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An Infodemia Experience from the First Months of the Pandemic, Turkey

Pandeminin İlk Aylarından Bir İnfodemi Deneyimi, Türkiye

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ÖZ

Amaç: COVID-19 pandemisi ve etkileri hala devam etmektedir. Bu çalışmada, Türkiye'de yaşayan katılımcıların COVID-19 hakkındaki söylentilere inanma durumlarını belirlemek, Sağlık Bakanlığı'nın korunma önlemlerini uygulamalarına ilişkin bilgi edinebilmek ve Türkiye'de ve dünyada salgının sonlanmasına ilişkin görüşlerini tespit etmek amaçlanmıştır.
Araçlar ve Yöntem: Tanımlayıcı tipteki epidemiyolojik araştırmada, Türkiye'de yaşayan sosyal medya hesaplarını aktif olarak kullanan 18-65 yaş arası 694 kişiye COVID-19 ile ilgili bazı soruları içeren bir anket uygulanmıştır. Verilerin özetlenmesinde (frekans, yüzde ve ortalama gibi) tanımlayıcı istatistiklerden, grupların karşılaştırmasında ise ki-kare analizlerinden faydalanılmıştır. İstatistiksel analizlerde anlamlılık değeri $p<0.05$ olarak kabul edilmiştir.
Bulgular: Katılımcılar arasında COVID-19 ile ilgili yanlış bilgiye inanma yüzdesinin (%38.4) en düşük olduğu ifade şudur: "Ağzı ve burnu düzenli olarak tuzlu su ile çalkalamak yeni koronavirüs hastalığını önler". Sağlık çalışanlarında COVID-19 ile ilgili yanlış bilgiye inanma yüzdesi anlamlı derecede düşüktür (sırasıyla $p=0.004$, $p<0.001$ ve $p<0.001$), ancak istenilen düzeyde değildir. Katılımcıların COVID-19'un sonlanması hususunda, Türkiye hakkındaki gelecek öngörüleri Dünyaya göre daha iyimserdi.
Sonuç: Çalışmaya katılanlar arasında yanlış bilgilerin yayılımı söz konusu olup bu durum sağlık çalışanları arasında dahi istenilen düzeyde değildir.

Anahtar Kelimeler: COVID-19; ölçüm; iyimserlik; söylenti; yanlış bilgi

ABSTRACT

Purpose: The COVID-19 pandemic and its effects are still ongoing. The present study was aimed to determine the status of participants in Turkey regarding whether they believe the rumors about COVID-19 in the first months of the pandemic, obtain information about their implementation of the protection measures of the Ministry of Health, and identify their perceptions on ending the pandemic in Turkey and the World.
Materials and Methods: A survey containing some questions about COVID-19 which designed as descriptive epidemiological research was applied to 694 individuals between the ages of 18 and 65, who lived in Turkey and actively used their social media accounts. Descriptive statistics were used in summarizing the data, whereas chi-square analysis was used in the comparison of the groups. In statistical analysis, the significance value was accepted as $p<0.05$.
Results: The lowest percentage of believing the misinformation on COVID-19 among the participants (38.4%) is "Regularly rinsing the mouth and nose with saline water prevents the new coronavirus disease". The percentage of the healthcare workers who believed the false information about COVID-19 was significantly lower ($p=0.004$, $p<0.001$, and $p<0.001$, respectively) but not at the desired level. In terms of ending COVID-19, the future predictions of the participants were more optimistic for Turkey than all over the world.
Conclusion: There was the spread of false information among the participants, and this was not at the desired level, even among the healthcare workers

Keywords: COVID-19; measurement; misinformation; optimism; rumor

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INTRODUCTION

The World Health Organization (WHO) declared on 11th March 2020 that the new coronavirus disease 2019 (COVID-19) was a global pandemic.[1] Although various countries have national pandemic influenza plans,[2,3] the COVID-19 pandemic has been recognized as a sudden and unexpected situation in many countries. The evolution of COVID-19 remains unpredictable,[4,5] and this unpredictability is compounded by the heterogeneity of health systems around the world and the difficulties in obtaining accurate infection and immunity numbers.[4]

The WHO describes COVID-19 as a pandemic that has created a new wave of anxiety, public panic, and global socioeconomic damage. In order to combat this public health emergency, the countries are implementing many measures. For example, as in the example of Turkey, which has implemented information and community campaigns that include messages, such as "Stay Home, Turkey" and "Life Fits into Home", very different public and social regulations have also been implemented in many countries.[6]

In order to control the pandemic, Turkey has started and popularized coronavirus prevention strategies according to geography and population density. In the first three months of the pandemic, the spread of the virus could be reduced through extensive practices such as physical distancing, social isolation, quarantine, and travel bans. When the effects and consequences of the Spanish flu, which started in 1918, were examined to better understand the scale of the effects of a viral pandemic, it was seen that the pandemic did not end immediately and it spread in waves around the world that lasted for two years.[7] For this reason, there is a need to periodically evaluate how well society can accept and apply these limitations. An infodemic environment has been created during the pandemic. According to the WHO, "an infodemic is too much information including false or misleading information in digital and physical environments during a disease outbreak".[8] In this process, the effect of misinformation emerging on social media should also be monitored. This study, therefore, aimed to evaluate the belief in the rumors about COVID-19 within society, obtain information about the implementation of preventive measures, and examine the views of society about the future of the pandemic.

Research Questions

1. What is the status of people in Turkey regarding whether they believe the rumors about COVID-19?
2. What are the individual measures of people in Turkey against COVID-19?
3. What do people think about how the COVID-19 pandemic will end in the world and in Turkey?

MATERIALS and METHODS

The snowball sampling method, which is one of the non-probability sampling methods, was preferred because it is easy to use and provides convenience in terms of time and finance due to the COVID-19 pandemic. During the COVID-19 pandemic, students have continued their education remotely. For this reason, an e-questionnaire was prepared using Google Forms in order to collect the data for this descriptive research. In order to evaluate the intelligibility of the questions, a pilot study was conducted with 15 individuals independent of the research group and necessary revisions were made. The last version of the e-questionnaire was shared with students studying at the Vocational School of Health Services via an online-based platform. Students were contacted through different networks and asked to share the e-questionnaire with their friends/acquaintances/other students through various intermediaries, such as their personal WhatsApp, Instagram, Twitter, and Facebook accounts. Various measures were taken to prevent the duplication of data (such as nicknames). Participants approved the consent form information text of the e-questionnaire. In the data collection tool, there were some sociodemographic variables such as sex, age, educational status, marital status, employment status in an income-generating job, some knowledge questions on COVID-19, and questions about the measures that the participants took during this pandemic. The statements about the coronavirus are taken from the infographics prepared by the Association of Public Health Specialists.[9] The data collection tool consisted of 30 questions in total.

Statistical Analysis

The data were collected from April to June 2020, when the lockdowns and closure of schools, workplaces, and shared communal areas were intense. During the data collection process, 743 people were reached, and after the invalid questionnaires were removed (those below 18 years of age and over 65 years of age), the remaining 694 individuals were analyzed. The data were evaluated using IBM SPSS Statistics for Windows 20.0 (IBM Corp., Armonk, NY, USA). The eligibility criteria for the normal distribution of the data were determined through the Kolmogorov-Smirnov and Shapiro-Wilk tests. Descriptive statistics (such as frequency, percentage, and mean) were used to summarize the data, whereas chi-square analysis was used in the comparison of the groups. Post-hoc comparison procedures were conducted to determine the differences between the groups. In cases where the difference was too great, the expected values that were 20% or more of the expected values in the crosstabs were used, Monte Carlo analysis was taken as a basis, and the chi-square value was given in the table.

In order to conduct the study, ethics committee approval was obtained from the Human Research Ethics Committee at Sinop University (Number: 25481574-900-E) dated 20.05.2020, and an information text was included on the front of the survey for the participants.

RESULTS

Of the participants, 67.4% were women, 82.1% were 18-24 years of age, and 85.3% were single. Moreover, 31.3% of the participants stated that they worked in an income-generating job, and 62.8% were students and healthcare professionals. According to the perception of the participants on their economic status, 65.0% of them determined their socioeconomic status as "moderate" (Table 1).

Table 1. Distribution of sociodemographic characteristics of the participants

Variables		n	%
Sex (n=693)	Male	226	32.6
	Female	467	67.4
Age groups* (n=694)	18-24 years of age	570	82.1
	25-34 years of age	73	10.5
	35 years of age and above	51	7.4
Marital Status (n=694)	Married	102	14.7
	Single	592	85.3
Employment Status (n=694)	Employee	217	31.3
	Student	384	55.3
	Non-worker	93	13.4
Occupational Status (n=693)	Healthcare professionals and student	435	62.7
	Non-healthcare worker	166	24.0
	Non-worker	92	13.3
Socioeconomic situation perception (n=694)	Good and very good	183	26.4
	Moderate	451	65.0
	Bad and very bad	60	8.6

* The average age of the participants is 22.7±6.36 years. The median age is 24; the youngest and oldest participants are 18-62 years old.

Knowledge on COVID-19

The first three statements with the lowest percentage of believing false information in society were "Regularly rinsing the mouth and nose with saline water prevents the new coronavirus disease" (38.4%). "Pets can become infected with the new coronavirus and transmit the disease" (39.7%) and "Garlic protects against coronavirus" (48.6%) (Table 2).

The belief that "Antibiotics may work against coronavirus" was significantly higher among the healthcare workers (54.9%) than non-healthcare 42.2%) and non-workers (41.3%) ($p<0.05$). Out of all participants, 78.4% of the healthcare workers. 61.4% of the non-healthcare workers and 68.5% of non-workers believed "The new coronavirus disease is transmitted by the bite of mosquitoes". This situation was higher in healthcare workers ($p<0.001$). The status of believing "Only the elderly and those with chronic diseases (such as diabetes and high blood pressure) are affected by the new coronavirus disease" was higher in healthcare workers (%91.3) compared to non-healthcare workers (78.3%) and non-workers (83.7%) ($p<0.001$). (Table 2).

Table 2. Distribution of the participants believing the information about COVID-19 according to employment status

The rumors on COVID-19	Healthcare workers†		Non-healthcare workers		Non-workers		Total		p-value
	n	%	n	%	n	%	n	%	
Regularly rinsing the mouth and nose with saline water prevents the new coronavirus disease	166	38.2	69	41.6	31	33.7	266	38.4	0.455
Pets can become infected with the new coronavirus and transmit the disease·	182	41.8	60	36.1	33	35.9	275	39.7	0.321
Garlic protects from coronavirus.	226	52.0	71	42.8	40	43.5	337	48.6	0.075
Antibiotics may work against coronavirus	239	54.9	70	42.2	38	41.3	347	50.1	0.004
The new coronavirus isn't transmitted in hot and humid areas.	254	58.4	81	48.8	48	52.2	383	55.3	0.087
Hand dryers kill the virus.	316	72.6	107	64.5	61	66.3	484	69.8	0.108
The new coronavirus disease is transmitted by the bite of mosquitoes.	341	78.4	102	61.4	63	68.5	506	73.0	<0.001
Only the elderly and those with chronic diseases (such as diabetes and high blood pressure) are affected by the new coronavirus disease.	397	91.3	130	78.3	77	83.7	604	87.2	<0.001

† Healthcare workers and healthcare students were evaluated as a single group

Measurement

All of the participants stated that they took measures to prevent themselves against COVID-19.

In terms of the measures taken by the participants to prevent themselves against COVID-19, the first four measures were, successively, "paying attention to handwashing", at a rate of 98.0%, "avoiding contact with sick people", at a rate of 87.2%, "using a medical mask when going to crowded places", at a rate of 86.4%, and "covering the nose and mouth with a tissue when coughing or sneezing", at a rate of 85.6% (Table 3).

Of the participants, 19.8% of the healthcare workers, 11.4% of the non-healthcare workers, and 7.6% of the non-workers stated that it was not necessary to take additional measures to end and control the pandemic in Turkey.

Table 3. Distribution of the preventive measures taken for COVID-19 by the participants according to employment status

Preventive measures	Healthcare workers‡		Non-healthcare workers		Non-workers		Total		p-value
	n	%	n	%	n	%	n	%	
Paying attention to handwashing	430	98.9	158	95.2	91	98.9	679	98.0	0.014§
Avoiding contact with sick people	378	86.9	147	88.6	79	85.9	604	87.2	0.798
Using a medical mask when you have to go to crowded places	375	86.2	142	85.5	82	89.1	599	86.4	0.704
Covering the nose and mouth with a tissue when coughing or sneezing	379	87.1	136	81.9	78	84.8	593	85.6	0.261
Not going to health centers/institutions for health problems unless it is compulsory	370	85.1	139	83.7	77	83.7	586	84.6	0.895
Not touching the mouth, nose and eyes without washing hands	365	83.9	138	83.1	74	80.4	577	83.3	0.719
Frequent hand washing after direct contact with sick people and those who have been in contact with them	351	80.7	120	72.3	62	67.4	533	76.9	0.006
Avoiding high-risk areas because of general infections, such as farms and livestock markets	289	66.4	111	66.9	54	58.7	454	65.5	0.334
Avoiding eating raw or undercooked animal products	277	63.7	99	59.6	54	58.7	430	62.0	0.512

‡ Healthcare workers and students were evaluated as a single group.§ Monte Carlo P value and confidence interval.

A higher rate of healthcare workers believed it was necessary to take additional measures to end the COVID-19 pandemic compared to the other groups (p=0.014). Non-healthcare workers and non-workers suggested the following additional measures: lockdown (44.7% and 52.4%, respectively), implementing measures more strictly and expanding their scope (28.9% and 16.7%, respectively), and

strengthening control and increasing penalties (10.5% and 14.3%, respectively). The healthcare workers stated that the additional measures that should be taken should be related to expanding the scope of staying at home (60.7%), implementing measures more strictly and expanding their scope (17.3%), and informing the public (5.6%) (Table not given).

Views About Ending the Pandemic ın the World and ın Turkey

While the prediction that "measures will be successful and the pandemic will end" was in first place in the future predictions for Turkey, this differs according to the employment status in the world.

Of the healthcare workers, 36.2% predicted that "measures will be insufficient, and the pandemic will end with a lot of losses", whereas 29.6% of the non-healthcare workers thought that "measures will be successful, and the pandemic will end". Among the non-workers, the predictions "measures will be successful, and the pandemic will end" (35.4%) and "measures will be insufficient, and the pandemic will end with a lot of losses" (35.4%) were placed in the first two answers (Table not given).

Of the healthcare workers, 27.6% indicated that "measures taken both in the world and in Turkey will be successful and the pandemic will end", whereas 26.7% thought that "measures will be successful in Turkey, but will not be sufficient in the world" (p<0.001). Among the non-healthcare workers, 29.2% indicated that "measures taken both in the world and in Turkey will be successful and the pandemic will end", while 17.5% thought that "measures will be successful in Turkey, but will not be sufficient in the world", and 14.2% stated that "the world system will change" (p<0.001). Among the non-workers, 31.1% indicated that "measures taken both in the world and in Turkey will be successful and the pandemic will end", 19.7% stated that "measures taken in Turkey are sufficient, while measures taken in the world are not sufficient", and 13.1% believed that "the world system will change" (p=0.008) (Table 4).

Table 4. Views of the participants about ending the pandemic in the World and Turkey according to employment status

Ending the pandemic in the world	**Ending the pandemic in Turkey**					Total %	p-value§
	Measures will be successful, and the pandemic will end	It will take a long time and end in time	Measures will be insufficient, and the pandemic will end with a lot of losses	A new lifestyle will appear, and a new economic order will emerge	The pandemic will end with the vaccine		
Healthcare workers							
Measures will be successful, and the pandemic will end	27.6	1.2	0.6	1.2	-	30.6	<0.001 (0.000-0.000)
It will take a long time and end in time	7.5	1.5	-	0.3	-	9.3	
Measures will be insufficient, and the pandemic will end with a lot of losses	26.7	4.2	3.0	1.2	0.3	35.4	
A new lifestyle will appear, and a new economic order will emerge	10.5	2.7	0.6	3.0	0.3	17.1	
The pandemic will end with the vaccine	3.6	0.3	1.5	-	2.1	7.5	
Total	76.0	9.9	5.7	5.7	2.7	100.0	
Non-healthcare workers							
Measures will be successful, and the pandemic will end	29.2	0.8	0.8	-	-	30.8	<0.001 (0.000-0.001)
It will take a long time and end in time	8.3	2.5	0.8	-	-	11.7	
Measures will be insufficient, and the pandemic will end with a lot of losses	17.5	2.5	6.7	-	-	26.7	
A new lifestyle will appear, and a new economic order will emerge	14.2	0.8	3.3	2.5	0.8	21.7	
The pandemic will end with the vaccine	5.8	-	-	0.8	2.5	9.2	
Total	75.0	6.7	11.7	3.3	3.3	100.0	
Non-workers							
Measures will be successful, and the pandemic will end	31.1	3.3	-	-	-	34.4	0.008 (0.005-0.010)
It will take a long time and end in time	8.2	-	-	-	-	8.2	
Measures will be insufficient, and the pandemic will end with a lot of losses	19.7	9.8	4.9	1.6	-	36.1	
A new lifestyle will appear, and a new economic order will emerge	13.1	-	-	3.3	-	16.4	
The pandemic will end with the vaccine	3.3	-	-	-	1.6	4.9	
Total	75.4	13.1	4.9	4.9	1.6	100.0	

§ Monte Carlo P value and confidence interval.

DISCUSSION

Considered in the category of biological disasters, COVID-19 causes more fear and uncertainty because it is both a new disease and has not ended as quickly as natural disasters.[10] Therefore, rather than rescue information that occurs in natural disasters,[11] people whose lives are limited by the precautions taken come to the forefront with the need for adaptation to prevent themselves from the virus, meet their basic needs, and facilitate their social activities and work lives.[10] In this context, the diversity of information sources is important in surviving a disaster with the least damage.[12] With the development of communication technology in recent years, it has been seen that social media has replaced traditional media in disasters,[13] and that this situation has increased even more, especially during the COVID-19 pandemic. However, although social media is used as a platform where emergency warnings are shared by public health institutions, the infodemia spreading in society causes a disadvantage for the control of public health.[14–16] In this study, the knowledge levels, measures taken, and the predictions for Turkey and the work situations of participants between 18 and 65 years of age, who were exposed to social media, were examined.

Knowledge on COVID-19

In the absence of a suitable antiviral agent or vaccine to prevent the development of the COVID-19 virus in the body, there is a need for a safe, effective, and scalable response that can be applied globally. The findings obtained from the Edinburgh and Lothians Viral studies, which are among the studies in this direction, suggest that nasal irrigation and mouthwash with saline water reduces coronavirus upper respiratory tract infection symptoms and duration.[17] However, the WHO reported that there was no evidence in that regularly washing the nose with saline water could protect people against COVID-19.[18] In this study, less than half of the participants and non-healthcare workers stated that rinsing the mouth and nose with saline water was a wrong practice to protect people against the virus. Here, the participants' view that rinsing the mouth and nose with saline could be beneficial in preventing COVID-19 may be due to misinformative messages they encountered in media.

Similar to other coronaviruses, COVID-19 shows that, although its viral load remains low, it can infect a variety of animal species, including pets, such as dogs, cats, and ferrets. Therefore, although the main source of infection transmission is from person to person, a few rare cases of pets infected as a result of contact with a person infected with COVID-19 have been identified.[19] As a result, it has been argued that, although the main source of infection transmission remains human-human, there is little but existing possibility for human-animal transmission.[20] In this study, the healthcare workers stated that the disease was mostly not transmitted from animals to humans. The remaining healthcare workers may have thought that due to the zoonotic nature of the disease, the virus could be transmitted from animals to humans.

COVID-19 has caused a worldwide pandemic that is spreading at an alarming rate. On the other hand, countries with a particularly high incidence of COVID-19 also have significant infection rates caused by multidrug-resistant bacteria.[21] Some of the patients hospitalized due to COVID-19 have received antimicrobial treatment, since it is known that there is a bacterial and fungal co-infection.[22] Therefore, almost half of the healthcare workers in the study may have admitted that the use of antibiotics due to the presence of a second infection was beneficial in the treatment of COVID-19.

There is a concern about the increase in the COVID-19 pandemic due to environmental factors changing with the summer season around the world. In general, it was reported by the WHO that the coronavirus is sensitive to high temperatures, high or low pH, and sunlight.[23] In the study, slightly more than half of the participants correctly knew that the disease could be transmitted in hot and humid areas. The participants who answered the statement correctly may have thought that the loss of virus vitality may be due to the fact that living conditions were among the extreme values.

Most coronaviruses are pathogenic, and it has been suggested that COVID-19 passes from bats to pangolins and then to humans.[24] This process has been confirmed in humans by aerosols. However, there are no reports on the transmission of COVID-19 by arthropods, such as mosquitoes, that carry out mechanical transport through blood.[25]

More than half of the participants and mostly the healthcare workers correctly stated that the disease was not transmitted by mosquito bites. The rest of the participants may have thought that a mosquito bite was contagious, as mosquitoes play a role in the mechanically infectious nature of many diseases.

The fact that older adults isolate themselves in their homes due to cardiovascular, autoimmune, neurocognitive and mental health problems poses a serious public health problem that needs to be solved.[19,26] As expected in the study, it was stated more frequently by the healthcare workers that elderly adults and those with chronic diseases were at risk.

Measurement

In order to respond to the pandemic, many countries, including Turkey, have conducted studies to protect the most vulnerable groups from infection; those countries also implemented control and mitigation activities aimed at delaying hospital overflow capacity and patient fluctuations and balancing the demand for hospital beds. The national response strategies that have been taken also include contact tracing, self-isolation or quarantine, closing down unnecessary institutions or limiting their work, and public health measures such as hand washing, physical distance, use of masks, and coughing or sneezing techniques.[6] In the study, it was observed that the participants were almost in high agreement with all the suggestions for protection from COVID-19 disease (for example, paying attention to handwashing, avoiding contact with sick people, using a medical mask when you have to go to crowded places, etc.). As found in a study conducted in Belgium,[27] due to perceived vulnerability to disease, the belief that public health measures protect the population and greater government support for crisis management may have come to the forefront in Turkey as well.

Views About Ending the Pandemic in the World and Turkey

The pandemic has posed a significant threat to world welfare. Despite these negative conditions, the spread of positive messages in society should be encouraged in order to reduce and eliminate the effects of the pandemic. In this study, the non-healthcare workers had positive views about the fact that the pandemic would end, both in the world and in Turkey, while the non-workers indicated that there would be a lot of losses in the world due to the virus and that Turkey would, however, be successful. Although there was no statistical relationship, three-quarters of the healthcare workers reported that the pandemic would end both in the world and in Turkey. During the period when the data was collected, the cases were spread in a limited area, there was a decrease in the number of cases, and Turkey implemented its pandemic influenza plans quickly. Turkey also produced protective equipment, such as masks, and produced test kits and respirators (breathing apparatuses). Along with these developments, the fact that city hospitals were opened and there was progress with vaccination studies might have increased the public's trust in the state.

Scientists agree that defeating COVID-19 will depend on developing a vaccine. A sufficient number of people should be vaccinated to ensure herd immunity against the virus. Especially since vaccines are less effective in older adults, this situation requires more vaccinations of younger generations to guarantee herd immunity. However, today there are two groups of people, those are against vaccination and those support it. Especially people who are hesitant about vaccination or who are looking for an alternative way are exposed to the arguments developed by vaccine opponents. This worrying situation could mean the lack of widespread adoption of the COVID-19 vaccine, the world's inability to provide herd immunity, and more countries dealing with new COVID-19 waves in the future.[28] In addition, the belief that countries will eradicate the disease through strict measures may negatively affect the vaccination action. There were very few opinions of the healthcare workers in the study that the disease could be prevented through vaccination. During the period when the data of the study were collected, this situation might have responded to the expectation that, in line with strict practices, such as lockdown, the disease could be prevented since it had just started and/or terminated since the peak level was decreasing.[29]

Study Limitations

It should be noted that the evaluation of the research findings was analyzed by forming a group of healthcare workers and students, and the findings should be interpreted with caution. Since these data were collected in the first four months of the pandemic, the evaluation of the participants' views and the measures they took should be taken into account. Since this study was carried out with participants who actively used social media and WhatsApp, the opinions, measurements taken, and future predictions of those who were not closely following technological developments in society are unknown.

In this study, the views of the participants in Turkey regarding their ability to evaluate information about the COVID-19 pandemic, take measurements and predict the process of ending the pandemic were investigated. It was determined that there was a spread of false information among the participants. For this reason, it is important to constantly and openly propagate messages in order to deliver the right information to all segments of society. It was observed that COVID-19 protection interventions were generally applied among the participants. However, due to their professional advantages, the healthcare workers' adaptation to preventive actions was higher than the non-healthcare workers and non-workers. The participants generally thought that the pandemic would successfully be ended in Turkey; however, there would be a lot of losses in the whole world. The reasons for this optimistic outlook in the face of the pandemic threatening the world may be investigated in depth, and an opportunity may have been caught to develop concepts or algorithms to manage better the psychological level of the society in pandemic-like public health emergencies.

Conflict of Interest

The authors declare that there is not any conflict of interest regarding the publication of this manuscript.

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Ethics Committee Permission

In order to conduct the study, ethics committee approval was obtained from the Human Research Ethics Committee at Sinop University (Number: 25481574-900-E) dated 20.05.2020.

Authors' Contributions

Concept/Design: GD, CÇ, HÖ. Data Collection and/or Processing: GD, CÇ, HÖ. Data analysis and interpretation: GD, CÇ, HÖ. Literature Search: GD, CÇ. Drafting manuscript: GD, CÇ, HÖ. Critical revision of manuscript: GD, CÇ, HÖ. Supervision: HÖ.

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