandemic spread, many people developed sleep disturbances. During covid-19, was shown that the use of electronic media by people near bedtime increased. During lockdown due to COVID-19, increased nutrition intake reduced bodily activity, and hence increased body mass index, especially among children was observed. Food delays have also occurred, particularly among young people. This study reviewed and summarized full-text articles and concluded that COVID-19 has had massive effects on several aspects of human life, such as economic stability, mental health, nutritional intake, sleep patterns, and many medical conditions. Further studies are recommended to evaluate other effects that might help stakeholders in future planning for the health system, economy, and education.

[1] *Assistant Professor, Department of Nursing, College of Applied Medical Sciences, Majmaah University, Al-Majmaah 11952, Saudi Arabia, a.yahia@mu.edu.sa, Orcid Number: https://orcid.org/https://orcid.org/0000-0003-4498-370X*

[2] *Assistant Professor, Department of Nursing, College of Applied Medical Sciences, Majmaah University, Al-Majmaah 11952, Saudi Arabia,* s.alasiry@mu.edu.sa*, Orcid Number: https://orcid.org/0000-0002-6057-3789*

[3] *Associate Professor, Department of Community Medicine and Public Health, College of Medicine, Majmaah University, Al-Majmaah 11952, Saudi Arabia, ey.mohamed@mu.edu.sa, Orcid Number: https://orcid.org/0000-0002-5987-2044*

[4] *Sawsan M. Abdalla2 Associate Professor, Department of Community Medicine and Public Health, College of Medicine, Majmaah University, Al-Majmaah 11952, Saudi Arabia, s.abdalla@mu.edu.sa, Orcid Number: https://orcid.org/0000-0001-9961-4325*

[5] *Lecturer, Department of Nursing, College of Applied Medical Sciences, Majmaah University, Al-Majmaah 11952, Saudi Arabia, m.ahmer@mu.edu.sa, Orcid Number: https://orcid.org/1234-5678-9012-3456*

[6] *Lecturer, Department of Physical Therapy, College of Applied Medical Sciences, Majmaah University, Al-Majmaah 11952, Saudi Arabia, f.kashoo@mu.edu.sa,Orcid Number: https://orcid.org/0000-0002-8272-674X*

INTRODUCTION

Coronavirus disease (COVID-19) is a zoonotic disease caused by viruses that affect the respiratory system. The disease was categorized as a pandemic that led to a worldwide lockdown. This, in turn, offered an extraordinary opportunity to recognize the extent to which changes in individuals' activities can affect nature (Manenti et al., 2020).

Lockdown, a word usually used as a substitute for mass quarantine, is naturally based on stay-at-home or shelter-in-place orders issued by a municipal government or authority for maintaining social separation and restrictive measures. While, in some sense, it can lead to improvement in the reducing spread of disease, it also results in negative behavioral changes and mental health issues from social isolation. Some of the greatest unwanted apprehensions of persistent homestay include physical inactivity, weight gain, behavioral disorders, inadequate sunlight exposure, and social separation (Lippi et al., 2020).

The assessments of death and healthcare response constructs based on information from China and other developed countries, variance in causal health circumstances, and different healthcare system capabilities will likely result in diverse designs. Suspensions in applying policies to defeat the spread of the virus will result in dangerous results and reduced survival protection. Furthermore, the plans in the place will need to be preserved until actual medications are developed to avoid the risk of future infectious diseases (Walker et al., 2020).

In a study conducted by Runkle to assess the association between climatological factors and transmission of COVID-19, the result revealed that humidity exposure in a short period was positively correlated with the spread of the virus. The authors recommended that weather should be a factor in deliberations on how to manage infectious diseases (Runkle et al., 2020).

2. Socioeconomic effects of COVID-19

The world economy was plunged into chaos during the COVID-19 pandemic, which has had a devastating effect on both destinations and institutions. (Pappas, 2021) The national lockdown in India led to low fiscal status and influenced all sections of society. The pandemic affected population health, healthcare systems, and the population's nutritional status (Gopalan & Misra, 2020).

A study was conducted to evaluate the influence of three factors: socioeconomic, climatic, and transportation factors, with everyday increasing cases of COVID-19. The results revealed that worldwide networks affected the flight transport system and are the fundamental factor contributing to the speed of COVID-19 spread in a diverse population (Coelho et al., 2020).

A study conducted in India on the effect of the COVID-19 pandemic on travel commerce found an expected spread of COVID-19 also was reflected in North India's travel commerce. Before the discovery of the COVID-19 disease, it was exaggerated that approximately 60% of professionals were employed and many relied on compensation timetables. The respondents (78.4%) were very optimistic, cheerful, and pleased to spend time with their families (Awasthi et. al, 2020).

A study conducted in Zimbabwe about the influence of COVID-19 on businesswomen revealed that they are in the formal section were influenced by inter-province nomadic rules. The issue became serious, and widows and others were caring for various babies. There was a wide range of circumstances of stress associated with housework and low incomes, particularly regarding food provision (Chikazhe et al., 2020).

A study was conducted to evaluate the impact of the COVID-19 pandemic on store marketing indices in most economically developed nations, including Japan, Korea, Singapore, the USA, Germany, Italy, the UK, Hong Kong, Malaysia, and Thailand, The results revealed that the stores in most countries were affected, and some dropped rapidly when the virus spread. Asian countries experienced additional undesirable and unusual revenues compared to other countries (Liu et al., 2020).

The COVID-19 pandemic has led to economic crises worldwide. Societal separation, self-isolation, and tourism limitations have led to an abridged employee throughout all financial areas and have eliminated work for several occupations. Educational intuitions were closed, and the need for supplies and industrial goods was reduced. Furthermore, the requirements for medical materials have improved significantly (Nicola et al., 2020).

A study conducted in China to evaluate the effect of the COVID-19 pandemic on the travel business revealed that the outbreak of the coronavirus had a significant impact, many international travelers canceled their plans to visit China. The speed of the coronavirus outbreak in China has changed the lives of Chinese residents. Likewise, the economy has been affected by the lockdown (Hoque et al., 2020).

Another study conducted in China on the effect of the pandemic on individuals found that different ways were followed to stop or mitigate the negative effects of the pandemic, such as societal separation, transportation limitations, and lockdowns. These interventions negatively affected the economy and

individual activities. This new situation has influenced numerous manufacturing and travel agencies and caused certain activities to come to a grinding halt (Özkan & Ulema, 2020).

Researchers from India conducted a study to evaluate the severe impact of COVID-19 on health care and internet marketing and found that the contagion influenced several areas such as cultivation, health business, economics, information technology, and industry. Through securities of an innovative collapse and monetary disaster, important instants requested solid, prompt actions to be taken(Kumar, S.et al., 2020).

A study conducted in Indonesia to evaluate the influence of COVID-19 on the economy showed that the global economy was affected by COVID-19. Likewise, the Indonesian economy has been seriously affected by COVID-19. Extremely affected areas as a result of the COVID-19 contagion are transport, travel, employment, health, and other segments. (Susilawati et al., 2020).

A study conducted to evaluate the influence of the six social-distancing strategies on COVID-19 revealed that statewide stay-at-home instructions had the most significant effect in decreasing out-of-home movement and increased increasing the number of individuals spent with family. Restrictions on cafeterias and taverns were rated next and caused an increase in those staying at home by an estimated 1.4% theme (8.5%). The four other additional strategies did not expressively decrease movement (Abouk & Heydari, 2021).

3. **Sleep disturbance**

Sinha conducted a study in India the result revealed delayed sleep and onset of wakeup, as well as delayed meal times during the lockdown among younger people. Young people reported increased periods of sleep. Increased time consuming digital media was evident in all age groups, mainly males. However, females reported delayed sleep and onset of waking time and first meal timing with extended sleep time during the lockdown (Sinha et al., 2020).

Results of an online survey conducted in Italy revealed that during a lockdown, the use of electronic media by people near bedtime increases; this alteration did not disturb nap patterns. During home quarantine, sleep timing changed in people who had higher levels of depression and nervousness, and anxiety symptomatology increased sleep problems (Cellini et al., 2020).

A cross-sectional study conducted in Wuhan in 2020 revealed that during the spread of COVID-19, sleep disturbance was high among pediatric and healthcare workers in health settings. Insomnia was independently associated with being an only child, exposure to patients, coronavirus infection, and depression (Wang et al., 2020).

A study conducted in Italy found that depression and apprehension symptom occurrence was 24.7% and 23.2%, respectively; 42.2% had insomnia, and 17.4% reported moderate/severe sleeplessness. Other factors such as old age, non-attendance of work-related distress, and marital status exacerbated such a possibility. Women with prolonged disorders were associated with a greater occurrence of insomnia (Gualano et al., 2020).

An online survey conducted in early May 2020 showed a change in bedtime with fewer hours of night sleep and a rise in daytime sleeping. These effects were observable in the crosswise work-related groups except for healthcare providers. Sleep quality worsened in the crosswise groups. Decreases in sleep time were related to depressive symptoms. Lockdown leads to variations in sleep time and the amount and value of night sleep (Gupta et al., 2020).

A study conducted to assess anxiety-sleep association and quarantine such as actual sleeplessness management through the COVID-19 pandemic revealed amendments of logical behavior treatment features that can be practically applied and are intended for persons facing altered labor timetables, individuals with health apprehension, and individuals managing baby-sitting and home-schooling while identifying the common restrictions imposed on bodily exercise and societal communication. Sleep difficulties can be managed through home quarantine to reduce anxiety and avoid disturbances in societal interactions (Altena et al., 2020).

A study conducted in Bangladesh evaluated the hazard factors related to sleep disturbance throughout the COVID-19 lockdown. The results revealed that the occurrence of insomnia was higher among respondents aged 31–40 years. Sex differences were observed in male candidates, and no significant differences were observed in local heterogeneity. Employed individuals working remotely or doing distance learning throughout the lockdown found issues of insomnia. Improper work reflects the financial influence of COVID-19, which also leads to insomnia (Ara et al., 2020).

Research showed an increased prevalence of sleep disturbance among students. In nursing students, insomnia leads to low performance, destructive behavior, and nutritional differences. There was also negative behavior due to differences in nap methods. The mean time students spent in bed was 7.6 h (SD = 1.1 h) before the lockdown and 8.5 h (SD = 1.2 h) throughout the lockdown. The greatest changes occurred in the areas of sleep latency, sleep time, and sleep effectiveness (Romero-Blanco et al., 2020).

4. COVID-19 and psychological disturbances

An online investigation conducted in India showed that more than two-fifths of individuals experienced mental illnesses due to lockdown and

COVID-19. Of the respondents, 38.2% had anxiety and 10.5% had depression. A reasonable level of anxiety was reported for a majority of students (74.1%), and 71.7% reported poor mental well-being. There is a need for continuous mental health services in communities throughout the pandemic (Grover et al., 2020).

Home quarantine from suspected or actual COVID-19 infection had an adverse influence on both psychological and temperament and feelings. (Ammar et al., 2020) Depression results in severe sleep disturbances. The "depressed brain" takes longer to initiate sleep, shortens the period of dreaming, spends little or no time in "deep sleep" and is subject to hyperactive brain regions during sleep. Antidepressants rectify sleep disturbances and restore normal sleep architecture and presumably normal brain metabolism during sleep (Slaughter, 2006).

A study conducted in China to assess the burden of the COVID-19 outbreak on mental health and to explore its potential effects on the Chinese population revealed that the main challenge throughout the coronavirus pandemic was mental health issues and healthcare providers are in great danger of mental disease (Huang & Zhao, 2020).

A study conducted in Italy evaluated sleep quality during home quarantine. The results revealed that more than half of Italian residents had insomnia and alterations in nap patterns due to increased emotional suffering throughout the COVID-19 lockdown restraints (Franceschini et al., 2020).

Research conducted on Chinese adolescents showed that Chinese youth maintained an active lifestyle throughout the COVID-19 outbreak. Girls in grade three senior secondary schools had advanced levels of temper disorder. Increased physical activity was demonstrated to help manage feelings of anger among youths during the outbreak (Kang et al., 2020).

A survey conducted in Italy assessed sleep quality, sleeplessness, and apprehension symptoms apparent in Italian residents throughout the continued lockdown. The results revealed that females appeared to display longer-lasting pliability throughout the lockdown. Temporarily, men were observed to be the most susceptible to the imposition of restraining procedures. Crosswise obtainable signs of emotional distress and significant sleep turbulences next to the prolonged and demanding lockdown time remain during the COVID-19 pandemic (Salfi et al., 2020).

In an Australian study evaluating unhappiness, apprehension, and psychological health, results revealed correlations of experience with Australian wildfires unconnected to anxiety. COVID-19 outbreak-induced work and societal functional losses are strongly connected to a raised level of despair and apprehension symptoms and decreased mental health. These results suggest that increasing access to mental health facilities is vital to lessening disturbances to work and societal functions and reducing COVID-19 outbreak-related influences on psychological health (Dawel et al., 2020).

De Sousa Moreira et al conducted a systematic review that used literature from the scientific databases of MEDLINE, EMBASE, and Network of Science to analyze the core effects of psychological and neuropsychiatric data, a study showed psychological and neuropsychiatric symptoms of acute respiratory syndromes in patients affected by COVID-19 throughout or post-infection (de Sousa Moreira et al., 2021).

An online survey conducted to determine the stages of anxiety, depression, and self-care symptoms throughout the COVID-19 pandemic in the overall population showed that 20.8% of the sample had symptoms of severe anxiety whereas 27.5% had symptoms of severe depression. The risk factors for increasing symptoms of anxiety and depression included being female, unmarried, having no children, having medical diseases, and having a history of psychological health. This suggested the crucial need for mental health care among participants (Galindo-Vázquez et al., 2020).

A study that focused on residents' mental health revealed the presence of queries related to the occurrence of mental health care delivered by psychologists and other health specialists who aim to decrease the undesirable effects of this emergency and assume a protective role (Faro et al., 2020).

A study conducted to measure the emotional influence of lockdown actions executed by the government suggested methods to combat the COVID-19 outbreak. The results suggest that continuous lockdown actions might have an increased effect on mental health over an extended period. It is important to continue to observe psychological suffering besides additional associated mental health complications among residents (Canet-Juric et al., 2020).

A study conducted to assess emotional disturbance among healthcare professionals revealed that contacting COVID-19 patients expects enlarged the feeling disturbances and approaches are not connected with the practice of intellectual reassessment. The study showed a maximum increase in anxiety levels among healthcare professionals. The study recommended that an appropriate strategy is essential for direct replies to decrease the high level of anxiety among healthcare professionals during the contagion crisis (García-Batista et al., 2020).

A study conducted in the United States revealed a significant increase in anxiety about parent exhaustion. Having relatives infected with COVID-19 increased the influence of digital emotion contagion (DEC) on parental burnout. An advanced level of

emotion regulation (ER) protected the association between feeling contaminated and worrying about COVID-19. Adjacent to that is a predisposition to an ordinal feeling contagion that may have an undesirable outcome for parents. Ordinal feeling contagion may increase parent exhaustion and is linked to anxiety (Prikhidko et al., 2020).

5. Nutrition intake and physical activities

A study conducted in Palestine revealed increased nutrition intake and increased body mass index of the pupils. The study revealed consumption of non-nutritive diets, and sleeping hours, as well as a reduction in exercise during the lockdowns. Weight gain is autonomously associated with increased nutrition intake (Allabadi et al., 2020).

In a study conducted in Italy to evaluate food intake, results revealed that people consuming vegetables and fruits had no divergence in body weight during the lockdown. In contrast, fried potato chips, red meat, and syrupy drink intake were significantly associated with increased body weight. Time spent doing sports activities decreased by 2.30 (SD 4.60) h/week (P = 0.003) (Pietrobelli et al., 2020).

Throughout the COVID-19 lockdown era in March and April 2020, an analytical study was conducted on the developed USA, Canada, the UK, Germany, Republic of Ireland, Australia, New Zeeland, and Singapore) to developing countries (e.g., India, Indonesia, the Philippines, Vietnam, Egypt, United Arab Emirates, Nigeria, and South Africa the result revealed that limited movement had affected the public's nutritional and life manners as people were continuously caring for an immune-boosting diet and have substituted outside events with inactive inside actions (Mayasari et al., 2020).

Health system consultants around the world have implemented protective health procedures that contain isolation to lessen the outbreak of coronavirus between populations. Physical activities remained one of the reasons for moving outdoors in most nations. Therefore, it is necessary to avoid the dangerous influence of reducing exercise in elderly adults, which is very important to change their lifestyle and refine their protection. The influence of COVID-19 decreased physical activity in the elderly, which preserved their level of individuality affecting their physical and psychological health (Ghram et al., 2020).

A study conducted in the United Arab Emirates on indirect health effects of COVID-19 and unhealthy lifestyles throughout the lockdown revealed increased food consumption (31.8%), reduced bodily activity (30%), weight gain (29.4%), reduced sleep (20.8%), and increased smoking (21%). The authors recommended plans and interventions directed specifically to high-risk groups, suggesting an increase in healthy lifestyle issues throughout the pandemic (Radwan et al., 2021).

The research was conducted to assess Japanese residents' exercise variations before and during the COVID-19 pandemic in the elderly home population. The results revealed a significant reduction in the overall exercise period throughout the COVID-19 pandemic compared to the period before the pandemic (Yamada et al., 2020).

The pandemic has led to food shortages and decreased revenues that influence nutritional varieties. Families spend approximately 50% of their wages on non-staple foods such as fruits, vegetables, and animal-sourced products. A study from Ethiopia supported this result that decreases in family nutritional intake are mostly in nutrient-dense foods such as fruit, meat, eggs, and dairy products. The decreased food variety, consumption of micronutrients, and food position raised adverse health costs (Laborde et al., 2020).

6. Education and COVID-19 pandemic

Preeti Tarkar conducted a study in India to evaluate the effect of the covid-19 pandemic on the education system, the result revealed that due to the pandemic, all schools, colleges, and universities are stated to be locked. The locked distracting the total education system. Education is altering from offline to online, and this alteration in education leads to many problems for policymakers, students, teachers, and parents (Tarkar, 2020).

The research was conducted to evaluate the impact of a pandemic on medical education the result revealed that faculty and medical students are coping with the alterations that have been made in the line has been altered with COVID-19 disturbing practices in hospitals, and medical schools. The transformation of in-person lessons with online counterparts is a clear requirement during this period but generates a defeat of cooperative experiences that has the potential to be a significant detriment to education. Several medical learners have also missed the chance for particular progress through consultation presentations (Ferrel & Ryan, 2020).

7. Other effects of the COVID-19 pandemic

A study conducted to investigate the influence of COVID-19 on patients with migraines revealed that compared to the era before the pandemic, 59.6% of participants reported a regular increase in migraines, 16% stated a regular reduction, and 10.3% reported a change to chronic migraines. COVID-19 has had a general adverse effect on individuals with migraines. (Al-Hashel & Ismail, 2020) The COVID-19 pandemic has influenced individual health. Air contamination remained throughout the pandemic, and the virus was also found in wastewater (SanJuan-Reyes et al., 2021).

This study assessed the influence of COVID-19 on patients with pneumonia in southern Iran. The results identified four clients in the initial days of COVID-19 co-infection with SARS-CoV-2 and the influenza virus. The co-infection of coronavirus and influenza A highlighted the necessity of considering the SARS-CoV-2 PCR assay, irrespective of other optimistic results for new pathogens in the curial test throughout the outbreak (Khodamoradi et al., 2020).

A study conducted to evaluate patients with autoimmune inflammatory rheumatoid arthritis showed that patients who received non-steroidal anti-inflammatory medications had higher proportions of health problems. However, insufficient information is available for other anti-rheumatic drugs. Patients who used induced treatments for autoimmune inflammatory rheumatism appeared to benefit from the treatment based on the immune system runaway and secretion of pro-inflammatory cytokines in severe disease methods (Grange et al., 2020).

Baysal-Kirac conducted study results revealed that COVID-19 is considered a global health problem that affects people worldwide. While the essential issue of the disease is to treat respiratory problems, current information recognizes the nervous system's clinical signs and symptoms, and nervous system problems are infrequently described with other coronavirus-related diseases and coronavirus-related neurological symptoms (Baysal-Kirac & Uysal, 2020).

A study was conducted in India during the COVID-19 national lockdown to evaluate its influence on ophthalmic practice and client management. The results revealed that ophthalmologists in India did not see their patients during the coronavirus disease lockdown. Almost all ophthalmologists closed operations. Only emergency facilities were open, and 27.5% of patients were able to receive services. A large number of ophthalmologists have changed their care to telephonic or other telemedicine methods to help patients (Nair et al., 2020).

A study was conducted to evaluate the effect of asthma, asthma medication, and asthma severity on the medical results of COVID-19. The results showed that the death rate for COVID-19 patients with underlying asthma (7.8%) was significantly greater than that of other patients. Asthma leads to raising the total medical costs of treatment and poor clinical outcomes of patients with COVID-19. However, primary asthma, medication usage, and asthma severity are not considered independent factors for poor medical outcomes of COVID-19 (Choi et al., 2020).

A study conducted to evaluate the influence of COVID-19 on patients with cardiac and kidney problems revealed fear as a common factor. Throughout the pandemic, strengthening the regular observation of patients with cardiovascular and kidney disease remains highly important. Ongoing care creates an essential level of management for patients with cardiovascular diseases (Pallarés Carratalá et al., 2020).

A study conducted to evaluate the serious risk factors of COVID-19 in individuals with other health problems revealed that the risk increased in countries with older residents, African countries with a high incidence of HIV/AIDS, and minor island countries with an increased incidence of diabetes mellitus. In addition, there was an increased risk with the high prevalence of chronic renal disease, diabetes mellitus, cardiovascular disease, and chronic respiratory disease (Clark et al., 2020).

CONCLUSION

This study reviewed and summarized full-text articles and concluded that COVID-19 has had massive effects on several aspects of human life, such as economic stability, mental health, nutritional intake, sleep patterns, and many medical conditions. Further studies are recommended to evaluate other effects that might help stakeholders in future planning for the health system, economy, and education.

COVID-19 is considered a global health problem that affects people worldwide. While the essential issue of the disease is treating the resulting respiratory problems, current information recognizes the nervous system's clinical signs and symptoms, and nervous system problems are infrequently described with other coronavirus-related diseases and coronavirus-related neurological symptoms. Health care professionals should be conscious that coronavirus can be related to neurological clinical signs and symptoms.

REFERENCES

Abouk, R., & Heydari, B. (2021). The Immediate Effect of COVID-19 Policies on Social-Distancing Behavior in the United States. Public Health Reports. https://doi.org/10.1177/0033354920976575

Al-Hashel, J. Y., & Ismail, I. I. (2020). Impact of coronavirus disease 2019 (COVID-19) pandemic on patients with migraine: a web-based survey study. The Journal of Headache and Pain. https://doi.org/10.1186/s10194-020-01183-6

Allabadi, H., Dabis, J., Aghabekian, V., Khader, A., & Khammash, U. (2020). Impact of COVID-19 lockdown on dietary and lifestyle behaviours among adolescents in Palestine. Dynamics of Human Health, 2020(2), 7.

Altena, E., Baglioni, C., Espie, C. A., Ellis, J., Gavriloff, D., Holzinger, B., Schlarb, A., Frase, L., Jernelöv, S., & Riemann, D. (2020). Dealing with sleep problems during home confinement due to the COVID-19 outbreak: Practical recommendations from a task

force of the European CBT-I Academy. In Journal of Sleep Research. https://doi.org/10.1111/jsr.13052

Ammar, A., Brach, M., Trabelsi, K., Chtourou, H., Boukhris, O., Masmoudi, L., Bouaziz, B., Bentlage, E., How, D., Ahmed, M., Mueller, P., Mueller, N., Aloui, A., Hammouda, O., Paineiras-Domingos, L. L., Braakman-jansen, A., Wrede, C., Bastoni, S., Pernambuco, C. S., … Hoekelmann, A. (2020). Effects of COVID-19 home confinement on physical activity and eating behaviour preliminary results of the ECLB-COVID19 international online-survey. MedRxiv. https://doi.org/10.1101/2020.05.04.20072447

Ara, T., Rahman, M. M., Hossain, M. A., & Ahmed, A. (2020). Identifying the Associated Risk Factors of Sleep Disturbance During the COVID-19 Lockdown in Bangladesh: A Web-Based Survey. Frontiers in Psychiatry. https://doi.org/10.3389/fpsyt.2020.580268

Awasthi, A., Soyav, M., & Shiwani, K. (2020). Effect of Covid-19 on Tourism Industry. International Journal of Trend in Scientific Research and Development (IJTSRD), 5(1), 857-859.

Baysal-Kirac, L., & Uysal, H. (2020). COVID-19 associate neurological complications. In Neurological Sciences and Neurophysiology. https://doi.org/10.4103/NSN.NSN_28_20

Canet-Juric, L., Andrés, M. L., del Valle, M., López-Morales, H., Poó, F., Galli, J. I., Yerro, M., & Urquijo, S. (2020). A Longitudinal Study on the Emotional Impact Cause by the COVID-19 Pandemic Quarantine on General Population. Frontiers in Psychology. https://doi.org/10.3389/fpsyg.2020.565688

Cellini , N.; Mioni, G.; Di Riso, D.; Di Giorgio, E. (2020). Changes in sleep pattern in mothers and their children during COVID-19 lockdown in Italy. Journal of Sleep Research.

Chikazhe, L., Mashapure, R., Chavhunduka, D., & Hamunakwadi, P. (2020). Socio-Economic Implications of Covid19 Pandemic to Women Entrepreneurs: A Case of the Informal Sector in Zimbabwe. Business Management and Strategy. https://doi.org/10.5296/bms.v12i1.17911

Choi, Y. J., Park, J.-Y., Lee, H. S., Suh, J., Song, J. Y., Byun, M. K., Cho, J. H., Kim, H. J., Lee, J.-H., Park, J.-W., & Park, H. J. (2020). Effect of Asthma and Asthma Medication on the Prognosis of Patients with COVID-19. European Respiratory Journal. https://doi.org/10.1183/13993003.02226-2020

Clark, A., Jit, M., Warren-Gash, C., Guthrie, B., Wang, H. H. X., Mercer, S. W., Sanderson, C., McKee, M., Troeger, C., Ong, K. L., Checchi, F., Perel, P., Joseph, S., Gibbs, H. P., Banerjee, A., Eggo, R. M., Nightingale, E. S., O'Reilly, K., Jombart, T., … Jarvis, C. I. (2020). Global, regional, and national estimates of the population at increased risk of severe COVID-19 due to underlying health conditions in 2020: a modelling study. The Lancet Global Health. https://doi.org/10.1016/S2214-109X(20)30264-3

Coelho, M. T. P., Rodrigues, J. F. M., Medina, A. M., Scalco, P., Terribile, L. C., Vilela, B., Diniz-Filho, J. A. F., & Dobrovolski, R. (2020). Exponential phase of covid19 expansion is driven by airport connections. In medRxiv. https://doi.org/10.1101/2020.04.02.20050773

Dawel, A., Shou, Y., Smithson, M., Cherbuin, N., Banfield, M., Calear, A. L., Farrer, L. M., Gray, D., Gulliver, A., Housen, T., McCallum, S. M., Morse, A. R., Murray, K., Newman, E., Rodney Harris, R. M., & Batterham, P. J. (2020). The Effect of COVID-19 on Mental Health and Wellbeing in a Representative Sample of Australian Adults. Frontiers in Psychiatry. https://doi.org/10.3389/fpsyt.2020.579985

De Sousa Moreira, J. L., Barbosa, S. M. B., Vieira, J. G., Chaves, N. C. B., Felix, E. B. G., Feitosa, P. W. G., da Cruz, I. S., da Silva, C. G. L., & Neto, M. L. R. (2021). The psychiatric and neuropsychiatric repercussions associated with severe infections of COVID-19 and other coronaviruses. Progress in Neuro-Psychopharmacology and Biological Psychiatry. https://doi.org/10.1016/j.pnpbp.2020.110159

Faro, A., Bahiano, M. de A., Nakano, T. de C., Reis, C., da Silva, B. F. P., & Vitti, L. S. (2020). COVID-19 and mental health: The emergence of care. Estudos de Psicologia (Campinas). https://doi.org/10.1590/1982-0275202037E200074

Ferrel M N, Ryan J J (March 31, 2020) The Impact of COVID-19 on Medical Education. Cureus 12(3): e7492. doi:10.7759/cureus.7492

Franceschini, C., Musetti, A., Zenesini, C., Palagini, L., Scarpelli, S., Quattropani, M. C., Lenzo, V., Freda, M. F., Lemmo, D., Vegni, E., Borghi, L., Saita, E., Cattivelli, R., De Gennaro, L., Plazzi, G., Riemann, D., & Castelnuovo, G. (2020). Poor sleep quality and its consequences on mental health during the COVID-19 lockdown in Italy. Frontiers in Psychology. https://doi.org/10.3389/fpsyg.2020.574475

Galindo-Vázquez, O., Ramírez-Orozco, M., Costas-Muñiz, R., Mendoza-Contreras, L. A., Calderillo-Ruíz, G., & Meneses-García, A. (2020). Symptoms of anxiety, depression and self-care behaviors during the COVID-19 pandemic in the general population. Gaceta Medica de Mexico. https://doi.org/10.24875/GMM.20000266

García-Batista, Z. E., Guerra-Peña, K., Kandany, V. N., Marte, M. I., Garrido, L. E., Cantisano-Guzmán, L. M., Moretti, L., & Medrano, L. A. (2020). COVID-19 pandemic and health worker stress: The mediating effect of emotional regulation. In medRxiv. https://doi.org/10.1101/2020.06.19.20135574

Ghram, A., Briki, W., Mansoor, H., Al-Mohannadi, A. S., Lavie, C. J., & Chamari, K. (2020). Home-based exercise can be beneficial for counteracting sedentary behavior and physical inactivity during the COVID-19 pandemic in older adults. In Postgraduate Medicine. https://doi.org/10.1080/00325481.2020.1860394

Gopalan, H. S., & Misra, A. (2020). COVID-19 pandemic and challenges for socio-economic issues, healthcare and National Health Programs in India. In Diabetes and Metabolic Syndrome: Clinical Research and Reviews. https://doi.org/10.1016/j.dsx.2020.05.041

Grange, L., Guilpain, P., Truchetet, M. E., & Cracowski, J. L. (2020). Challenges of autoimmune rheumatic disease treatment during the COVID-19 pandemic: A review. Therapies. https://doi.org/10.1016/j.therap.2020.06.013

Grover, S., Sahoo, S., Mehra, A., Avasthi, A., Tripathi, A., Subramanyan, A., Pattojoshi, A., Rao, G., Saha, G., Mishra, K., Chakraborty, K., Rao, N., Vaishnav, M., Singh, O., Dalal, P., Chadda, R., Gupta, R., Gautam, S., Sarkar, S., … Janardran Reddy, Y. (2020). Psychological impact of COVID-19 lockdown: An online survey from India. Indian Journal of Psychiatry. https://doi.org/10.4103/psychiatry.IndianJPsychiatry_427_20

Gualano, M. R., Lo Moro, G., Voglino, G., Bert, F., & Siliquini, R. (2020). Effects of COVID-19 lockdown on mental health and sleep disturbances in Italy. International Journal of Environmental Research and Public Health, 17(13), 1–13. https://doi.org/10.3390/ijerph17134779

Gupta, R., Grover, S., Basu, A., Krishnan, V., Tripathi, A., Subramanyam, A., Nischal, A., Hussain, A., Mehra, A., Ambekar, A., Saha, G., Mishra, K., Bathla, M., Jagiwala, M., Manjunatha, N., Nebhinani, N., Gaur, N., Kumar, N., Dalal, P., … Avasthi, A. (2020). Changes in sleep pattern and sleep quality during COVID-19 lockdown. Indian Journal of Psychiatry. https://doi.org/10.4103/psychiatry.IndianJPsychiatry_523_20

Hoque, A., Shikha, F. A., Hasanat, M. W., Arif, I., & Abu Bakar Abdul Hamid. (2020). The Effect of Coronavirus (COVID-19) in the Tourism Industry in. Asian Journal of Multidisciplinary Studies.

Huang, Y., & Zhao, N. (2020). Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. Psychiatry Research. https://doi.org/10.1016/j.psychres.2020.112954

Kang, S., Sun, Y., Zhang, X., Sun, F., Wang, B., & Zhu, W. (2020). Is Physical Activity Associated with Mental Health among Chinese Adolescents during Isolation in COVID-19 Pandemic? Journal of

Epidemiology and Global Health. https://doi.org/10.2991/jegh.k.200908.001

Khodamoradi, Z., Moghadami, M., & Lotfi, M. (2020). Co-infection of coronavirus disease 2019 and influenza a: A report from Iran. Archives of Iranian Medicine. https://doi.org/10.34172/aim.2020.04

Kumar, S., Maheshwari, V., Prabhu, J., Prasanna, M., Jayalakshmi, P., Suganya, P., ... & Jothikumar, R. (2020). Social-economic impact of COVID-19 outbreak in India. International Journal of Pervasive Computing and Communications.https://doi.org/10.1108/IJPCC-06-2020-0053

Laborde, D., Martin, W., Swinnen, J., & Vos, R. (2020). COVID-19 risks to global food security. Science, 369(6503), 500–502. https://doi.org/10.1126/science.abc4765

Lippi, G., Henry, B. M., Bovo, C., & Sanchis-Gomar, F. (2020). Health risks and potential remedies during prolonged lockdowns for coronavirus disease 2019 (COVID-19). Diagnosis (Berlin, Germany), 7(2), 85–90. https://doi.org/10.1515/dx-2020-0041

Liu, H., Manzoor, A., Wang, C., Zhang, L., & Manzoor, Z. (2020). The COVID-19 outbreak and affected countries' stock markets response. International Journal of Environmental Research and Public Health. https://doi.org/10.3390/ijerph17082800

Manenti, R., Mori, E., Di Canio, V., Mercurio, S., Picone, M., Caffi, M., Brambilla, M., Ficetola, G. F., & Rubolini, D. (2020). The good, the bad and the ugly of COVID-19 lockdown effects on wildlife conservation: Insights from the first European locked down country. Biological Conservation, 249(August). https://doi.org/10.1016/j.biocon.2020.108728

Mayasari, N. R., Ho, D. K. N., Lundy, D. J., Skalny, A. V., Tinkov, A. A., Teng, I. C., Wu, M. C., Faradina, A., Mohammed, A. Z. M., Park, J. M., Ngu, Y. J., Aliné, S., Shofia, N. M., & Chang, J. S. (2020). Impacts of the COVID-19 pandemic on food security and diet-related lifestyle behaviors: An analytical study of google trends-based query volumes. Nutrients. https://doi.org/10.3390/nu12103103

Nair, A. G., Gandhi, R. A., & Natarajan, S. (2020). Effect of COVID-19 related lockdown on ophthalmic practice and patient care in India: Results of a survey. Indian Journal of Ophthalmology. https://doi.org/10.4103/ijo.IJO_797_20

Nicola, M., Alsafi, Z., Sohrabi, C., Kerwan, A., Al-Jabir, A., Iosifidis, C., Agha, M., & Agha, R. (2020). The socio-economic implications of the coronavirus pandemic (COVID-19): A review. In International Journal of Surgery. https://doi.org/10.1016/j.ijsu.2020.04.018

Özkan, N., & Ulema, Ş. (2020). The effect of coronavirus (covid19) pandemic on individuals' vacation plans. Journal of Institute of Economic Development and Social Researches, doi:10.31623/iksad062507

Pallarés Carratalá, V., Górriz-Zambrano, C., Morillas Ariño, C., Llisterri Caro, J. L., & Gorriz, J. L. (2020). COVID-19 and cardiovascular and kidney disease: Where are we? Where are we going? In Semergen. https://doi.org/10.1016/j.semerg.2020.05.005

Pappas, N. (2021). COVID19: Holiday intentions during a pandemic. Tourism Management. https://doi.org/10.1016/j.tourman.2021.104287

Pietrobelli, A., Pecoraro, L., Ferruzzi, A., Heo, M., Faith, M., Zoller, T., Antoniazzi, F., Piacentini, G., Fearnbach, S. N., & Heymsfield, S. B. (2020). Effects of COVID-19 Lockdown on Lifestyle Behaviors in Children with Obesity Living in Verona, Italy: A Longitudinal Study. Obesity, 28(8), 1382–1385. https://doi.org/10.1002/oby.22861

Prikhidko, A., Long, H., & Wheaton, M. G. (2020). The Effect of Concerns About COVID-19 on Anxiety, Stress, Parental Burnout, and Emotion Regulation: The Role of Susceptibility to Digital Emotion Contagion. Frontiers in Public Health. https://doi.org/10.3389/fpubh.2020.567250

Radwan, H., Kitbi, M. Al, Hasan, H., Hilali, M. Al, Abbas, N., Hamadeh, R., Saif, E. R., & Naja, F. (2021). Indirect Health Effects of COVID-19: Unhealthy Lifestyle Behaviors during the Lockdown in the United Arab Emirates. International Journal of Environmental Research and Public Health 2021, Vol. 18, Page 1964.

Romero-Blanco, C., Rodríguez-Almagro, J., Onieva-Zafra, M. D., Parra-Fernández, M. L., Prado-Laguna, M. D. C., & Hernández-Martínez, A. (2020). Sleep pattern changes in nursing students during the COVID-19 lockdown. International Journal of Environmental Research and Public Health. https://doi.org/10.3390/ijerph17145222

Runkle, J. D., Sugg, M. M., Leeper, R. D., Rao, Y., Matthews, J. L., & Rennie, J. J. (2020). Short-term effects of specific humidity and temperature on COVID-19 morbidity in select US cities. Science of the Total Environment. https://doi.org/10.1016/j.scitotenv.2020.140093

Salfi, F., Lauriola, M., Amicucci, G., Corigliano, D., Viselli, L., Tempesta, D., & Ferrara, M. (2020). Gender-related time course of sleep disturbances and psychological symptoms during the COVID-19 lockdown: A longitudinal study on the Italian population. Neurobiology of Stress. https://doi.org/10.1016/j.ynstr.2020.100259

SanJuan-Reyes, S., Gómez-Oliván, L. M., & Islas-Flores, H. (2021). COVID-19 in the environment. In Chemosphere. https://doi.org/10.1016/j.chemosphere.2020.127973

Sinha, M., Pande, B., & Sinha, R. (2020). Impact of COVID-19 lockdown on sleep-wake schedule and associated lifestyle-related behavior: A national survey. Journal of Public Health Research. https://doi.org/10.4081/jphr.2020.1826

Slaughter, J. R. (2006). Sleep and depression. In Missouri medicine. https://doi.org/10.5958/0974-0155.2016.00010.3

Susilawati, S., Falefi, R., & Purwoko, A. (2020). Impact of COVID-19's Pandemic on the Economy of Indonesia. Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences. https://doi.org/10.33258/birci.v3i2.954

Tarkar, P. (2020). Impact of COVID-19 pandemic on education system. International Journal of Advanced Science and Technology, 29(9), 3812-3814.

Walker, P. G. T., Whittaker, C., Watson, O., Baguelin, M., Ainslie, K. E. C., Bhatia, S., Boonyasiri, A., Boyd, O., Cattarino, L., Cucunubá, Z., & Cuomo-dannenburg, G. (2020). Imperial College COVID19-Global Impact. Imperial College COVID-19 Response Team, March, 1–19.

Wang, S., Xie, L., Xu, Y., Yu, S., Yao, B., & Xiang, D. (2020). Sleep disturbances among medical workers during the outbreak of COVID-2019. Occupational Medicine. https://doi.org/10.1093/occmed/kqaa074

Yamada, M., Kimura, Y., Ishiyama, D., Otobe, Y., Suzuki, M., Koyama, S., Kikuchi, T., Kusumi, H., & Arai, H. (2020). Effect of the COVID-19 Epidemic on Physical Activity in Community-Dwelling Older Adults in Japan: A Cross-Sectional Online Survey. Journal of Nutrition, Health, and Aging. https://doi.org/10.1007/s12603-020-1424-2

Management of the COVID-19 Health Crisis in the World; an Evaluation on Centralization and Decentralization Practices*

Kazım BAŞ[1], Haydar SUR [2]

Corresponding Author
Kazım BAŞ

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ABSTRACT

It has been reported that the tensions, incoordination and incompatibility between the central and local government, and the disconnection in the institutional capacity in the fight against the COVID-19 pandemic, adversely affected the pandemic management. Therefore, this study was carried out in order to evaluate the practices of some countries in the context of centralization and decentralization at the beginning and after the pandemic in the management of the COVID-19 crisis in the world within the scope of the literature.

With the spread of COVID-19 around the world in 2020, most governments have had to take drastic central measures to reduce the spread of the virus. It was emphasized that the measures taken in most countries in the early stages of the pandemic were not taken in coordination with the local units, causing incompatibilities with the local. As of 2021, due to the different experiences of the local effects of the pandemic during the pandemic process, it has been observed that the measures applied in the countries against the pandemic differ according to the local and regions. Ensuring that coordination and harmony between central government and local government/units are important that is explained by the fact that the local effects of the pandemic are different (infection rate, population density, effectiveness of the measures taken, etc.). During the COVID-19 process, it has been observed that countries have different centralization and decentralization practices suitable for their own conditions.

It is reported that the simultaneous and complementary coordination of centralization and decentralization in governance in COVID-19 and similar crises will prevent complexity at management levels and positively affect the effective management of the crisis.

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[1] *PhD, RN, Assist. Prof (Corresponding author) Munzur University Tunceli Vocatioanl School, Medical Services Department Tunceli-TURKEY -62000, e-mail: kbas@munzur.edu.tr, ORCID: 0000-0002-5061-4006*
[2] *MD, Prof.Dr. Usküdar University/Faculty of Medicine, Public Health / Turkey, e-mail: haydar.sur@uskudar.edu.tr, ORCID: 0000-0002-6862-179X*

INTRODUCTION

The concept of decentralization has become the basis of reforms that include the reorganization of the powers of the state in the public sector and the transfer of these powers to local units, non-governmental organizations, and private industries in line with the effect of neoliberal economic policies in the eighties. In the health care industry, decentralization was defended to provide more rational health care according to local preferences by better defining the target population, reducing inequality in urban and rural areas, strengthening local participation, and facilitating adaptation to public and private organization activities. It was emphasized that the decentralization experience differs depending on the conditions of countries, and may lead to negative outcomes unless designed well. Decentralization, which was brought to the agenda again during the pandemic, positively affects effective emergency management during the coronavirus pandemic (Hayran, 2017; Baş and Sur, 2021; Das et al., 2021).

In addition to national dynamics, it was emphasized that the political structure of the countries, administrative localization, and the organizational capacity of the health system are important in the effective fight against COVID-19. It was reported that pandemic management was adversely affected due to tensions between central and local governments, lack of coordination, and interruptions in the institutional capacity in the fight against the pandemic (Capano and Lippi, 2021). It was stated that local, regional, and national coordination is important in the successful fight against the pandemic, and it was emphasized that decentralization has an important role in successful pandemic management. It was reported that coordinating centralization and decentralization in governance in a way that complements each other simultaneously in COVID-19 and similar crises will prevent complexity at management levels and ensure efficient management. On the other hand, it was reported that it would be useful to establish a clear institutional framework on competencies between the central and local units, that the national government should be responsible for the regulation of management principles, while the local government should be responsible for operational practices with the help of the regulatory framework (Asmorowati et al., 2021; Goschin and Dimian, 2021; Lele, 2021).

Prevention and control of COVID-19 and reduction of mortality rates were found to be associated with the capacity and degree of resilience of local health systems (Goschin and Dimian, 2021). For example, health services in Italy are carried out based on a high level of regional autonomy. With the onset of the pandemic, three autonomous regions in Italy (Lombardy, Veneto, and Emilia-Romagna) had different responses to the pandemic, despite their strong health care systems. It was observed that Lombardy responded late at the onset of the pandemic due to the impact of the multi-part system against the pandemic, leading to an increased number of cases and deaths (especially in the elderly), and the health system of the region was helpless to manage the pandemic. It was noted that the Emilia-Romagna region was also unable to respond effectively to the management of the pandemic at the beginning of the pandemic, but performed well in the process. The Veneto region, on the other hand, was reported to have coordinated the health care system before and during the COVID-19 crisis, and developed response tools, thus performing better against the pandemic compared to other regions (Capano and Lippi, 2021). Yang (2020) in the same study, it was reported that many state governors of the central government experienced conflicts due to the problems experienced in the United States of America (USA) regarding vertical coordination between the central government and the states (such as when to implement social distancing, purchase of medical devices from abroad), while in China, it was reported that central decisions were effective in ensuring coordination with the provinces.

In the fight against the COVID-19 pandemic in some countries, it was emphasized that the assertion of claims contrary to scientific evidence has led to increasing tensions between the central government and local governments and has adversely affected the effective fight against the pandemic. In Indonesia, in the early stages of the pandemic, national government leaders stated that the country's tropical climate, faith, and ethnic superiority provided adequate protection against the pandemic (Asmorowati et al., 2021). Brazilian President Jair Bolsonaro's delay in taking the necessary measures against the pandemic due to his denying approach has caused conflicts and incompatibilities between the central government and local governments in the fight against the pandemic (Parker and Ferraz, 2021).

During the pandemic, it was observed that there are different experiences in local governance along with the regulatory and inclusive role of the central authority. This study was conducted to evaluate centralization and decentralization practices implemented in some countries in managing the COVID-19 health crisis in the world.

2. MATERIALS AND METHODS

In this study, the practices of countries within the scope of centralization and decentralization at the beginning and after the pandemic in the management of the COVID-19 crisis in the world were evaluated within the scope of the literature. For free access to literature publications, Web of Science, Scopus, Sobiad and Google academic databases, which are constantly accessible by Munzur University Library and Documentation Department, were used. The literature review was conducted between 28-30 March 2022 with the keywords "centralization and decentralization, centralization and decentralization in the management of the COVID-19 health crisis". As a result of the literature review, 50 publications, the full text of which were reached and published, constituted the universe of the research. As a result of the examination of the publications, it was determined that 20 articles were related to the scope of centralization and decentralization at the beginning and after the pandemic, and 30 studies did not match the content of the subject. Therefore, 30 publications that were not related to the research topic were excluded from the research. 20 publications were included in the scope of the research. Three of these publications are related to the concept of centralization and decentralization (Bankauskaite and Saltman 2007; Cheema and Rondinelli 2007; Terlizzi 2018) and two of them are related to the examples in Turkey (Hayran; 2017; Baş and Sur 2021) 5 and 15 of them are related to the COVID 19 pandemic management. includes examples from other countries.

3. DECENTRALIZATION AND RECENTRALIZATION CONCEPT IN HEALTH

The concept of decentralization, which has been discussed for about fifty years within the framework of different practices in public administration, started to be discussed (in the 1970s to the 1980s) with the claim that the bureaucracies centralized in line with the central authority (state, government) in the public sector were inefficient. The second stage began in the eighties. At this stage, it was suggested that it would be appropriate to increase the decision-making role of the private sector in the public by reducing the role of the state in the public sector. The third stage covers the nineties and the following period, and it is reported that decentralization will be the appropriate tool for the participation of the people in the administration through non-governmental organizations. Decentralization is the concept that involves the transfer of some powers and responsibilities of the central authority to subunits, local, autonomous organizations, regional institutions, and civil society. Decentralization is classified into four sub-dimension, mainly political, administrative, financial, and market dimensions, and four sub-types, deconcentration, delegation, devolution, and privatization, within the scope of the public administration experiences of countries (Cheema and Rondinelli, 2007; Baş and Sur, 2021).

The concept of decentralization was one of the basic elements of the reforms made worldwide in the health care services industry after the 1990s. Decentralization application is recommended in health care services for strengthening local health administration, increasing innovations in the delivery of health care services, improving techniques in health, ensuring efficiency, increasing allocation efficiency in health care services, and ensuring equality in health (Bankauskaite and Saltman, 2007; Baş and Sur, 2021).

The decentralization practices applied since the 2000s in some European countries were explained within the scope of re-centralization policies, and the necessary regulations in health care services were explained by the concept of re-centralization. The main reasons for strengthening the central policies in these countries include the inconsistent policies pursued locally in health care services that increase the financial problems, causing geographical inequalities and incompatibility in local and central policies. For these reasons, the necessity of strong central governments for geographical equality and fiscal discipline was emphasized in some countries of Europe, and it was aimed to limit and reduce some powers of regions with strong decentralization in health care through re-centralization (Terlizzi, 2018). In 2020, the role of central management in health care and the importance and coordination of the local in the prevention and control of the pandemic was discussed again in the world during the COVID-19 pandemic. For example, Italy has intervened public sector to combat the COVID-19 emergency by increasing the number of hospital beds and staff that were previously reduced in the public (Mauro and Giancotti, 2021). Moreover, it was reported that strategic decisions can be better handled by centralized structures for determining administrative boundaries in emergency cases such as the COVID-19 pandemic and that the handling of operational decisions by decentralized governance will provide a significant balance in administrative coordination (Lele, 2021).

4. CENTRALIZATION AND DECENTRALIZATION APPLICATIONS IN THE COVID-19 HEALTH CRISIS; SOME COUNTRY EXAMPLES

It was stated that countries have comprehensive authority and control over critical resources, emphasizing the importance of the central leadership of national governments in responding to a crisis. Since the effects of COVID-19 are local, cooperation with local units was reported to be necessary to reduce the negative impact of the pandemic (Asmorowati et al., 2021). During the COVID-19 pandemic, it was seen that countries have experienced different examples of centralization and decentralization in the fight against the pandemic. Some country examples, within the scope of the literature, are as follows.

Although COVID-19 was declared an emergency public health problem in Indonesia in April 2020, it was stated that national and local governments were unprepared to manage the pandemic. Indeed, it was reported that some government leaders in the country did not fight the disease in the early stages of the disease by making bizarre claims such as the country's tropical climate, faith, and ethnic superiority providing adequate protection against the pandemic. It was also reported that there was a large increase in cases of illness and deaths, causing problems in governance between national and local units due to the shortsightedness of some national leaders in assessing the pandemic, and due to the lack of coordination between the central government and state governments (Asmorowati et al., 2021). It was stated that Brazilian President Jair Bolsonaro's denying approach to the pandemic has increased the number of cases and deaths in the country due to failure to take measures at the central level in managing the pandemic. There were conflicts and dissonances between the central government and local governments in efforts to prevent the pandemic in the country. Some states have pursued a policy separate from the central government, taking measures to prevent and control the pandemic (Parker and Ferraz, 2021) In an evaluation made on the example of India on the effectiveness of central decisions, it was reported that the resources and capacities of health services in the state and local units in the country were different, and that the incidence of COVID-19 has different distributions between the states, and that local differences were not taken into consideration since the decisions of the central government (federal) on the spread of the disease were applied at the same level throughout the country (Choutagunta et al., 2021). A study conducted in Ghana found that the general public communication strategy carried out by the government was successful when the pandemic began. With this strategy, the spread of the virus was minimized and people were informed about COVID-19, and people's fears were calmed thanks to the assurance given to the public that the government is controlling the pandemic (Antwi-Boasiako and Nyarkoh, 2021). A study conducted in Vietnam on the suitability of the health care system in responding to the COVID-19 crisis reported that the country's health care system is intertwined with the application of decentralization from a pyramid model (stratified technical hierarchy) to a wheel model, in which quality health care is expected equally among all health units. As part of the decentralization in the country, it was emphasized that the capacity increase of low-level hospitals during the pandemic and the effectiveness of local public health interventions provided significant advantages in COVID-19 management (Van Nguyen et al., 2021). A study on public health cases in Kenya and Thailand reported that community health care professionals working in the decentralized public health system performed better than in the central system during the pandemic. It was reported that decentralization in these countries includes exemplary practices both for developed and developing countries to serve the needs of the local population, especially the disadvantaged groups, more appropriately (Sudhipongpracha and Poocharoen, 2021). A study conducted in Pakistan, based on World Bank data, reported that the COVID-19 pandemic would further increase the poverty rate in the world. In addition, according to the results of the research, it was reported that financial localization in Pakistan has a direct and indirect effect on the eradication of poverty (Hussain et al., 2021). It was emphasized that there is no strong decentralization practice in health care services in Turkey and that decisions are generally taken at the central level in pandemic management and that the powers given to provincial and district sanitation boards within the scope of the fight against COVID-19 allow more dynamic and effective decisions to be taken according to the local conditions (Baş and Sur, 2021). According to the literature, it is seen that in the management of the COVID-19 pandemic crisis, countries take decisions at the central and local level in the pandemic management according to their own conditions. In some countries, it has been observed that the decisions taken at the central level at the beginning of the pandemic adversely affected the fight against the pandemic and the coordination, coordination and simultaneity between the center and the local could not be achieved.

In a study on the evaluation of the functioning of the multi-level government intervention related to managing the COVID-19 crisis in Italy and Spain, it was emphasized that the political structures and dynamics of the countries are important variables in the response to the pandemic. It was noted that both countries were initially unable to effectively intervene in the pandemic. However, over time, multi-level decisions related to regional administrations have become more compatible in Spain, while interregional compliance is weaker in Italy, compared to Spain,

leading to conflict in some practices between the center and regions. In the comparison of the examples of Spain and Italy, it was seen that the significant reasons for the inadequacies in the intervention in the early stages of the pandemic were the lack of adequate investments in the response to the pandemic historically due to strict administrative systems and the incompatibility between the central government and local governments (Casula and Pazos-Vidal, 2021).At the beginning of the pandemic, three autonomous regions in Italy (Lombardy, Veneto, and Emilia-Romagna) had different responses against COVID-19, despite their strong health care systems. Lombardy's fragmented system has responded late in preventing the pandemic due to a lack of governance. The Emilia-Romagna region, on the other hand, reacted more slowly at the beginning of the pandemic and subsequently improved its performance in the fight against the disease. The Veneto region had a better response to the pandemic, compared to other regions, thanks to its coordinated health care system and response tools well before and during the COVID-19 crisis (Capano and Lippi, 2021). When the examples of Italy and Spain, which have strong decentralization in health services, are compared, it is reported that the two countries were unprepared for the pandemic and failed in the early stages of the pandemic. In the examples of both countries, it was emphasized that the harmony between the central government and local governments is important in well-coordinating the health systems, as well as the decisions taken within the scope of combating the pandemic. In addition, it has been stated that Spain's success in the pandemic crisis compared to Italy is better at different levels between the central government and regional governments. It was stated that the success in the response to the pandemic depended on many variables, and it was emphasized that the lack of adequate investments in the fight against the pandemic, the strict administrative systems implemented and the incompatibility between central and regional governments were the main reasons that negatively affected the success in the COVID-19 pandemic.

In the United States, it was stated that there were problems with vertical coordination between the central government and the states with the onset of the pandemic. There was a conflict between the central government (President Trump) and many state governors over issues such as when social distancing should be enforced in the country, and whether the federal government and states should coordinate the purchase of medical devices from abroad, causing dissonance at the beginning of the pandemic. It was stressed that it would be important for central and local governments that were unprepared for the COVID-19 pandemic to make the necessary adjustments and adaptations in case of a similar pandemic or crisis. In the period after the beginning of the pandemic, cooperation and coordination between the center and the provinces were ensured to fight effectively against the pandemic. It was stated that China has established a COVID-19 Response Center Leadership Group under the Leadership of the Health Care Commission to facilitate coordination between the central government and the provinces during the COVID-19 pandemic, providing effective coordination with the provinces in controlling and managing the pandemic (Yang, 2020). The importance of leadership in the fight against the pandemic has been better understood in the COVID-19 process. It has been observed that the negative attitudes of some leaders during the pandemic process negatively affected the pandemic management and delayed the measures taken against the pandemic. For example, at the beginning of the pandemic, there was a lack of coordination and incompatibility between state governments due to the negative attitudes of the central government leadership in the United States. This situation caused a conflict between the central government and some local governments, as it delayed the measures against the pandemic and caused the health crisis to deepen. Later, it was seen that the pandemic crisis could be effectively combated with the coordination between the center and the local.

A study made on the negative aspects of the cities with a large population regarding the spread of the pandemic states that people who are attracted to the influence of the cities migrate to the cities for a better life. It was emphasized that migration-originated higher density urban life also threatens the lives of millions of people (as in COVID-19) by enabling the rapid spread of infectious diseases. It was also stated that the localization of the activity center is important for the effective fight against COVID-19 in the cities affected by the high mortality rates due to the pandemic in Bangladesh and that it is necessary to move the health care facilities away from the center due to the increasing demand for health care services (Das et al., 2021).

With the spread of COVID-19 around the world in 2020, many governments have had to take drastic measures to reduce the spread of the virus. In some countries, where strict central decisions were taken to control the pandemic and strengthen health care systems, private hospitals were nationalized to combat the pandemic more effectively. It was emphasized that the measures taken by the central governments for large geographical areas in the early stages of the pandemic were not in coordination with local units, causing incompatibilities with the locals. As of 2021, with the increase in experiences with the pandemic, regional (eg. Provinces in China, states in the United States, Länder in Germany, and regions in France and Spain) decisions were reported to facilitate local alignment in the fight against the pandemic. As a result, it was seen that the measures taken during the pandemic differ depending on the specific conditions of the countries (education, political structures, health

care systems, economic status, etc.) and the measures applied in a particular country also differ according to regions and localities. One of the factors that stress the importance of coordination and consistency between the center and the locals during the pandemic is explained by the different local effects of the disease. For example, it is assumed that the rate of virus transmission in each region is different (due to local population density, weather conditions, the level of effectiveness of the measures taken, etc.). Moreover, the difference in disease spread between regions was reported to affect the capacity and performance of the health care system as well as its effectiveness in cases, diseases, and recoveries (De Silva et al., 2021; Goschin and Dimian, 2021). The literature has reported that with the onset of the pandemic, the strong central decisions taken by the countries in the pandemic management cause incompatibility with the local. In the light of the increasing experience depending on the conditions of the countries and the different effects of the disease in the local area in the fight against the pandemic during the pandemic process, it has been observed that measures have been taken to strengthen the harmony between the center and the local.

5. CONCLUSION AND RECOMMENDATIONS

According to the results of this research, during the pandemic, it was seen that countries had different centralization and decentralization practices according to their conditions. With the COVID-19 outbreak, it was seen that the decentralization applied in health care services for many years has the effect of reducing the weaknesses of central systems by enabling more flexible decisions according to the characteristics of the local during the crisis periods of the pandemic. It was observed that some countries with highly decentralized health care services could not effectively manage the pandemic due to the incompatibility between the center and the locals at the beginning of the pandemic. In this study, it was observed that there were significant problems between the central and local units in the management of the health crisis at the beginning of the pandemic and afterwards in some countries. In the light of the lessons learned from the experiences of the countries during the pandemic, it was emphasized that the synchronicity and coordination in the exercise of powers between the central and the local structures played a key role in the management of the pandemic. In the effective fight against COVID-19 and similar pandemics, it is suggested that it would be beneficial for countries to clearly define the powers related to coordination, synchronicity, and compatibility between central structures and local units appropriate to their conditions.

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REFERENCES

1. Asmorowati, S., Schubert, V., & Ningrum, A. P. (2021). Policy capacity, local autonomy, and human agency: Tensions in the intergovernmental coordination in Indonesia's social welfare response amid the COVID-19 pandemic. *Journal of Asian Public Policy*, 1-15.
2. Antwi-Boasiako, J., & Nyarkoh, E. (2021). Government Communication during the Covid-19 Pandemic in Ghana. *International Journal of Public Administration*, *44*(13), 1175- 1188.
3. Baş, K., Sur, H., (2021). Sağlık hizmetlerinde desantralizasyon ve Türkiye'deki uygulamları. *SDÜ Sağlık Yönetimi Dergisi*, *3*(2), 79-97.
4. Bankauskaite, V. and Saltman, R.B. (2007). Decentralization İn Health Care. Figueras, J. McKee, M. Mossialos, E. and and Saltman, R.B. (Ed.). Chapter in; Strategic Dimensi ons; Central İssues in the Decentralization Debate (p.9-21). European Observatory on Health Systems and Policies Series: First Published 2007: Open University Press: 1-293
5. Casula, M., & Pazos-Vidal, S. (2021). Assessing the Multi-level Government Response to the COVID-19 Crisis: Italy and Spain Compared. *International Journal of Public Administration*, *44*(11-12), 994-1005.
6. Capano, G., & Lippi, A. (2021). Decentralization, policy capacities, and varieties of first health response to the COVID-19 outbreak: evidence from three regions in Italy. *Journal of European Public Policy*, *28*(8), 1197-1218.
7. Cheema, G.S. and Rondinelli, D.A. (2007). From government decentralization to decentralized governance. D.A. Rondinelli and G.S.Cheema (Ed.). cahpter in decentralizing governance: emerging concepts and practices, (p.1-20), Washington: *Brookings Institution Press*.
8. Choutagunta, A., Manish, G. P., & Rajagopalan, S. (2021). Battling COVID-19 with dysfunctional federalism: lessons from India. *Southern Economic Journal*, *87*(4), 1267- 1299.
9. Das, A., Roy, S., Parvez, M. S., & Hasan, M. M. U. (2021). Decentralized activity centers in rural Bangladesh: A step towards effective emergency situation management in the post-pandemic cities. *Journal of Urban Management*, *10*(3), 242-254.
10. De Silva, O. L., Lasaulce, S., & Morărescu, I. C. (2021). On the efficiency of decentralized epidemic management and application to Covid-19. *IEEE Control Systems Letters*, *6*, 884-889.
11. Goschin, Z., & Dimian, G. C. (2021). Healthcare under pressure: modelling COVID-19 fatalities with multiscale geographically weighted regressions. *Kybernetes*. Doi:10.1108/K-07-2021-0548
12. Hayran, O. (2017). Sağlık reformlarının başarısı açısından desentralizasyon- resantralizasyon döngüsü ve ülkemizdeki son durum. *J Biotechnol and Stratejic Healt Res*.,1: 1-6.
13. Hussain, S., Hali, S. M., Ahmad, R., Iqbal, S., & Iftikhar, H. (2021). Fiscal decentralization and poverty alleviation: A case study of Pakistan. *Poverty & Public Policy*, *13*(2), 139-154.
14. Lele, G. (2021). Concurrency as crisis decision-making governance: Lessons from Indonesia's response to the COVID-19 pandemic. *Regional & Federal Studies*, 1-26.

15. Mauro, M., & Giancotti, M. (2021). Italian responses to the COVID-19 emergency: Overthrowing 30 years of health reforms?. *Health Policy*, *125*(4), 548-552.
16. Parker, R., & Ferraz, D. (2021). Politics and pandemics. *Global Public Health*, *16*(8-9), 1131-1140.
17. Sudhipongpracha, T., & Poocharoen, O. O. (2021). Community health workers as street-level quasi-bureaucrats in the COVID-19 Pandemic: The cases of Kenya and Thailand. *Journal of Comparative Policy Analysis: Research and Practice*, *23*(2), 234-249.
18. Terlizzi, A. (2018). health system decentralization and recentralization in Italy: Ideas, Discourse, and İnstitutions *Social Policy & Administration***,** 2018;1-15. Doi: 10.1111/spol.12458
19. Van Nguyen, H., Debattista, J., Pham, M. D., Dao, A. T. M., Gilmour, S., Nguyen, H. L., et al., (2021). Vietnam's healthcare system decentralization: How well does it respond to global health crises such as COVID-19 pandemic?. *Asia Pacific Journal of Health Management*, *16*(1), 47-51.
20. Yang, K. (2020). Unprecedented challenges, familiar paradoxes: COVID-19 and governance in a new normal state of risks. *Public Administration Review*, *80*(4), 657-664.