MALATYA TURGUT ÖZAL UNIVERSITY

NATURENGS

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Covid-19 Special Issue

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We have to prepare the world for the age in which our children will live. The world is facing a huge epidemic today. The Covid-19 outbreak affected the whole world, it will not be the first and the last. Scientific studies will play a key role in solving the problems caused by Covid-19 pandemic.

In the last year, the most important agenda of the scientific world has been the solution and planning issues for health problems. Even security issues, political debates and conflicts remained in the background. Health has become the common subject of not only medical professionals but also the scientific world. Everyone is trying to be a solution partner in their field. The epidemic has affected human health as well as in all areas of life.

When the Covid-19 outbreak first started, there were many unknown, unanswered questions. Now we can say this very easily; we need to be prepared for possible outbreaks in the future. In the world, health problems have the potential to change areas very quickly and to continue for a long time by increasing their destructive effect. Due to this developing situation; health has now become a security issue for the world and the future of humanity. We need to prepare a health substructure in which our children can live comfortably.

Now is the time for scientists of the world to show solidarity and act responsibly. Malatya Turgut Özal University is ready for all kinds of international cooperation in this regard. Wherever you are in the world, let's work together for science, for the future of humanity.

One of the tasks of a university is that guide all institutions of the state and the private sector. In the Covid-19 process, the new-old university concept is gone and sustainability in education, research and development has become important. We are a two-year university. During this time, we have achieved many good works. Our Naturengs (MTU Journal of Engineering and Natural Sciences) journal is completing its first year. We published this issue as a special issue for the Covid-19 pandemic.

I wish you healthy days.

Prof. Dr. Aysun Bay KARABULUT

The Rector of Malatya Turgut Özal University

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Contact Information

MTU Journal of Engineering and Natural Sciences – NATURENGS,

Malatya Turgut Özal University, 44210, Battalgazi/Malatya, TURKEY

Phone: +90-422 846 12 55, Fax: +90-422 846 12 25,

e-mail: naturengs@ozal.edu.tr

web: https://dergipark.org.tr/tr/pub/naturengs

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Opinions of Students About Distance Education in the Pandemi Process

Mustafa AKSOĞAN

Akcadağ Vocational School, Malatya Turgut Özal University, Malatya, Turkey.

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ABSTRACT: While the pandemic process experienced all over the world has caused digital transformations in many areas, it has also caused some obligations in the field of education. Distance education has become an imperative this process in Turkey. Private or public institutions that provide education and training at all levels continued their activities through distance education. This study was carried out to determine student views on distance education. The working group consists of 508 students studying in different faculties and vocational schools of Malatya Turgut Ozal University. The data were collected by a "Student Views on Distance Education" questionnaire prepared by the researcher. According to the results of the research, the participants stated that distance education has a negative effect on their socialization. However, it was observed that the participants' views on distance education were undecided, and men viewed distance education more positively than women.

Keywords: Distance learning, Student opinions, Online learning, Pandemic process.

1. INTRODUCTION

Rapidly developing information and communication technologies have become an integral part of life both individually and institutionally. In this way, information and communication technologies affect the education sector as well as all sectors. Diversity has occurred in training methods and the obligation of individuals to be together has been eliminated in order to present the information. Especially, the widespread use of the internet and the increase in the number of technological devices connected to the internet enabled the spread of distance education applications. Thus, individuals were provided with a space-independent and flexible learning environment.

The history of distance education goes back nearly 200 years. In 1840, in England, Isaac Pitman laid the foundations of distance education with letter teaching [1]. Letter Education University was established in the United States of America in 1883 and attracted the attention of the public [2]. With the developing technology in the following years, radio, telephone, television, computer and the internet started to be used as distance education tools. Every technological development has led to groundbreaking changes in distance education. These developments have enabled distance education to reach wider audiences and more people to benefit from this education. Today, thanks to internet-connected technological devices, distance education activities can be carried out simultaneously and in mutual communication. Thus, the problem of not being able to give instant feedback to students, who are seen as one of the biggest disadvantages of distance education, has begun to be overcome. Due to these positive aspects,

Corresponding Author: mustafa.aksogan@ozal.edu.tr
ORCID number of author: 0000-0002-6826-3902

distance education has been used in developed and developing countries with an increasing number of applications in recent years.

Distance education generally refers to the education that takes place when teachers and students are physically separated [3]. Distance learning is a learning activity that removes the time and places limits by using special communication methods and presents the learning activities to the users in a planned and designed way [4]. Distance education largely customizes the education process, taking into account individual differences such as learning speed and style [5]. Teachers and students get rid of compulsory workload and individual differences disappear with distance education applications [6]. The success levels increase as the students move more comfortably in the environment in which they take lessons and are not constantly under supervision [7].

For example, the Covid-19 virus, which was seen in Wuhan province of China at the end of 2019, became a global epidemic in a short time, and education, like many sectors, was negatively affected in this process, and educational institutions had to continue their activities with distance education. By preparing the infrastructure as soon as possible universities in Turkey, students were able to keep their distance education activities. This study was carried out in order to determine the opinions of students who had to carry out their educational activities with distance education during the pandemic process.

Purpose of the Research

The research aims to determine student views on distance education, which is mandatory in higher education institutions during the pandemic process. For this reason, the research has been discussed within the framework of the following sub-problems:

1- What are the general views of the participants on distance education?
2- Is there a significant difference by gender in the general views of the participants on distance education?
3- Is there a significant difference by age in the general views of the participants on distance education?

2. MATERIAL AND METHODS

The general screening model was used in the study. The general screening model involves studies on the entire universe or a sample to be taken from it in order to make a general judgment about the universe in a universe consisting of many elements [8].

2.1. Participant Group

The population of the research consists of students studying at Malatya Turgut Özal University. Non-random - voluntary sampling method was used for sample selection. This sampling is a voluntary method in which the person or individuals voluntarily participate in the research [9]. The survey link prepared online has been delivered to all students. The sample group of the research consists of 508 students who fill the questionnaire completely. The data regarding the demographic characteristics of the participants are shown in Table 1.

Table 1. Data on the Demographic Characteristics of the Participants

GENDER	**N**	**%**	**FACULTY / VOCATIONAL SCHOOL**	**N**	**%**
Female	272	53.5	Akcadag Vocational Scool	46	9.1
Male	236	46.5	Arapgir Vocational Scool	45	8.9
AGE	**N**	**%**	Battalgazi Vocational Scool	51	10.0
17-19	67	13.2	Darende Vocational Scool	79	15.6
20-22	291	57.3	Dogansehir Vocational Scool	58	11.4
23-25	106	20.9	Hekimhan Vocational Scool	62	12.2
26 and over	44	8.7	Kale Vocational Scool	61	12.0
DEVICE	**N**	**%**	Yesilyurt Vocational Scool	48	9.4
Mobile	357	70.3	Faculty of Agriculture	58	11.4
Computer	144	28.3	**TOTAL**	**508**	**100**
Tablet	7	1.4			
TOTAL	**508**	**100**			

As seen in Table 1, the students who participated in the survey consisted of 272 people, women and 236 people. Again, 67 of the participants are between the ages of 17-19, 291 are between the ages of 20-22, 106 are between the ages of 23-25 and 44 are between the ages of 26 and over. Considering the schools in which the participants attend, 79 of them are in Darende Vocational School, 62 of them are in Hekimhan Vocational School, 61 of them are in Kale Vocational School, 58 of them are in Dogansehir Vocational High School and Faculty of Agriculture, 51 of them are in Battalgazi Vocational High School, 48 of them are in Yesilyurt Vocational High School, 46 of them are in Akcadağ Vocational High School. It is seen that there are 45 schools in Arapgir Vocational School. It is seen that 70.3% of the participants use their mobile phones to connect to the internet.

2.2. Data Collection Method

In our study, a questionnaire prepared by the researcher was used to determine the views of students about distance education. During the questionnaire development process, firstly, a literature review was conducted in which student views on distance education were investigated. Later, the items in the questionnaires developed on the subject were reformatted in line with our research questions and an item pool was created. The data obtained were analyzed by the researcher, and 29 attitude statements that were thought to be related to university students' views on distance education were determined. The draft form of the questionnaire consisting of 29 items was submitted for expert opinion to determine the content validity, and some statements were corrected following the recommendations of the experts. In addition, 7 items that were not suitable for the purpose of the study or were difficult to understand were removed from the scale in line with expert opinions.

Due to the interruption of formal education in educational institutions in our country during the pandemic process, it was not possible to reach students face to face. That's why the questionnaire has been published online. The survey consists of three parts. The first part of the survey included demographic information. In the second part of the questionnaire, there are 22 statements to get students' views on distance education. The students were asked to mark to what extent agree (1- minimum agree or disagree, 5- maximum agree) to these statements. In the last part, two open-ended questions are asked to write the positive and negative aspects of distance education. Reliability analysis of the questionnaire used in the study was made and the Cronbach's alpha value was found to be 0.92. Cronbach’s Alpha value must be greater than 0.7 for a reliable survey [10]. Indeed, the value of 0.92 indicates that the survey questions are highly reliable.

2.3. Data Analysis

The data obtained are analyzed with a package program. First of all, in order to examine whether the distribution of the data is normal or not, kurtosis and skewness values were calculated and the results are shown in Table 2.

Table 2. Normality Test Results of Data

Descriptives	**Value**
Mean	3.039
Median	3.091
Variance	0.764
Std. Deviation	0.874
Minimum	1
Maximum	5
Range	4
Skewness	-0.263
Kurtosis	-0.043

As seen in Table 2, kurtosis and skewness values are between -1 and +1 values and close to 0. Based on this result, it can be assumed that the data are distributed normally. Parametric tests were applied as the data showed normal distribution. T-test was conducted to determine whether the data on views on distance education differ by gender, and ANOVA test was conducted to determine whether there was a difference according to age.

3. RESULTS AND DISCUSSION

In this section, the answers given by students about distance education and the results of the analysis will be given.

Table 3. Frequency and Percentage Distributions of Students' Answers Regarding Their Views on Education that Prolong the Pandemic Process

	Mean	**SD**	**1**		**2**		**3**		**4**		**5**	
			N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
I was able to access the course contents quickly with distance education.	2.98	1.351	93	18.3	92	18.1	153	30.1	73	14.4	97	19.1
I think that one of the advantages of distance education is the possibility of continuous repetition.	3.23	1.462	101	19.9	64	12.6	90	17.7	123	24.2	130	25.6
Thanks to distance education, I was able to access the necessary information faster.	2.69	1.387	135	26.6	110	21.7	117	23.0	70	13.8	76	15.0
I think that I can learn faster thanks to distance education.	2.11	1.309	235	46.3	106	20.9	89	17.5	30	5.9	48	9.4
Thanks to distance education, I was able to save time and allocate time for other interests.	3.19	1.485	107	21.1	63	12.4	97	19.1	106	20.9	135	26.6

I think that distance education can be used in every lesson taught with formal education.	2.31	1.463	226	44.5	88	17.3	76	15.0	46	9.1	72	14.2
I regularly followed the live lessons I took with distance education.	3.18	1.478	106	20.9	68	13.4	96	18.9	107	21.1	131	25.8
I followed the record of the live lessons I could not attend.	3.22	1.476	100	19.7	75	14.8	81	15.9	118	23.2	134	26.4
I sometimes had technical problems with my distance education site.	3.30	1.535	110	21.7	47	9.3	97	19.1	87	17.1	167	32.9
I think distance education and face to face education are equivalent.	2.02	1.380	281	55.3	83	16.3	52	10.2	39	7.7	53	10.4
I see distance education as face-to-face education supportive.	2.54	1.491	189	37.2	82	16.1	100	19.7	50	9.8	87	17.1
The duration of distance education courses was sufficient.	3.53	1.337	65	12.8	47	9.3	99	19.5	149	29.3	148	29.1
The course materials used for distance education courses were sufficient.	3.34	1.366	79	15.6	54	10.6	114	22.4	136	26.8	125	24.6
The lecturers who gave distance education lessons were prepared for the lesson.	3.98	1.333	46	9.1	36	7.1	72	14.2	83	16.3	271	53.3
Thanks to distance education, it was useful for me to watch the lessons again.	3.21	1.403	95	18.7	57	11.2	114	22.4	128	25.2	114	22.4
I had difficulty understanding the faculty members in distance education classes.	2.58	1.341	135	26.6	135	26.6	109	21.5	64	12.6	65	12.8
Announcements and explanations were made about the start time of the courses to be given by distance education.	3.65	1.345	59	11.6	45	8.9	89	17.5	136	26.8	179	35.2
In distance education classes, I could ask questions that I could not understand.	3.75	1.342	55	10.8	40	7.9	85	16.7	124	24.4	204	40.2
Distance education negatively affected my socialization.	3.11	1.635	134	26.4	73	14.4	83	16.3	40	7.9	178	35.0
I prefer distance education to face to face education.	1.94	1.464	329	64.8	43	8.5	40	7.9	29	5.7	67	13.2
Distance education has benefited my education during the epidemic period.	3.15	1.458	106	20.9	68	13.4	96	18.9	118	23.2	120	23.6

Except for compulsory situations, I prefer face to face education instead of distance education.	3.83	1.605	96	18.9	28	5.5	43	8.5	39	7.7	302	59.4

In order to determine whether there is a significant difference in the opinions of students about distance education by gender, t-test was performed and the data regarding the findings are shown in Table 4.

Table 4. The Results of the t-test Conducted on the Opinions of Distance Education According to the Gender Variable

	Gender	**N**	**$\bar{x}$**	**SD**	**t**	**df**	**p**
Students' views on distance education	Female	272	2.96	0.866	-2.074	506	**0.039***
	Male	236	3.12	0.876			

* $p < 0.05$

When Table 4 is examined, it is seen that the arithmetic mean scores of the answers given by the male participants to the questionnaire items are higher than the female participants (Male $\bar{x}$ = 3.12, Female $\bar{x}$ = 2.96). As a result of the t-test, the difference was found to be significant. According to this result, it can be said that the opinions of male participants regarding distance education are more positive than female participants. The reason for this result may be that men generally have a more positive view of technology than cats. Many studies have concluded that men's attitudes towards technology are more positive than women [11-13].
ANOVA test was conducted in order to determine whether there is a significant difference in the opinions of students regarding distance education according to the age variable and the information about the findings is shown in Table 5.

Table 5. ANOVA Results According to the Age Variable of Student Views on Distance Education

	Age			**N**	**$\bar{x}$**	**SD**	
Students' views on distance education	17-19			44	2.82	0.976	
	20-22			67	2.98	0.477	
	23-25			291	3.03	0.824	
	26 and over			106	3.19	0.738	
	Total			**412**	**3.54**	**0.883**	
	Source of Variance	**SS**	**df**	**MS**	**F**	**p**	
	Between Groups	4.934	3	1.645	2.169	0.091	
	Within Groups	382.198	504	0.758			
	Toplam	387.132	507				

According to Table 5, as the ages of the participants' increase, their views on distance education change positively. The average scores ($\bar{x}$ = 2.82) of the participants between the ages of 17-19 are lower than the other age groups (20-22 $\bar{x}$ = 2.98, 23-25 $\bar{x}$ = 3.03, 26 and over $\bar{x}$ = 3.19). As a result of the ANOVA test conducted to determine whether the difference is significant, it was determined that the difference was not significant. The reason for this may be that there is not much difference between age groups and almost all of the participants are digital natives that grow with technology [14].

4. CONCLUSIONS

Today, the widespread use of internet technology has created diversity in distance education and has allowed courses to be held simultaneously. Especially, the fact that portable devices have internet technology and the use of the internet from these devices has given students more freedom in following the distance education lessons. Our research results have shown that 70.3% of students prefer mobile phones in internet connection, similar to the results of recent research [15-17].

Distance education is a type of education that is not done face to face using technological devices and individuals cannot communicate directly, and this situation negatively affects the social skills of individuals. Looking at the results of the research, it is seen that the participants have negative effects on the socialization of distance education. Face-to-face interaction can be used and learned as the main reasons that prevent socialization. A review of the research results reveals that the participants have negative effects on the socialization of distance education. It can be counted as the main reason preventing socialization, where face-to-face interaction can be used and learned [18-21].

Another result of our research is that students' views on distance education are unstable, supporting other research in the field [18, 22]. In some studies, it was concluded that students expressed negative views against distance education [19, 23], while another study determined that students had a positive opinion [24]. The study shows that men view distance education more positively than women [24]. Many previous studies show that there is no difference in the opinions of students regarding distance education by gender variable [18, 22, 25, 26]. The reason why students do not have a positive view may be technical problems in distance education. Indeed, the participants stated that they had some technical problems in distance education [18-20]. In addition to these results, students find face-to-face education more effective than distance education and prefer face-to-face education over distance education [26-28].

The constraints experienced during the pandemic made it impossible for educational activities to be carried out formally. In this process, the importance of distance education is once again understood. Distance education systems need to be developed in order to provide more effective training activities. For this purpose, solving technical problems experienced during participation in live lessons can increase the quality of education as well as student motivation. By performing training activities with blended learning, the negative effects of socialization can be eliminated and the flexibility provided by distance education can be maintained.

This study was carried out to obtain students' views on distance education. Researchers are recommended to conduct studies to determine teachers 'views on distance education or the effects of this process on students' academic achievement.

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Effect of Alkaloids on SARS-CoV-2

Duygu YILMAZ AYDIN [1*], Metin GÜRÜ[2], Selahattin GÜRÜ[3]

[1] Department of Bioengineering, Faculty of Engineering and Natural Sciences, Malatya Turgut Özal University, Malatya, Turkey.
[2] Department of Chemical Engineering, Faculty of Engineering, Gazi University, Ankara, Turkey.
[3]Department of Emergency Medicine, Bilkent City Hospital, Ankara, Turkey

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ABSTRACT: The use of herbs in treatment has started with the history of humanity and a significant number of effective drugs are being developed from herbal sources. Primary and secondary metabolites, which are natural products produced by plants, are the most basic products of the industry directly or indirectly. One of these groups is alkaloids. Alkaloids show antiviral effects in viral diseases. COVID-19, which started in China and spread to many countries, has become an epidemic that threatens all humanity worldwide as a "Coronavirus Pandemic". No reliable and certified drug has yet been developed for this virus. Recent important research shows that plant-based substances can be potential candidates for developing effective and safe drugs against this virus. Referring to such recent studies, this study primarily shows that the antiviral potentials of some alkaloids especially quinine and artemisinin and its derivatives. In addition, the importance of antiviral plant substances in the development of a broad-spectrum drug for SARS-CoV-2 is emphasized.

Keywords: SARS-CoV-2, COVID-19, Alkaloid, Quinine, Artemisinin

1. INTRODUCTION

COVID-19, which started in China and spread to many countries, has become an epidemic that threatens all humanity worldwide as 'Coronavirus Pandemic'. To date, all coronavirus groups that infect humans have posed a serious risk to public health [1]. The SARS-CoV and MERS-CoV outbreaks that have occurred at certain time intervals over the last two decades have created a global threat to public health and the threat has gradually increased with the recently defined 2019-nCoV. SARS-CoV-2 has a faster propagation profile than previous CoVs that have been defined.

Viral infections caused by coronaviruses are often associated with upper respiratory infections, symptoms may differ depending on the immune responses of patients. Since the virus-host relationship plays a key role in viral infections, it is extremely important to activate the immune response and combat viral infection by increasing the body's combat mechanism, thereby controlling CoV infections. However, immune responses unconformably can cause immunopathology and impaired pulmonary gas exchange in individuals [2-4]. Immune deficiency or misdirection of the immune response may increase viral replication and cause tissue damage; overactive immune responses can also lead to immunopathological conditions.

*Corresponding Author: duygu.aydin@ozal.edu.tr
ORCID number of authors: [1] 0000-0003-0557-5279, [2] 0000-0002-7335-7583, [3]0000-0002-0299-1691

SARS-CoV-2 spreads in the respiratory epithelium by binding to angiotensin converting enzyme 2 [5, 6]. The transmission of the disease is through direct contact from person to person. The transmission route of SARS-CoV-2 is similar to influenza. The disease is transmitted mainly through droplets. When a person with an infection coughs, sneezes or talks, the virus in their respiratory secretions can infect another person if they come into direct contact with the mucosa. In addition, it is transmitted to the droplets that are brought out by coughing and sneezing by sick individuals, after contact with the hands of other people, taking their hands to the mouth, nose or eye mucosa. The incubation period ranges from one to fourteen days [5]. COVID-19 presentation can range from a mild disease to pneumonia and even septic shock [7]. COVID-19 can affect many organs such as the brain, kidney, liver, especially the lungs. Generally, fever, cough, fatigue, sputum production, shortness of breath, sore throat, headache and sometimes vomiting Diarrhea and lymphopenia are common [6]. Patients have bilateral multilobar ground-glass opacities with peripheral or posterior distribution [8, 9]. Radiological findings progress with the highest severity around the 10th day of disease [9]. There is no specific drug or vaccine with proven safety and efficacy in the treatment or prevention of the disease yet. Immune response in a viral infection; It aims to destroy both the virus and the host cells that carry or reproduce the virus. With the researches on cell culture and animal models, many antiviral drug candidates have been identified that have an effect on preventing the entry of viruses into the host organ or decreasing the rate of reproduction in the host organ. Medicinal plants contain many different active phytochemical compounds such as glycosides, saponins, flavonoids, proanthocyanidins, terpenoids, phenylpropanoids, tannins, resins, lignans, sulfides, polyphenolics, coumarins, furyl compounds, alkaloids and essential oils. It has been demonstrated in previous studies that some of them show strong antiviral activity against various viruses and some of them are phyto-antiviral agents that have the potential to be used in different types of coronavirus-induced diseases.

2. MATERIAL AND METHODS

2.1. Alkaloids

Nature has been the source of medical agents for thousands of years and people recognized the therapeutic power of plants and used it to live healthily. In addition, primary and secondary metabolites, which are natural products produced by plants, are the most basic products of the industry directly and indirectly. One of these groups is alkaloids. Alkaloids are nitrogen-containing compounds in a heterocyclic ring common to about 20% of all vascular plants. Alkaloids are formed as metabolic by-products. Alkaloids with complex molecular structures usually contain at least one nitrogen atom in the amine structure. Hydrocarbon groups consisting of carbon and hydrogen are attached to the nitrogen atom, and the amine structure is often found in a ring structure on the nitrogen or hydrocarbon groups. Plants containing alkaloids contain more than 0.01% alkaloids [10].

Plants usually have more than one alkaloid in a similar structure. Oxygen-containing alkaloids have a hard crystalline structure, and those that react with acid are in the form of salt. Their salt-forming abilities and their complexity with metal ions facilitate their separation and determination prior to chromatography. Alkaloids are subclassed according to the chemical type of their nitrogen-containing rings. There are about 12,000 alkaloids known for their biological activities. However, with their characteristic bitter taste and concomitant toxicity, they repel insects and herbivores. Alkaloids are used as pharmacological, stimulant, narcotic and poison [11, 12]. Biochemical studies of alkaloids in plants began in 1806 with the isolation of morphine. Due to the stereochemical complexity of the morphine molecule, its structure could

not be explained until 1952. Alkaloid biosynthesis in plants over half a century has been attempted to be understood by chemical, biochemical and molecular research [13].

Alkaloids often cause poisoning in animals and humans. An alkaloid contained in Cotalaria and Heliotropium (balbulus) species causes liver cirrhosis when taken continuously. The alkaloid produced by a type of fungus known as rye mackerel found in grain seeds causes ergotism disease. The physiological effects of alkaloids are important in medicine. For example, morphine obtained from poppy is used as a painkiller in medicine and noscapine is used as a cough suppressant. Intake amounts of alkaloids are also important. Alkaloids taken in small amounts may benefit, while alkaloids taken in excess can be lethal [10]. The poisonous alkaloid which is obtained from the hemlock (*conium maculatum*) causes death by paralyzing the respiratory tract. Misuse of methadone used in medicine also causes addiction. Therefore, the use of the drug outside the doctor's control poses serious dangers to people.

Alkaloids are used as antiviral agents against viruses. Studies have shown that berberine could inhibit viral replication of the Herpes Simplex virus and Chikungunya virus [14, 15]. The isoquinoline alkaloids tetrandrine, fangchinoline and cepharanthine are potential for treatment HCoV- OC43 infection [16]. HCoV-OC43 is similar to SARS-CoV. Palmatine, an isoquinoline alkaloid, suppresses West Nile and Zika virus replication [17, 18]. Chelidonine shows antiviral effect against Herpes Simplex virus, Human Immunodeficiency virus and the influenza virus [19]. Sanguinarine is used for antimicrobial activities and it shows antiviral activity against Human Immunodeficiency virus protease and Herpes Simplex virus [20]. Emetine is a potential antiviral agent against SARS-CoV-2 [21].

2.2. Quinine and it’s Derivatives

Since ancient times, the *Cinchona officinalis* has traditionally been used as an anti-malaria medication to treat various malaria-related health problems. About 40 species of this plant grow in South America. During culture, the lower branches of the plant are pruned so that the crown of the tree grows and the trunk is in the shade. The temperature should not be prevented during the drying of the shells. Because a compound called quinotoxin is formed at high temperature, which is toxic. The shells are yellow when first collected, and become red when dry. This color comes from the grain in the drog. During tanning, the tannins are oxidized and turned into flobafen. The most important feature of the *Cinchona officinalis* is due to the presence of various types of alkaloids. 60% of these alkaloids constitute quinine, quinidine, kinkonin and kinkonidine, and 2/3 of this rate is "quinine" alkaloid. The shell contains minerals such as acids, essential oils and triterpine (quinovic acid), organic (kinic acids), phenolic, flavonoids (psoantycyanidin), phytosterols [22].

Quinine is used as an antimalarial agent because of their effectiveness against P. vivax, P. malariae and P. ovale parasites, especially Plasmodium falciparum. Also quinine demonstrates antiviral effect against Herpes Simplex virus, Dengue and influenza virus [23]. Although other alkaloids found in the composition of the plant also have antimalarial effects, their activities are quite low compared to quinine, so they are not preferred for malaria treatment. Of these alkaloids, quinidine, the stereoisomer of quinine, is used in the treatment of arrhythmia. Researchs show that the combination effects of more than twenty alkaloids, rather than one of them, are a key source of their medicinal property. Studies have been conducted to demonstrate that potassium alkaloids have the potential for anti-obesity, anti-cancer, anti-oxidant, anti-microbial, anti-parasitic and anti-inflammatory activity [22].

Quinine is absorbed by the body both parenterally and orally and reaches peak concentrations within 1-3 hours [24]. It is dispersed throughout the body fluids and bound to a high proportion of protein, alpha-1 acid glycoprotein. Concentration and alpha-1 acid glycoprotein levels determine its binding capacity in plasma. Quinine easily crosses the placental barrier and it is also found in cerebral spinal fluid. The excretion of the body is rapid, 80% of the drug administered is eliminated by hepatic biotransformation, and the remaining 20% is excreted unchanged by the kidney [25, 26]. The half-life of quinine varies between 11-18 hours [27]. Many of the pharmacokinetic properties of quinine vary according to the patient's age. The distribution volume is lower in younger children than in adults, and the elimination rate is slower in older than younger adults. In acute malaria patients, the distribution volume decreases and systemic clearance is slower than healthy individuals; the severity of the disease is proportional to the changes occurring in the body. In malaria patients, the binding of quinine to proteins and the level of quinine in their plasma increase [28]. Quinine is still used in the treatment of chlorine resistant malaria cases. In long-term and high doses, it shows side effects such as sensitization in the heart, hematuria and hearing difficulties. A well-controlled use can help reduce its toxicity. The commercial drug is sold as quinine sulfate. The powdered drug in quinine sulfate is wetted with barium hydroxide or calcium hydroxide and consumed with benzene. The benzene extract is rinsed with 10% sulfuric acid and the alkaloids are taken into the acidic water. Acidic water is neutralized with the help of sodium carbonate. If the neutral solution is left in the refrigerator or in a cold place, quinine sulfate will settle. The collapsed quinine sulfate is filtered, dissolved in hot water, and decolorized with activated charcoal.

The quinolone rings of quinine, chloroquine and hydroxychloroquine molecules are common. Chloroquine and hydroxychloroquine are alkylated 4-4 aminoquinoline compounds. In the process of COVID-19 pandemic, which influenced the world, quinine and its derivatives are frequently mentioned. The effects of chloroquine and hydroxychloroquine substances, synthetic analogs developed based on the chemical structure of quinine, on COVID-19 have been investigated in many studies in the literature. Chloroquine interferes with the glycosylation of SARS-CoV cellular receptors. It also increases the endosomal pH required for virus/cell fusion so it has broad spectrum antiviral activity [29, 30]. Another synthetic analog of quinine, hydroxychloroquine suppresses terminal phosphorylation of Angiotensin-converting enzyme 2 (ACE2) such as chloroquine. Figure 1 shows the key points in the application of natural products against SARS-CoV2. It also increases the pH in endosomes [31]. A significant number of clinical studies have been conducted examining the therapeutic efficacy of chloroquine phosphate and hydroxychloroquine in patients with SARS-CoV-2 infection [32-34]. Chloroquine, a broad spectrum antiviral in vitro experiments, has been reported to show strong antiviral activity against SARS-CoV-2 [35, 36]. Data from 100 patients participating in multiple clinical studies conducted with chloroquine treatment in China until February have been published and chloroquine phosphate has been reported to be superior in suppressing pneumonia exacerbation, improvement in lung imaging findings, and shortening the duration of the disease [37]. But, the results of a study reveal that hydroxychloroquine is potent than chloroquine to inhibit SARS-CoV-2 in vitro [38].

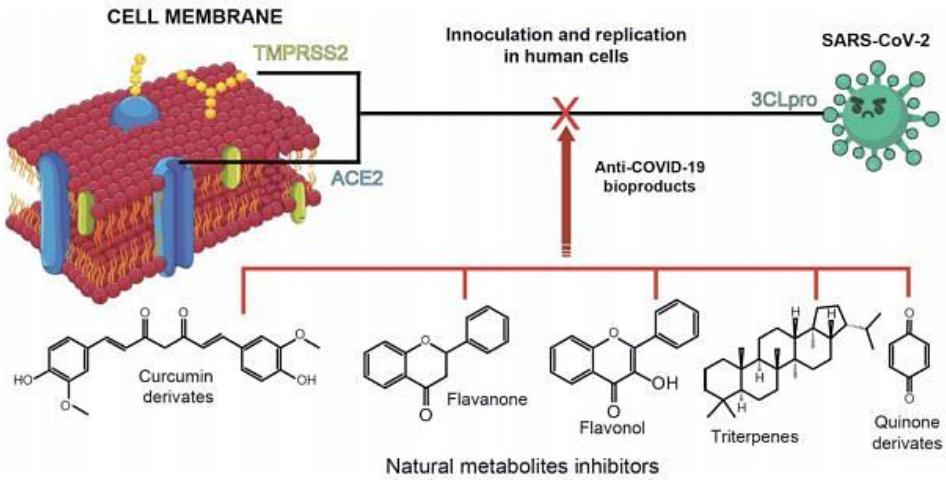

Fig. 1. Schematic representation of key points on the application of natural products against SARS-CoV2 [39]

A study has shown that chloroquine, hydroxychloroquine, and quinine can interact with amino acid residues in the peptidase domain of the ACE2 receptor. According to the results, quinine showed the strongest affinity to the ACE2 receptor (-4.89 kcal/mol) followed by hydroxychloroquine (-3.87 kcal/mol) and chloroquine (-3.17 kcal/mol), respectively. The results showed that quinine, chloroquine and hydroxychloroquine can prevent infection of the SARS-CoV-2 virus by interacting with the Lys353 residue in the peptidase region of the ACE2 receptor [40]. In another study showed that quinine has a higher antiviral effect with a better toxicity profile against SARS-CoV-2 in vitro and a better plasma presence compared to H-CQN and CQN drugs [41]. In patients infected with SARS-CoV-2, high cytokine concentrations have been determined and show that the severity of the disease is associated with cytokine storm [42]. Therefore, besides the direct antiviral activity of hydroxychloroquine, it is also possible to act by suppressing the synthesis of cytokines and especially pro-inflammatory factors with its anti-inflammatory effect. In vitro data show that quinine, chloroquine and hydroxychloroquine inhibit SARS-CoV-2 replication. Since hydroxychloroquine and chloroquine are quinine derivatives and similar chemical structures, it is thought that they can be used as a therapeutic agent in the treatment or prevention of COVID-19.

2.3. Artemisinin and it's Derivatives

The source of Artemisinin is the *Artemisia* species, which contains between 200-400 species, grows in dry or semi-arid climates. Artemisinin is a sesquiterpene with a peroxide group with chemical formulas $C_{15}H_{22}O_5$ and a molecular weight of 282.332 g/mol. The unique endoperoxide bridge supply an active site for the drug mechanism of action [43]. Among the *Artemisia* species, the highest amount of artemisinin is found in *Artemisia annua* [44]. Artemisinin, a sesquiterpene alkaloid, has been used as an anti-malaria drug since 1975. Chinese scientist Dr. Tu Youyou isolated one of the active molecules, antimalarial active substance artemisinin and its derivatives, in 1972 and caused these studies to receive the 2015 Nobel Prize. Artemisinin and its derivatives, artesunate and artemether are used as antimicrobial drugs against Plasmodium falciparum. Antimalarial drug combination therapy proposed by the World Health Organization (WHO) in 2001 includes Artemisinin-based Combination Therapy (ACT). The basis of this treatment is combining artemisinin and its derivatives with existing antimalarial drugs. Combination therapy of Artemisinin is currently one of the most effective ways to treat and reduce the transmission rate of malaria. In the period 2010-2018, an estimated

3 billion artemisinin-based combination therapy was provided by countries. It is reported that approximately 63% of these supplies are made for the public sector [45].

In addition to its antimalarial feature, artemisinin is effective in various diseases in the literature. Artemisinin has been demonstrated to cause cancer cell death very potently and selectively by iron bonding [46]. Due to the high selectivity of cancer cells, positive results have been obtained in cancer studies due to their anti-cancer potential of artemisinin and its derivatives [47]. Kim et al. demonstrated that artemisinin is antimicrobial on various bacteria and also has anti-inflammatory, antioxidant properties [48]. Artemisia annua has antiviral activity against human cytomegalovirus, herpes simplex virus type 1, Epstein Barr virus, hepatitis C virus, dengue fever virus and some HIV-1 strains. It was also successfully tested in patients receiving traditional Chinese medicine as a supplement to traditional treatment during the SARS-CoV outbreak in 2003 [49].

In order to reduce the side effects of chloroquine and hydroxychloroquine, artemisinin can be used as an adjunct cure. Artemisinins can be prescribed with higher doses because it has less side effect. There is a cytokine storm in patients infected with COVID-19 responsible for a major inflammatory response and their very severe progressive clinical state. Artemisinin can be also used to inhibit the cytokine storm. During the COVID-19 infection, chymotrypsin-like protease (CLPro) enzyme has been producing, Artemisia annua pharmacological mechanism inhibit the activity of this enzyme [43]. The effect or interactions of artemisinins on the ACE2 receptor has not been studied yet which is known as a critical binding cellular receptor of SARS-CoV-2 [50]. Artemia can be an alternative treatment for acute respiratory distress syndrome (ARDS) because of having its ability to reduce TNF-a and IL-6 [51].

Artemisia annua can inhibit the androgen pathway and decrease the expression of ACE2 and TMPRSS2 proteins which can slow the entry of viruses into human host cells [49]. Artemisia annua also can slow the transmission of infection in the human body so it can reduce the negative effect of COVID-19 symptoms. Because of these advantages of artemisinin, it can be considered as a potential drug candidate and acceptable treatment for COVID-19 pandemic.

3. CONCLUSIONS

Infectious diseases caused by viruses are among the leading causes of death in the world and can create a wide range of symptoms that affect human health globally. Alkaloids are effective in enhancing the immune response of the host against viral pathogens by enhancing the immune system, therefore it is considered a protective and complementary treatment opportunity. In order to develop effective treatment strategies; the structural features, the biology of the virus and the mechanisms of infection in the host cell must be known exactly. It is emphasized that as the knowledge we have about the COVID-19 genome and infection mechanism increases, potential therapeutics and drugs from herbal origin may occur. Due to the fact that different alkaloids can be tested on different types of diseases, it is thought that a new drug with more potency and significantly reduced toxicity can be designed for COVID-19 and it can be produced as a pioneering drug in the treatment of more diseases with good bioactive potential with an appropriate modification in alkaloids. In particular, quinine and artemisia-based drugs could make a potent drug candidate that can be used as a treatment for a wide range of respiratory diseases and could be an option for emergency treatment for the COVID-19 pandemic.

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Assessment of The Experience and Mood of COVID-19 Pandemic Care Nurses

Aziz AKSOY[1*], Havva DEMİRTAŞ[2], Derya BAYRAKTAR[3]

[1]Depatment of Bioengineering, Faculty of Engineering and Natural Sciences, Malatya Turgut Ozal University, Malatya, Turkey
[2]Department of emergency and Disaster Management, Bitlis Eren University, Bitlis, Turkey
[3]Department of Pharmacology, Medical Faculty, Mersin University, Mersin, Turkey

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ABSTRACT: Epidemics and pandemics have affected many societies at various times throughout human history. In the 21st century, the world is still struggling with epidemics and pandemics. Nurses play important roles in healthcare practices during infectious disease pandemics and other epidemic diseases. Therefore, they are at risk of direct patient care and exposure to contagious diseases. In this study, during the COVID-19 outbreak, pandemic care nurses; It is aimed to examine their experiences and moods with a questionnaire. This work; was conducted with the participation of 50 (13 Male + 37 Female) volunteer nurses who directly care for COVID-19 patients or suspects. Online survey questions were asked to determine the experiences and moods of the nurses during the interventions. The data obtained were analyzed with IBM SPSS 20® program. All of the participants were trained in care nursing. Participants were forced, 60% (30) of them in the habit of using personal protective, disinfectant and clothing. 78% (39) experienced insomnia, stress and anxiety, but only 2% (1) reported using sleeping pills, 36% (17) practiced meditation, muscle relaxation and breathing exercises. During this difficult period, 62% (31) of the nurses were found to be exposed to verbal/physical aggression by their patients/relatives. A significant relationship has been found between exposure to verbal or physical violence by patients / patient relatives and the Marital status-professional working year (P <0.05). As a result, the COVID-19 Pandemic process imposes both an intense work pace and a heavy responsibility for nurses. Changes in work habits brought along both psychological and physical stress and looking at the data, the fact that the COVID-19 Pandemic process took longer than expected created psychological burnout in nurses. Despite all this, nurses overcome these difficulties with their experiences.

Keywords: COVID-19, Epidemics, Pandemic, Care Nursing, Nurse Experience

1. INTRODUCTION

Coronaviruses (CoV) are a large family of viruses that cause diseases ranging from the common cold to more serious diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV) [1]. Emerging in Wuhan, China's Hubei province, the disease quickly spread to the whole country and then to the whole world [2-4]. The first case in our country was seen on March 10, 2020. The first death from COVID-19 disease occurred on March 17, 2020 [5, 6]. COVID-19 disease is usually transmitted by respiratory droplets or close contact. Therefore, hand hygiene and masks are important in preventing contamination. Healthcare providers are responsible not only for patient care but

*Corresponding Author: aksoy_aziz@hotmail.com
ORCID number of authors: [1]0000-0002-9683-6691, [2]0000-0003-0623-3131, [3]0000-0002-1318-8917

also for safe patient care and epidemic control to protect health [7, 8]. Doctors and nurses constitute the most important professional group of healthcare providers [9]. Nurses are at the forefront of healthcare delivery, both in the fight against epidemics and in the care process with other diseases. They look at patients directly and are in close physical contact. Therefore, they are directly exposed to such viruses and their risk of contracting the disease is high [10]. Studies have shown that many healthcare professionals are aware of the risks of their profession in the event of a pandemic [11]. Nurses perceived the personal risks of their profession as very high. So some of them even had to quit their jobs [12]. Pandemics are the simultaneous global transmission of emerging and recurring infectious disease outbreaks that affect large numbers of people. It often causes significant deaths and social and economic deterioration [13].

According to the World Health Organization, there are 49.2 million COVID-19 cases worldwide as of November 6, 2020. Data from 216 countries reported a total of more than 1.24 million deaths. More than 35.1 million people recovered from the epidemic [5]. The total number of cases in Turkey 386.8 thousand, the number of those killed has exceeded 10.6 thousand. Those who got sick and recovered were seen around 332.3 thousand [6]. The International Council of Nurses (ICN)'s analysis shows that on average 7% of all Covid-19 cases worldwide are among healthcare workers (HCWs), which means that nurses and other staff are at great personal risk, and so are the patients they care for [14]. The data of the Ministry of Health showed that this rate in our country is 6.5% [7].

The aim of this study is to ensure that pandemic care nurses during the COVID-19 pandemic outbreak; to observe their experiences and moods with a questionnaire.

2. MATERIAL AND METHODS

This survey, planned as cross-sectional research, covers the universe of the study; Nurses working in the COVID-19 Pandemic hospital. Nurses participating voluntarily were included in the study, a total of 50 (13 M + 37 F) nurses working in Bitlis, Van and Elazığ Pandemic hospitals. Participants were composed of nurses over the age of 18. Participants were included in the study as they were only working as nursing nurses in the pandemic hospital. The purpose and scope of the study were explained to 50 volunteer participants. A questionnaire form consisting of questions about age, gender, weekly working hours, professional working years, pandemic care training, and their professional experiences and mood was applied online. The survey was created as a result of the literature and the observations of a nurse who cared for patients in Bitlis pandemic hospital. For the volunteer participants, a total of 26 questions were asked online, 5 questioning demographic data and 21 questioning their professional experiences, experiences and moods. The questions asked to the participants were prepared using a 7-question Likert scale [15]. The data obtained were evaluated using IBM SPSS 17® program software, frequency and Pearson chi-square ($\chi 2$) tests, $p < 0.05$ level was considered statistically significant.

3. RESULTS AND DISCUSSION

The nurses participating in the study were seen as 26% (13) male and 74% (37) female. The mean age range of the participants was found to be between 25-40 with 78% (39). Marital status, work experience and weekly working hours are given in Table 1. It was determined that %48(24) of the nurses worked between 48-72 hours a week (Table 1).

Table 1. Demographic data of the participants

Parameters		**n**	**%**
Gender	Male	13	26
	Female	37	74
	Total	50	100
Age	18-24	6	12
	25-40	39	78
	>40	5	10
	Total	50	100
Marital Status	Single	26	52
	Married	24	48
	Total	50	100

Parameters		**n**	**%**
Work Experience (Year)	<1	8	16
	1-5	23	46
	6-15	14	28
	>15	5	10
	Total	50	100
Weekly Working Time (Hours)	<10	1	2
	10-24	8	16
	> 72	9	18
	25 - 48	8	16
	48 - 72	24	48
	Total	50	100

96% (48) of the participants were working in a public institution. It was observed that 76% (38) of the nurses received training on COVID-19 pandemic care. They also provided care to patients diagnosed or identified as suspected. 40% (20) of the participants stated that they had difficulty in using personal protectors, disinfectants and clothes. Fever, cough and shortness of breath, etc. Any of the symptoms such as were seen in 60% (30). Despite this, 46% (23) continued to work and 56% (28) stated that they were tested regularly for COVID-19 at certain time intervals. Of the participants, 78% (39) showed insomnia, stress and anxiety symptoms, 2% (1) used sleeping pills, 36% (17) did meditation, muscle relaxation and breathing exercises, 62% (31) ' stated that he was exposed to verbal/physical aggression by his patients/relatives. Despite all these, 94% (47) stated that they did not receive psychological and counseling support. Those who received Covid-19 pandemic care training and those who applied methods such as meditation or breathing practices to sleep more comfortably and those who had regular tests, those who worked in an isolated pandemic unit were compared, and a significant relationship was observed between them (P <0.05)(Table 2).

Table 2. Pandemic care nurse and professional moods

Questions		**n**	**%**	***P***	***P***
Do you also work at a medical institution that cares for COVID-19 patients?	Yes	48	96	0.823[a] 0.380[b]	0.928[c] 0.979[d]
	No	2	4		
	Total	**50**	**100**		
Is there a special isolated area in the institution where I work for patients with suspected COVID-19?	Yes	41	82	0.248[a] **0.014[b]**	0.530[c] 0.071[d]
	No	9	18		
	Total	**50**	**100**		
Did you provide direct care to a patient admitted to the COVID-19 service?	Yes	38	76	0.681[a] 0.100[b]	0.392[c] 0.096[d]
	No	12	24		
	Total	**50**	**100**		
	Yes	38	76		0.156[c]

Have you been trained by your unit on how to protect against COVID-19 infection?	No	12	24	-------	0.310[d]
	Total	**50**	**100**		
Have you had problems accessing personal protective equipment while caring for or treating a COVID-19 patient?	Yes	30	60	0.059[a] 0.224[b]	0.599[c] 0.124[d]
	No	20	40		
	Total	**50**	**100**		
Did you experience at least one of the symptoms during the COVID-19 outbreak, such as fever, cough, shortness of breath?	Yes	30	60	0.082[a] 0.417[b]	0.065[c] **0.036[d]**
	No	20	40		
	Total	**50**	**100**		
Did you have to work during the COVID-19 outbreak, even though you had symptoms such as fever, cough, shortness of breath?	Yes	23	46	0.105[a] 0.730[b]	0.054[c] **0.013[d]**
	No	27	54		
	Total	**50**	**100**		
Have screening tests for the COVID-19 outbreak been conducted at the institution where you work?	Yes	28	56	0.194[a] **0.013[b]**	0.406[c] **0.013[d]**
	No	22	44		
	Total	**50**	**100**		
Have you experienced split sleep or insomnia problems due to increased stress and anxiety during the COVID-19 process?	Yes	39	78	0.883[a] 0.190[b]	0.503[c] 0.792[d]
	No	11	22		
	Total	**50**	**100**		
Did you take sleeping pills because of your sleep problems?	Yes	1	2	0.453[a] 0.072[b]	0.549[c] 0.575[d]
	No	49	98		
	Total	**50**	**100**		
Have you used methods such as meditation or breathing practices to sleep more comfortably?	Yes	17	34	0.418[a] **0.041[b]**	0.775[c] 0.375[d]
	No	33	66		
	Total	**50**	**100**		
Have you been subjected to verbal or physical violence by patients and/or relatives of patients due to the COVID-19 outbreak?	Yes	31	62	**0.020[a]** 0.326[b]	0.171[c] **0.003[d]**
	No	19	38		
	Total	**50**	**100**		
Have you received counseling or psychological support because of the COVID-19 outbreak?	Yes	3	6	0.290[a] 0.315[b]	0.290[c] 0.203[d]
	No	47	94		
	Total	**50**	**100**		

[a] professional working year or work experience [b] Getting COVID-19 pandemic care training
[c] Gender status [d] Marital status

The answers expressing the experiences of the nurses against the difficulties they encountered during care were measured using the Likert scale (Likert). 94% (47) of the nurses marked "I agree", "strongly agree" with the sentence "I am worried that I might get COVID-19 infectious disease". The nurses who said "I am worried about carrying the COVID-19 contagious disease to my family and friends" were found to be 96% (48) "agree" and "strongly agree". Those who mark "excessive weekly working hours reduce my work efficiency and endurance" with 90% (45) are "agree", "strongly agree". 72% (36) marked the sentence "I am convinced of the risks and difficulties of my profession during the COVID-19 pandemic process" as "I agree" and "strongly agree". The nurses, who stated that they were overwhelmed and exhausted due to the workload and protective equipment they used during the COVID-19 process, marked "I agree" and "strongly agree" with 92% (46). 64% (32) of the nurses marked "I agree", "I strongly agree" "If it was not mandatory, I would not work in the COVID-19 pandemic hospital during this period, or I would go on leave". 54% (27) of the nurses marked "I agree", "strongly agree" "I am happy and proud to serve in the COVID-19 pandemic process as a healthcare worker". When nurses who said that they were happy to serve and work with patients during the gender

and pandemic period were compared, a significant relationship was found. (P <0.05) (Table 3).

Table 3. Likert scale data on COVID-19 pandemic care nurses and the difficulty of the profession

Experience and Achievements		**n**	**%**	***P***
I'm worried I might get COVID-19.	Neutral	1	2	0.692[a] 0.785[b] 0.307[c] 0.601[d]
	Agree	17	34	
	Disagree	2	4	
	Strongly Agree	30	60	
	Strongly disagree	--	--	
	Total	**50**	**100**	
I am concerned about carrying the infectious disease COVID-19 to my family and friends.	Neutral	--	--	0.706[a] 0.720[b] 0.590[c] 0.594[d]
	Agree	12	24	
	Disagree	2	4	
	Strongly Agree	36	72	
	Strongly disagree	--	--	
	Total	**50**	**100**	
Excess weekly working hours reduce my productivity and endurance.	Neutral	1	2	0.797[a] 0.264[b] 0.319[c] 0.493[d]
	Agree	22	44	
	Disagree	3	6	
	Strongly Agree	23	46	
	Strongly disagree	1	2	
	Total	**50**	**100**	
For the first time in the process of the COVID-19 pandemic, I was convinced of the risks and difficulties of my profession.	Neutral	2	4	0.600[a] 0.261[b] **0.000[c]** 0.575[d]
	Agree	11	22	
	Disagree	11	22	
	Strongly Agree	25	50	
	Strongly disagree	1	2	
	Total	**50**	**100**	
Along with the workload that fell on us during the COVID-19 pandemic, I am overwhelmed/exhausted by the protective suits we use to avoid getting infected.	Neutral	2	4	0.513[a] 0.267[b] 0.054[c] 0.739[d]
	Agree	10	20	
	Disagree	2	4	
	Strongly Agree	36	72	
	Strongly disagree	--	--	
	Total	**50**	**100**	
If it wasn't mandatory, I wouldn't be on leave or working at the COVID-19 pandemic hospital.	Neutral	3	6	0.589[a] 0.155[b] 0.076[c] 0.649[d]
	Agree	13	26	
	Disagree	10	20	
	Strongly Agree	19	38	
	Strongly disagree	5	10	
	Total	**50**	**100**	
As a health worker, I am happy and proud to serve in the process of the COVID-19 pandemic.	Neutral	17	34	0.748[a] **0.001[b]** 0.247[c] 0.812[d]
	Agree	16	32	
	Disagree	6	12	
	Strongly Agree	11	22	
	Strongly disagree	--	--	
	Total	**50**	**100**	

[a] professional working year or work experience [b] Getting COVID-19 pandemic care training
[c] Gender status [d] Marital status

Nurses stated that during the COVID-19 pandemic outbreak, their moods expressed burnout in 54% (27). This situation showed a significant correlation when compared with gender (P <0.05) (Table 4).

Table 4. Participating COVID-19 pandemic care nurses and their moods

Questions		**n**	**%**	***P***
How do you express your feelings and thoughts due to the COVID-19 pandemic outbreak?	Desperate	4	8	0.141[a]
	Worry	8	16	0.240[b]
	Strong	1	2	**0.029[c]**
	Fear	4	8	0.383[d]
	Burnout	27	54	
	Full of hope	2	4	
	No hope	4	8	
	Total	**50**	**100**	

[a] professional working year or work experience [b] Getting COVID-19 pandemic care training
[c] Gender status [d] Marital status

Nurses are leading healthcare professionals working in acute care hospitals, long-term care institutions, nursing homes, schools, community and government health institutions [16-18]. The multiple roles and functions played by nurses are particularly important during this COVID-19 pandemic. These important roles and functions cover five domains [18]. The first area is to provide health education, screening services, and support to individuals at high risk. The second area is Nosocomial Infection Prevention and monitoring. The third area is to apply the necessary preparations and precautions in nursing home and long-term care settings. The fourth area is the protection of patients with immunodeficiency or underlying diseases such as chronic obstructive pulmonary disease, chronic diseases and cancer. These patients are a group of patients facing significantly higher health risks than the general population. The fifth and final area is providing care for COVID-19 patients in acute or critical condition [18-23].

The news of the COVID-19 disease caused anxiety and fear in the community. Depression, insomnia, Obsessive-compulsive disorder (OCD) symptoms, hopelessness, suicide, loneliness, rejection, anxiety and fear have been encountered in both suspected and confirmed COVID-19 cases [24]. Especially in quarantined patients with COVID-19 infection, compared to the general population; the increased prevalence of depression and anxiety, depressive mood, being easily disturbed, and similar situations can be observed [25]. For this reason, healthcare professionals make extraordinary efforts to adapt patients to the treatment and quarantine process in order to overcome the process more smoothly.

Nurses are doing their job meticulously during this epidemic, as always. Although the nurses working in the field seem calm and professional; they are worried about themselves, their patients, colleagues, family and friends [26]. COVID-19 virus can spread rapidly after being transmitted in a unit where nurses work. This causes significant morbidity and mortality. Thus, it may have negative consequences on regional health systems. Unrecognized symptomatic and asymptomatic infections accelerate transmission in these settings. During the COVID-19 outbreak, all care and treatment facilities must quickly take preventive measures to prevent the spread of the epidemic. These protective measures include preventing visitors and non-essential personnel from entering the building, using face masks by all personnel within the facility, and strict screening of medical personnel [27].

Since a nurse is always face to face with those who lost their lives, she knows what death is and witnesses the suffering of those who remain [26]. Nurses may face various psychological problems with the risk of pandemics and epidemics [25]. Nurses are aware of the risk of infection as part of their chosen profession. These problems have been found to increase especially during the COVID-19 epidemic process. Family members, particularly the elderly, are constantly concerned about other patients at risk [27, 28]. Insults and violence by the patients they care for or by their relatives can also create stress for nurses. Studies have shown that nurses treating COVID-19 patients face health problems such as intense stress, anxiety, insomnia and depression [25]. For this reason, situations such as psychological support, appreciation, protection, and trust to the nurse are very important for the nurse. Thus, the nurse will know how to cope with every challenge more easily and will be able to work more efficiently during the pandemic [26].

The COVID-19 pandemic process has additionally brought a socio-economic burden to mental health services worldwide [29]. Health authorities also provide support to both patients and healthcare providers at the national and regional level in dealing with psychological health problems. All nursing nurses feel this in every sense and do their best.

4. CONCLUSIONS

Although it has not been very successful in combating the Covid 19 pandemic epidemic globally, our country has taken very successful steps in combating this pandemic epidemic and it has been revealed that we are more systematic and thus manage the process better. It has also emerged that there are major shortcomings in health education worldwide and more struggles are needed to improve health knowledge. Of course, the intense efforts of healthcare professionals, especially the nurses, are admirable. As a result, COVID-19 is a highly contagious disease and hospital transmission still poses a major threat to healthcare professionals. Nurses have always been involved in the beginning, middle and end of the process, working full time. Changes in nurses' working habits have brought both psychological and physical stress. Despite all this, nurses have overcome these difficulties with their experiences and experiences.

Notes from the Pandemic Care nurse observations;

In this context, patients admitted to the service are informed in detail by nurses and physicians about possible situations related to treatment processes and discharge procedures when they first come to the service. Nurses give general information about the room to be held during the treatment, general restrictions, rules, meal times, treatment hours, invasive procedures and examinations to be performed. Patients try to reduce their anxiety by answering all the questions they are curious about. Patients also start symptoms of compliance the day after their hospitalization. In particular, female patients exhibit more selfless behavior than male patients in this process and adapt more to the treatment process. The attitudes and behaviors of families are important from the moment the patients are treated to the day they are discharged. Families and their patients can indirectly complicate or facilitate the treatment process in helping healthcare professionals do their jobs. Families can usually look after their relatives who are hospitalized during the treatment process. They do not leave their relatives alone by calling them, and they provide their needs and do not insist on seeing them. Patients recovering in the clinic are informed and discharged before their families are discharged. Nurses and responsible persons cover the needs of patients during their stay in the hospital. In this process, all opportunities are offered to patients in our country for free.

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A Study on Foods That Boost The Immune System During The Covid-19 Pandemic

Ayse BİÇER
Department of BioEngineering, Faculty of Engineering and Natural Sciences, Malatya Turgut Özal University, Malatya, Turkey.

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ABSTRACT: The coronavirus (COVID-19) has spread rapidly across the world and has been declared a pandemic by the World Health Organization. One of the ways to combat COVID-19 and other infectious diseases is to boost the immune system. It is, therefore, of utmost importance to eat well and consume foods that boost the immune system. This study investigated the effect of Nigella sativa (black seed) oil, silverberry, date, grape, Asphodelus aestivus, Rheum ribes, and carob on the immune system. There is no cure yet for Covid-19. However, scientists and healthcare professionals recommend that people eat foods that are rich in vitamins and minerals to bolster their immune system to fight COVID-19 because immunodeficiency is the Achilles' heel of the Covid-19 pandemic

Keywords: Immune system, foods, metabolism, Covid-19, Thymoquinone.

1. INTRODUCTION

The coronavirus disease 2019 (COVID-19) was first reported at a local seafood wholesale market in Huanan, China, and since then has caused millions of infections and thousands of deaths worldwide. COVID-19, which causes severe acute respiratory distress syndrome, was declared a pandemic by the World Health Organization (WHO) on March 11, 2020 [1,2].

Clinical trials are currently underway worldwide to develop a vaccine against COVID-19, and infected individuals and those at the highest risk for infection are put in quarantine to help prevent the spread of the virus. The Centers for Disease Control and Prevention (CDC) recommend that all healthcare professionals wear standard protective equipment [3,4].

COVID-19 spreads rapidly through respiratory droplets from person to person, including those with no link to the disease epicenter. The continuing increase in the number of COVID cases shows that community transmission is taking place worldwide [5].

There are several risk factors for disease progression in COVID-19 patients. Liver, kidney, and cardiovascular diseases, as well as tobacco use, are associated with increased severity and mortality from COVID-19 [6].

People with a weakened immune system are at higher risk for contracting Covid-19, like all viral infections. Immunodeficiency makes the body vulnerable to diabetes and cancer, as well as viral infections [7]. Protein-energy malnutrition (PEM) decreases immunity and increases

*Corresponding Author: ayse.bicer@ozal.edu.tr
ORCID number of authors: 0000 -0003-4514-5644

the risk of contracting infectious diseases. Ritz and Gardner (2006) reported that PEM exacerbated by aging resulted in an increase in mortality from influenza infection, which they believed was due to low body weight reducing the availability of energy and immune function [8].

Current Covid-19 treatments focus mainly on preventing symptoms and complications. Therefore, the most crucial strategy, for now, is prevention. These strategies are designed to reduce exposure and boost immunity. Research shows that a healthy diet boosts the immune system [9].

It is necessary to know the immune system well before focusing on foods that boost it. The immune system consists of organs, cells, tissues, and proteins, which are responsible for bodily processes that combat viruses, bacteria, and pathogens that cause infections and diseases. The immune system is the collection of all processes by which pathogens and tumor cells are recognized and destroyed to protect the living organism against diseases. The immune system scans every foreign substance that enters or comes into contact with the body and distinguishes them from healthy body cells and tissues.

All foreign molecules that stimulate the immune system are referred to as "antigens" or "immunogens." Antigens are kept away from the body by a layered protective system consisting of surface barriers and the innate and adaptive immune system. Antigens can penetrate the first line of defense (skin, respiratory, and digestive system) and stimulate the second line of defense. The innate immune system consists of specialized centers, such as bone marrow, the thymus, the spleen, and lymph nodes. Defense cells and molecules (phagocytes, macrophages, and lymphocytes) involved in innate immunity come into play to combat the antigens that evade the surface barriers. First, phagocytes and macrophages, which are precursor cells, try to destroy the antigens. The body continually recognizes and destroys the foreign invaders that penetrate the first line of defense [10].

B and T lymphocytes are the primary cells of the adaptive immune system. They are activated in cases where the second line of defense fails, which triggers a rather complex chain system. T cells that detect antigens trigger other defense cells and numerous related biochemical cascades [11]. Malignant T cells, a subset of T cells, destroy antigens, while B cells begin to synthesize antibodies (immunoglobulins), known as smart molecules [12].

2. BOOSTING THE IMMUNE SYSTEM

Immunodeficiency is caused by the failure of one or more than one component of the immune system. Immunosenescence leads to a diminished response of the immune system to pathogens in both young and old populations, but especially after the age of 50. [13,14]. In developed countries, immunodeficiency is mainly caused by malnutrition as well as obesity, alcoholism, and illegal substance use. Protein-energy malnutrition (PEM) is associated with a serious deterioration in cell-mediated immunity, and the complement system, phagocytic functionality, change in IgA antibody concentrations, and cytokine production. Single nutrient deficiency (iron, copper, zinc, selenium, and vitamins A, C, E, B6, and B9 (folic acid)) also play a role in immunodeficiency [14].

3. SOME FOODS THAT HELP BOOST THE IMMUNE SYSTEM

3.1. Nigella Sativa Oil

Nigella sativa (black seed) seeds contain 32 to 40 percent fixed oil (Figure 1), which is rich in unsaturated and essential fatty acids. According to the chemical characteristics of the total lipids and the fatty acid profile, the essential unsaturated fatty acids are linoleic and oleic. Linoleic acid is the main component of omega-6 fatty acids that reduces the risk of cardiovascular diseases. High intake of linoleic acid increases insulin sensitivity and reduces LDL cholesterol and the risk of hypertension. The fixed oil in *Nigella sativa* is also rich in β-sitosterol. According to the chemical analysis, 85 percent of the fixed oil is composed of unsaturated fatty acids. *Nigella sativa* seeds contain essential oils [thymoquinone (tq), thymohydroquinone (thq), dithymoquinone (nigellone), thymol, carvacrol, α and β-pinene, d-limonene, dihydrogeraniol, p-cymene], and bitter substances. Fourteen preclinical studies address the bronchodilation, anti-histaminic, anti-inflammatory, and immunomodulatory effects of *Nigella sativa* in animal or cellular models of asthma models. Moreover, seven clinical trials point out improvements in asthma outcomes, such as symptoms, pulmonary function, and laboratory parameters (15).

Figure 1. Nigella Sativa Seeds

Hussain and Hussain reported that *Nigella sativa* oil resulted in an improvement in 70 percent of allergic diseases, such as dust allergy, acne, neurodermatitis, asthma, and general immune system weakness among 600 patients in Germany (16).

The anticancer properties of *Nigella sativa* depend mainly on its potent anti-proliferative, pro-apoptotic, antioxidant, antimutagenic, and anti-metastatic effects. Its protective effects against tumor onset and progression also depend partly on its ability to suppress inflammation and boost the immune system (17).

Thymoquinone is the main active phenolic compound extracted from the essential oil of *Nigella sativa* seeds. It is widely used in the treatment of many diseases due to its high antioxidant properties. In vitro and in vivo studies suggest that it may have anti-inflammatory, antimicrobial, and anticancer properties. It is toxic only at high concentrations. It is an essential molecule due to its high biological activity and low systemic toxicity (18).

3.2. Silverberry

Ripe fruits and seeds of wild silverberry are rich in flavonoids, lycopene, carotenoids, phytosterols, and vitamins A, B1, B12, C, E, K, and P. Wild silverberry is, therefore, an

excellent antioxidant that boosts the cardiovascular and immune system and protects against aging, inflammation, gastrointestinal ulcers, cancer, and radiation (Figure 2).

Figure 2. Silverberry

Silverberry is also a source of omega 7, that is, palmitoleic acid, which helps reduce the amount of cholesterol in the vessels and maintain the flexibility of the vessel walls. Palmitoleic acid is the source of the potential benefit of Omega 7. The human body can produce palmitoleic acid with a decreasing trend with age. Wild silverberry also has numerous health benefits for the cardiovascular and immune system because it is rich in antioxidants (flavonoids, lycopene, and carotenoids) and vitamins A, B1, B12, C, E, and K.

While omega 3 fights chronic inflammation, omega 7 serves a different purpose. It prevents arteriosclerosis in the endothelial layer, known as the vascular membrane, before the onset of disease. It enhances the communication between the muscle and fatty tissue and thus helps with the efficient use of energy. Even a small concentration of omega 7 puts a stop to the production of harmful fatty acids and adjusts the level of insulin. It reduces the risk of type-2 diabetes, prevents vascular stiffness, and controls the inflammatory markers known as C-reactive protein and associated with heart attacks and stroke. It increases HDL cholesterol levels and lowers LDL cholesterol levels. It is a powerful antioxidant and anti-inflammatory. It accelerates cellular regeneration and recovery and helps with the production of collagen, which plays a vital role in tissue repair.

Omega 7 prevents inflammation and boosts the immune system. It contains carotenoid antioxidant, which is greatly beneficial for the immune system. Wild silverberry is also thought to be effective against cancer cells because the antioxidants in it neutralize free radicals and protect against cancer [19].

3.3. Date

The date is an essential source of antioxidants as it is rich in phytochemicals (Figure 3). Antioxidants are known to be effective against chronic diseases, especially cardiovascular diseases, and cancer [20]. The date seed makes up 6-15 percent of its weight. The date seed extract is an essential antioxidant because it contains phenolic, flavonoid, catechin, and epicatechin (21). Date seed has ten times as high polyphenol content and antioxidant capacity as foods with high antioxidant capacity, such as grape seed (22). The date seed oil has more phenol than olive oil. There are two types of antioxidants; water-soluble (phenolic compounds and ascorbic acid) and fat-soluble (carotenoids, vitamin E) (23). The date is a good source of antioxidants because it is rich in antioxidant components and phenolic compounds consisting of p-coumaric, ferulic, and synaptic acids, and flavonoids, and procyanidins (24,25).

Figure 3. Date

Antioxidants in flavonoids reduce free radical activity and thus have positive effects against some chronic and cardiovascular diseases and some types of cancer.

The date is rich in phytochemicals. Vembu et al. (26) reported that date contains alkaloids, coumarin, tannins, flavonoids, phenolic compounds, and quinones. Of fat-soluble phytochemicals, date contains phytosterols the most. There are about 200 phytosterols, mostly in fruits and vegetables (27). The date has more phytoestrogens than various fruits (apple, orange, blueberry, and cranberry).

3.4. Grape

Grape is the second most extensively cultivated fruit crop in the world after orange. Substances in grape protect the body from infections, cancer, obesity, diabetes, and aging, and boost the immune and nervous system, and help relieve arthritis symptoms [28] (Figure 4). Grape contains vitamins, protein, carbohydrates, and minerals, and phenols and polyphenols (anthocyanin, flavanol, flavonol, phenolic acid, caffeic acid, catechin, quercetin, and resveratrol) and flavonoids, proanthocyanidins, and anthocyanidins [29,30]. Resveratrol is a stilbenoid and a phytoalexin, which is an antimicrobial compound synthesized in the leaves and grains of the grape. Resveratrol not only protects plants against diseases, but also has antifungal, antimicrobial, antitumor, and antioxidant effects in humans [31,32]. Its inflammatory markers increase the activity of antioxidant enzymes and suppress that of angiogenic and metastatic gene products [33]. Resveratrol is a powerful antioxidant that helps prevent cell damage caused by free radicals. [34,35]. Research shows that resveratrol inhibits the activity of some inflammatory enzymes [36].

Figure 4. Grape

3.5. Asphodelus aestivus

There is no data on the use of *Asphodelus aestivus* in modern medicine [37]. *Asphodelus aestivus* is vital for the defense system as it increases the WBC (white blood cells) count [38] (Figure 5) and has antimicrobial [39, 40] and antioxidant effects [41]. *Asphodelus aestivus* is eaten cooked. However, there is no research on water-soluble vitamins and glutathione in *Asphodelus aestivus*.

Figure 5. Asphodelus aestivus

3.6. Rheum ribes

Many antioxidative compounds in plants are free radical inhibitors, active oxygen scavengers, or in vitro reducing agents [42,43]. *Rheum ribes* (locally called *ışgın*) grows in the Eastern Anatolian Mountains, especially in Ağrı, Bingöl, Elazığ, Hakkari, Kars, and Van regions. Its leaf stems are its edible parts consumed by locals, either raw or cooked [44,45] (Figure 6). Its leaves and stems of flowers taste bitter. It is effective against nausea, vomiting and constipation, and hemorrhoids, measles, and smallpox [46].

Figure 6. Rheum Ribes

3.7. Carob

Carob is rich in potassium (970 mg/100g dry substance) and calcium (300 mg/100g dry substance) as well as protein, amino acid, and sugar. Carob is not widely consumed, although it is rich in phytochemicals and other healthy substances, such as antioxidants, tannins, and polyphenols. However, it may become a functional food or a functional additive in the future [47] (Figure 7). Recent studies have shown that carob extracts have antioxidant activity and positive effects on human health, mainly to decrease the risk of cardiovascular diseases, diabetes, and cancer [48,49].

Figure 7. Carob

4. CONCLUSIONS

There is no cure yet for Covid-19. However, scientists and healthcare professionals recommend that people eat foods that are rich in vitamins and minerals to bolster their immune system to fight COVID-19 because immunodeficiency is the Achilles' heel of the Covid-19 pandemic.

People with chronic diseases, cardiovascular disease, kidney failure, diabetes, and cancer generally have a weakened immune system, and therefore, should consume foods that boost their immune system during outbreaks.

We, therefore, recommend that *Nigella sativa* oil, silverberry, date, grape, *Asphodelus aestivus*, *Rheum ribes*, and carob be consumed to boost the immune system.

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A Research on Academician Opinions on Distance Education in the COVID-19 Process

Mustafa AKSOĞAN[1]*, Meral ÇALIŞ DUMAN[2]
1Computer Programming, Akcadag Vocational School, Malatya Turgut Ozal University, Malatya, Turkey.
2Business Management, Akcadag Vocational School, Malatya Turgut Ozal University, Malatya, Turkey.

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ABSTRACT: With the Covid-19 pandemic process, educational activities all over the world faced a great challenge. This epidemic, which has a very high risk of transmission, prevented students from taking lessons in the classroom, created social distances and made distance education compulsory. While distance education offers a solution to prevent interruption of educational activities during the pandemic process, on the other hand, it requires teachers and students to adapt to new learning roles through information technologies in order to be successful. However, the adequacy or success of the distance education process is also discussed. The views of the educator (academician) using distance education on this subject are very important. This research is important in terms of reflecting the views of academics. Within the scope of the research, the views of academicians at a state university in the Eastern Anatolia Region on distance education were examined. An online questionnaire was sent to all academicians at this university and evaluations were made over 93 academics who returned to the questionnaires. The data were analyzed with the SPSS 25 package program. As a result of the data obtained, it was seen that the academicians had both positive and negative opinions about distance education. In particular, female academics' opinions on distance education are more positive. However, factors such as age, experience, and title did not affect views on distance education. Again, most of the academicians do not find distance education alone sufficient but think that it will be much more effective when reinforced with formal education.

Keywords: Covid-19, Pandemic, Online Learning, Distance Education, Educational Opinions.

1. INTRODUCTION

In December 2019, an unknown pneumonia case was recorded for the first time in Wuhan, China. Later, the disease-causing virus was named the SARS-CoV-2 (COVID-19), and this virus which led to a large epidemic worldwide. This epidemic was announced by the World Health Organization as a global pandemic on March 11, 2020 [1, 2]. Although life has come to a standstill in many parts of the world during the pandemic, there have been rapid developments in the use of different methods and practices to adapt to this process [3]. These developments have been seen in many areas from health to transportation, culture to tourism, economy to finance. One of the areas where rapid developments are education [4].

The first precaution taken all over the world regarding education was the close of schools. However, as the process took longer, it was understood that this solution was not sufficient, and distance education studies have been started [3]. Working online has become much easier by developing new platforms for distance education, especially in line with educational

*Corresponding Author: mustafa.aksogan@ozal.edu.tr
ORCID number of author: [1]0000-0002-6826-3902, [2]0000-0002-8283-5188

technologies. For example, virtual classrooms such as Google Meet, Zoom, Moodle, Google Classroom, Microsoft teams, Canvas have started to be used widely [1-5].

Distance education is an innovative education system that is independent of time and place, takes place entirely in virtual environments where learners with teachers do not have to come together [6]. Distance education can also be defined as a system that brings an important solution to inequality of opportunity in education, meets the educational needs of students, is based on the use of educational technologies and more self-learning [7]. Distance education is an important part of the education process and its positive results can be listed as follows [8]:

- Convenience: 24/7 access from any online computer.
- Enhanced learning: emphasizes writing skills, technology skills, life skills such as time management, independence and self-discipline.
- Balancing the playing field: students can spend more time thinking and delving before communicating; shy students tend to do well online.
- Interaction: increased student-teacher and student-student interaction and discussion.
- Innovative teaching: student-centered approaches; the increasing variety and creativity of learning activities; experience of different learning styles.
- Improved management: time to review student work more comprehensively; the ability to document and record online interactions.
- Austerity: reaching more students; increased student satisfaction, less repetition.
- Maximum use of physical resources: reducing the demand for limited campus infrastructure.
- Social assistance: Increasing the educational options of students and easy access to new students.

In some studies on student's satisfaction with distance education, it has been stated that there is an important link between students' easy access to distance education and their level of use. The ability of students to attend classes comfortably from wherever they want has a significant effect on their satisfaction [2].

Distance education will inevitably become a part of education in the future. The pandemic has accelerated this process and demonstrated some benefits with sample applications. For example, with distance education, students and residents in medical education have been allowed to quickly learn the basics of health care. In addition, medical students were able to learn from experts on topics of interest by attending free of charge online conferences and webinars of many medical associations [9]. In some studies in the field of medical education in India, it has been observed that the educators stated that distance education helps to maintain the continuity of educational programs and serves the purpose of completing the current academic year. Accordingly, distance education not only benefited students but also created a continuous education momentum in the country [10].

In addition, in order to be successful in distance education, it is also important to know the duties, abilities and readiness of the learner, teacher and technical team who have taken on different roles in the system. Providing technical infrastructure, establishing virtual classrooms, creating course materials by educators and system domination are among the factors that affect the success of the process [7]. Otherwise, the distance education system will present some disadvantages. For example [1];

- Inequality of opportunity in education due to insufficient technical tools and infrastructure (computer, tablet, phone tools, internet infrastructure)
- Not being able to provide a home working environment while taking online lessons
- Worse / lower academic achievement
- Not yet adapting to online learning, not knowing the system
- More absenteeism compared to formal education, desire not to attend classes
- The notion that taking online lessons is unsafe, etc.

In addition to these disadvantages, worry, concern and anxiety disorders that occur in family members during the pandemic process have also been a problem in distance education. It has been stated that parental anxiety and stress are positively associated with child anxiety [4]. For this reason, educators should pay attention to understanding the psychology of students who receive distance education in the home environment, empathy and equal opportunity. To face all the challenges, distance educators must be careful, flexible, willing to face changes and use smart technologies and do not panic [5]. In particular, educators should train themselves in the acquisition of digital skills, technology literacy and cybersecurity [11].

Purpose of the Research

Users' opinions, satisfaction and perceptions about distance education differ. Due to the differences and widespread use of distance education, there is a significant increase in the number of studies on distance education. However, most of the studies are aimed at determining students' opinions and attitudes towards distance education. Whereas, the number of studies on the opinions of educators and experts on the subject is limited. Therefore, in this study, the opinions of educators and experts on distance education, which has become a part of education in the Covid-19 process, were examined. For this reason, the research has been discussed within the framework of the following sub-problems:

1- What are the general views of the participants on distance education?
2- Is there a significant difference by gender in the general views of the participants on distance education?
3- Is there a significant difference by participant's age in the general views of the participants on distance education?
4- Is there a significant difference by participant's titles in the general views of the participants on distance education?
5- Is there a significant difference by participant's experience in the general views of the participants on distance education?
6- Is there a significant difference in the general views of the participants regarding distance education according to their status of thinking that distance education is an effective model?

2. MATERIAL AND METHODS

The general screening model was used in the study. The general screening model involves studies on the entire universe or a sample to be taken from it in order to make a general judgment about the universe in a universe consisting of many elements [12].

2.1. Participant Group

The research's participant group is composed of academicians working in a university in Turkey. Non-random - voluntary sampling method was used for sample selection. This sampling is a voluntary method in which the person or individuals voluntarily participate in the research [13]. The online questionnaire link has been delivered to all academics. The sample group of the research consists of 93 academics who fill the questionnaire completely. The data regarding the demographic characteristics of the participants are shown in Table 1.

Table 1. Data on the demographic characteristics of the participants

GENDER	***f***	**%**	**EXPERIENCE**	***f***	**%**
Female	42	45.2	0-3 years	26	28.0
Male	51	54.8	4-7 years	9	9.7
AGE	***f***	**%**	8-11 years	29	31.2
23-33	28	30.1	12- 15 years	11	11.8
34-44	38	40.9	16 years and over	18	19.4
45 and over	27	29.0	**Have you received orientation training on distance education?**	***f***	**%**
TITLE	***f***	**%**			
Lecturer	30	32.3	Yes	15	16.1
Lecturer Dr.	11	11.8	No	78	83.9
Assistant Prof.	26	28.0	**Do you think distance education is an effective education model?**	***f***	**%**
Associate Prof.	16	17.2			
Professor	10	10.8	Yes	40	43.0
TOTAL	**93**	**100**	No	53	57.0

As seen in Table 1, the academians who participated in the survey consisted of 42 female and 51 male. Again, 28 of the participants are between the ages of 23-33, 38 are between the ages of 34-44 and 27 are the ages 45 and over. Looking at the titles of the participants, there are 30 Lecturer, 11 Lecturer Dr., 26 Assistant Prof., 16 Associate Prof. and 10 Professors. In addition, it is seen that most of the participants (72%) have more than 4 years of job experience. On the other hand, the rate of participants who did not receive orientation training related to education is 83.9%, while the rate of participants who argue that distance education is an effective education model is 43%.

2.2. Data Collection Method

In our study, a questionnaire prepared by the researchers was used to determine the views of academics about distance education. During the questionnaire development process, firstly, a literature review was conducted in which student views on distance education were investigated. Later, the items in the questionnaires developed on the subject were reformatted in line with our research questions and an item pool was created. The data obtained were analyzed by the researchers, and 24 attitude statements that were thought to be related to academians' views on distance education were determined. The draft form of the questionnaire consisting of 24 items was submitted for expert opinion to determine the content validity, and some statements were corrected by the recommendations of the experts. In addition, 6 items that were not suitable for the study or were difficult to understand were removed from the scale in line with expert opinions.

It was not possible to reach academicians face to face due to the restrictions imposed during the pandemic process in our country. That's why the questionnaire has been published online. The survey consists of two parts. The first part of the survey included demographic information. In

the second part of the questionnaire, there are 18 statements to get academians views on distance education. The academians were asked to mark to what extent agree (1- minimum agree or disagree, 5- maximum agree) to these statements. Reliability analysis of the questionnaire used in the study was made and the Cronbach's alpha value was found to be 0.78. Cronbach's Alpha value must be greater than 0.7 for a reliable survey. The value of 0.78 indicates that the survey questions are reliable.

2.3. Data Analysis

The data obtained are analyzed with SPSS 25 package program. First of all, it was analyzed whether the data showed normal distribution or not. If the sample size is larger than 35, the Kolmogorov-Smirnov test can be applied [14], and if it is small, the Shapiro-Wilk test can be applied [15]. The Kolmogorov-Smirnov test was applied and the results are shown in Table 2.

Table 2. Test of Normality (Kolmogorov-Smirnov)

Statistic	df	p
0.076	93	0.200

The fact that the calculated p-value as a result of the test is higher than $\alpha = 0.05$ indicates that the data has a normal distribution. Accordingly, it can be assumed that the data are distributed normally. For this reason, independent samples t-test and ANOVA tests, which are among the parametric tests, were used in the analysis of the data.

3. RESULTS AND DISCUSSION

In this section, the answers given by academians about distance education and the results of the analysis will be given.

Table 3. Frequency and Percentage Distribution of Academicians' Answers Regarding Distance Education During the Pandemic Process

	Mean	SD	1		2		3		4		5	
			N	%	N	%	N	%	N	%	N	%
I felt comfortable while lecturing with distance education.	3.54	1.147	7	7.5	5	5.4	35	37.6	23	24.7	23	24.7
I prepared the course materials I used for distance education.	4.11	0.994	2	2.2	3	3.2	20	21.5	26	28.0	42	45.2
For distance education, I used course materials previously prepared by others.	1.95	0.993	41	44.1	23	24.7	22	23.7	7	7.5	0	0
I think students attend live lessons enough in distance education.	2.42	1.087	26	28.0	19	20.4	31	33.3	17	18.3	0	0
I think students are more active in distance education lessons than in formal education lessons.	1.87	1.002	47	50.5	16	17.2	26	28.0	3	3.2	1	1.1
I have added various resources (presentation, study note, graphic, table,	4.10	1.074	2	2.2	7	7.5	16	17.2	23	24.7	45	48.4

etc.) to the system so that students can benefit from distance education lessons.												
Distance education is at least as effective as formal education.	2.39	1.189	32	34.4	12	12.9	33	35.5	13	14.0	3	3.2
Distance education alone is not enough for effective learning.	3.83	1.396	13	14.0	2	2.2	15	16.1	21	22.6	42	45.2
I can use distance education to support formal education in the upcoming period.	2.77	1.278	21	22.6	18	19.4	22	23.7	25	26.9	7	7.5
I think online exams are safe.	2.52	1.129	20	21.5	27	29.0	29	31.2	12	12.9	5	5.4
I don't think that the activities (homework, projects, etc.) given to students in online environments are safe.	2.73	1.303	22	23.7	18	19.4	26	28.0	17	18.3	10	10.8
I don't think that practice-based courses can be taught effectively with distance education.	4.01	1.379	10	10.8	4	4.3	15	16.1	10	10.8	54	58.1
I don't think that students pay enough attention to distance education lessons.	3.49	1.203	6	6.5	12	12.9	30	32.3	20	21.5	25	26.9
I think that I am not as useful as formal education when teaching students with distance education.	3.39	1.286	9	9.7	14	15.1	26	28.0	20	21.5	24	25.8
Since recording live lectures allows students who cannot attend the lecture to follow the lecture later, equal opportunity in education is provided.	3.72	1.271	10	10.8	3	3.2	22	23.7	26	28.0	32	34.4
Before entering distance education lessons, I needed more preparation than formal education lessons.	3.14	1.426	16	17.2	15	16.1	27	29.0	10	10.8	25	26.9
I had difficulty distinguishing students who actively participated in distance education classes.	2.97	1.410	21	22.6	12	12.9	27	29.0	15	16.1	18	19.4
I don't think distance education is beneficial.	2.55	1.238	25	26.9	19	20.4	29	31.2	13	14.0	7	7.5

The data of the opinions obtained from the academicians regarding distance education are shown in Table 3. Accordingly, most of the academicians (73.2%) stated that they prepared for the lesson in advance and prepared the necessary course materials themselves. 73.1% of the academicians stated that they uploaded these materials to the system so that students would not be aggrieved. Although the majority of the academicians (68.9%) find distance education inadequate, especially in applied courses, they think that this education system can be a solution in extraordinary processes. In addition, academicians generally think that they do not find distance education alone sufficient (67.8%), it is difficult to attract students' attention to the lesson, therefore students do not participate in the lesson adequately (48.4%) and do not show interest (48.4%). It was stated that the students were not as active in the lessons as they were in formal education (48.4%). Among the reasons for these may be; the infrastructure of the

distance education system is insufficient and the students have not enough technological equipment.

In order to determine whether there is a significant difference in the opinions of academians about distance education by gender, an independent samples t-test was performed and the data regarding the findings are shown in Table 4.

Table 4. The Results of the Independent Samples t-test Conducted on the Opinions of Distance Education According to the Gender Variable

	Gender	**N**	**$\bar{x}$**	**SD**	**t**	**df**	**p**	**d**
Academians' views on distance education	Female	42	3.08	0.828	2.056	91	**0.043***	0.30
	Male	51	2.84	0.757				

* $p < 0.05$

When Table 4 is examined, it is seen that the arithmetic mean scores of the answers given by the female participants to the questionnaire items are higher than the male participants (Female $\bar{x}$ = 3.08, Male $\bar{x}$ = 2.84). As a result of the t-test, the difference was found to be significant (p<0,05). According to this result, it can be said that the opinions of female participants regarding distance education are more positive than male participants. In addition, the effect size (d) was calculated as 0.30. If the effect size is less than 0.20, it can be defined as weak, if greater than 0.80, it can be defined as strong, in other cases, it can be defined as a medium. Accordingly, it can be said that the effect size is medium.

ANOVA test was conducted in order to determine whether there is a significant difference in the opinions of academians regarding distance education according to the age variable and the information about the findings is shown in Table 5.

Table 5. ANOVA Results According to the Age Variable of Academians Views on Distance Education

	Age			**N**	**$\bar{x}$**	**SD**
Academians' views on distance education	23-33			28	3.03	0.467
	34-44			38	2.88	0.624
	45 and over			27	2.96	0.521
	Total			**93**	**3.54**	**0.548**
	Source of Variance	**SS**	**df**	**MS**	**F**	**p**
	Between Groups	0.332	2	0.166	0.546	0.581
	Within Groups	27.331	90	0.304		
	Total	27.663	92			

According to Table 5, it is seen that there are differences between the ages of the participants and their views on distance education. As a result of the ANOVA test conducted to determine whether the difference is significant, it was determined that the difference was not significant(p>0.05). According to this result, there is no significant difference between the views of academicians on distance education and their ages.

Table 6. ANOVA Results According to the Title Variable of Academians Views on Distance Education

	Age			**N**	**$\bar{x}$**	**SD**
Academians' views on distance education	Lecturer			30	3.02	0.260
	Lecturer Dr.			11	3.19	0.207
	Assistant Prof.			26	3.04	0.471
	Associate Prof.			16	3.10	0.263
	Professor			10	3.05	0.233
	Total			**93**	**3.06**	**0.325**
	Source of Variance	**SS**	**df**	**MS**	**F**	**p**
	Between Groups	0.255	4	0.064	0.594	0.668
	Within Groups	9.451	88	0.107		
	Total	9.706	92			

According to Table 6, it is seen that there are differences between the titles of the participants and their views on distance education. As a result of the ANOVA test conducted to determine whether the difference is significant, it was determined that the difference was not significant($p>0.05$). According to this result, there is no significant difference between the views of academicians on distance education and their titles.

Table 7. ANOVA Results According to the Experience Variable of Academians Views on Distance Education

	Age			**N**	**$\bar{x}$**	**SD**
Academians' views on distance education	0-3 years			26	3.13	0.212
	4-7 years			9	2.97	0.270
	8-11 years			29	3.06	0.450
	12- 15 years			11	3.04	0.322
	16 years and over			18	3.02	0.252
	Total			**93**	**3.06**	**0.325**
	Source of Variance	**SS**	**df**	**MS**	**F**	**p**
	Between Groups	0.255	4	0.056	0.523	0.719
	Within Groups	9.481	88	0.108		
	Total	9.706	92			

According to Table 7, it is seen that there are differences between the experiences of the participants and their views on distance education. As a result of the ANOVA test conducted to determine whether the difference is significant, it was determined that the difference was not significant ($p>0.05$). According to this result, there is no significant difference between the views of academicians on distance education and their experiences.

In order to determine whether there is a significant difference between the state of thinking that distance education is an effective model and their views on distance education, an independent samples t-test was conducted and the result is shown in Table 8.

Table 8. Independent Samples t-Test Results Regarding Distance Education Views

	Answer	**N**	**$\bar{x}$**	**SD**	**t**	**df**	**p**	**d**
Do you think distance education is an effective model?	Yes	40	3.25	0.473	-5.342	91	**0.000***	1.10
	No	53	2.72	0.491				

* $p < 0.05$

As seen in Table 8, academicians who consider distance education to be an effective model have more positive opinions on distance education ($\bar{x} = 3.25$). The opinions of the academicians who do not see distance education as an effective model and who are reluctant are more negative

($\bar{x}$ = 2.72). According to this; It can be concluded that academicians' views on distance education will diverge positively by carrying out activities that enable them to see distance education as an effective model. In addition, the effect size (d) was calculated as 1.10. Accordingly, it can be said that the effect size is strong (d>0.80).

4. CONCLUSIONS AND SUGGESTIONS

The COVID-19 epidemic, which has affected the whole world as of December 2019, has made unconventional innovations mandatory in the education system, and distance education has become indispensable for all levels of educational institutions. Most private or public educational institutions were caught unprepared for this process and both students and teachers encountered some technical problems [16]. In addition, the lack of internet connection or low connection speed, inability to use technological devices effectively and correctly, low level of digital literacy, insufficient software/hardware caused the emergence of various problems [17]. All these problems cause divergence on the views of academicians who had to teach their lessons with distance education. For this reason, it is the purpose of this study to determine the level of academicians' views on distance education. When the data obtained for this purpose were examined, the following results were encountered:

- The results of the research showed that the general views of the participants on distance education were undecided. Although this result supports the literature [18-21], there are also studies in which participants have positive [22] and negative views on distance education [23, 24].
- Although there are studies in the literature showing that male participants have more positive opinions about distance education [25, 26] or that there is no significant difference in terms of gender [27], our research results show that female participants have more positive views.
- Approximately half of the academicians participating in the study (48.4%) stated that students did not participate in the lessons taught by distance education, and the vast majority (67.7%) thought that students were not as active as the formal education lessons in these lessons. These results support the studies in the literature that conclude that student participation in distance education lessons is low [17, 28, 29].
- Many studies in the literature revealed that problems are experienced and students face various difficulties, especially during the delivery of practical courses with distance education [3, 6, 24]. In our study, a large part of the participants (68.9%) thinks that practice-based courses will not be effective with distance education.
- Research in this field is not an orientation study on distance education for academicians. For this reason, it has revealed that they have some problems in the distance education environment [22, 30]. As a matter of fact, 83.9% of the academicians who participated in our research stated that they had not received any orientation training related to distance education.
- 47.3% of the participants stated that distance education is not as beneficial to students as formal education and formal education is more effective than distance education, 67.8% of them stated that distance education alone is not enough. The positive and negative aspects of distance education have led to the need to mix distance education and formal education in education, and in a study, it was observed that the information provided with the blended learning method was more permanent [31].

- Lastly, 50.5% of the participants stated that the exam, project, homework, etc. which was done by distance education evaluations were not very reliable and they should be face to face. This result supports the literature [30].

The following suggestions can be made in line with the results of our research:

- Studies can be conducted to support the active participation of students in distance education lessons.
- Orientation studies related to distance education can be made for trainers (academicians).
- In-service training on technology literacy and computer-aided education can be given to academicians working in higher education.
- More resources can be allocated to distance education infrastructure studies of universities and R&D activities on this subject.
- The reliability of online exams can be increased with face recognition technologies and various software.

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