

The Effect of Fear of COVID-19 on Health Information Searching Behavior During the Pandemic

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Abstract

Fear can cause people to panic, make wrong decisions, and behave inappropriately. This study aims to investigate the effects of fear of COVID-19 on the perception of the reliability and the use of health information sources. The participants in this study were 323 students attending a state university in Turkey. The Fear of COVID-19 Scale (FCV-19S) and the Health Information Sources Survey were used as data collection tools. The Pearson correlation coefficient was used to determine the relationships between the perception of the reliability of health information sources and their use. Simple linear regression analyses were used to determine the effect of fear on the perception of the reliability of health information sources and their use. The participants' mean FCV-19S score was 2.30 ± 0.93 on a five-point Likert scale. As a result of the evaluations made, in the range of 0–10, the information source with the highest reliability perception mean score was the doctor (7.10 ± 2.74), whereas that with the highest usage was the Internet (7.98 ± 2.77). Although the fear of COVID-19 had a negative effect on Internet use ($b = -0.38$; $p < 0.05$), the effects on the use of other health information sources was positive ($b = 0.37-0.83$; $p < 0.05$). Trust in radio ($b = 0.60$; $p < 0.05$) and newspapers/magazines ($b = 0.49$; $p < 0.05$) also increased with fear. These results showed that as university students' fear of COVID-19 increased, the use of the Internet for health information decreased; however, use of doctors, nurses, pharmacists, other health workers, scientific articles, television, radio, and newspapers/journals increased. The findings can guide health policies to be followed. Talks of health professionals and their videos with both educational and scientific content should be given more space on the Internet, social media, traditional media, and other mass media.

INTRODUCTION

The SARS-CoV-2 virus, which first appeared in China's Wuhan Province in late December 2019 with various respiratory symptoms, was officially declared an epidemic by the WHO on March 11, 2020. Although most people infected can recover without special treatment, anyone can also become infected with the COVID-19 virus and can become seriously ill or die at any age.¹ The rapid outbreak and spread of COVID-19 has affected many lives globally, has placed a heavy burden on health systems, and has caused great economic losses.²

Given the novelty of the situation, there was no treatment or vaccine for the disease in the early stages. This led individuals and society to seek up-to-date information to protect themselves and save lives.³ When individuals are faced with an uncertain event, they engage in information-seeking behavior to better cope with the threat posed by this event (currently COVID-19).⁴ Information behavior is concerned with how people need, seek, manage, give, and use information in different contexts.⁵ Health information seeking behavior, which means the purposeful obtaining of health information from selected information carriers, can provide a variety of benefits, above all the potential to reduce knowledge gaps between individuals and to educate them. In crises or disaster situations, information sources can heighten awareness and consciousness of the current situation, learn about the measures taken, and reduce anxiety arising from the uncertainty posed by a newly emerging situation.⁶ It is critical for individuals to understand the basic characteristics of the coronavirus, to recognize the threat of viral disease for their own and for public health, and to follow appropriate health

protocols. Informing the public can reduce transmission, the spread of the virus, and ultimately lower the burden on a country's healthcare facilities. Therefore, especially during the pandemic, it is very important to be aware of the information the public is receiving about the coronavirus.⁷

Both traditional and non-traditional sources of information have been used to understand the current coronavirus crisis plaguing globally. This may have been due to widespread curfews, stay-at-home orders in many countries, travel restrictions, and people's instinct to better understand the pandemic because of the uncertainty about the nature of the disease.⁸ People were facing a pandemic that they knew little about and had limited knowledge of before the COVID-19 outbreak. They needed to learn more about the coronavirus to protect themselves from it. Because they had to exclude themselves from the social environment, the sources of information were restricted. During this time, the most effective information sources were television, radio programs, and the Internet. In the pre-Internet era, the primary sources of information were traditional media such as television, radio, and printed publications. Websites have become popular sources of information since the arrival of the Internet,⁹ which provides a wide but variable source of health information and has the capacity to influence its users.¹⁰ Scholars believe that the new media, especially social media, have great potential to support information-seeking and decision-making on issues related to personal care and health.⁶

The widespread use of social media (YouTube, Instagram, Facebook, Twitter, etc.), has not only benefits but also has caused harm.¹¹ Social media have increased knowledge about the ways of transmission of the virus and the symptoms of COVID-19 and encouraged their participants to comply with preventive measures, social distancing, and sanitation. On the other hand, social media is full of misconceptions, rumors, and misinformation about the disease, which has caused an increase in fear and anxiety.¹² The flood of conflicting, incorrect, and manipulated information from social media should be recognized as a global public health threat.¹³ Since everyone can express their opinion on social media platforms, it has become very difficult to distinguish between true and false information.¹¹ COVID-19 is not just a pandemic, but also an "infodemic" of complex and dynamic information—true and false.¹⁴ The WHO director addressed this situation at the 2020 Munich Conference thus: *"We're not just fighting a pandemic, we're fighting an infodemic"*.^{15,16} Recent studies have shown how online forums, social media, online magazines, television, and newspapers contribute to the spread of information about COVID-19 and in some cases, misinformation and vaccine hesitancy.¹⁷ The increase in Internet usage and the reliance on social media such as YouTube, Facebook, Twitter and TikTok have changed the way society gathers information.¹⁴ Napiórkowska-Baran et al.¹⁸ reported that only one in five people learned about the pandemic from reliable sources. The sources of information used even influence the decision to vaccinate. Kim et al.¹⁹ found that those who used informal sources of COVID-19 information such as the media, the Internet, and friends or family were more hesitant to get vaccinated than those who used official sources of information such as government guidance and health care providers. Distrust in information sources, especially if there is uncertainty about the pandemic, can affect adoption of recommended behaviors. Information overload with rapidly changing, sometimes-questionable content and sources, can cause confusion, fear, and stress.² Rapidly expanding mass panic over COVID-19 could lead to permanent psychological problems that could potentially be even more harmful in the long run than the virus itself. Appropriate use of Internet services, technology, and social media should be encouraged to curb both the pandemic and the infodemic.¹³

The use of social media and the Internet is becoming more common, especially among young people.²⁰ Experiencing negative emotions is positively related to the frequency of media use. Young people exposed to disturbing media images of traumatic events are more likely to develop post-traumatic stress disorder later.⁴ According to Lin et al.²¹ uncertainty of information was very common among university students during the pandemic, which was also associated with stress. One of the groups most affected by the pandemic due to the closure of schools and various bans has been university students. Therefore, these students need to be well-protected. In addition, even though studies^{8,18,22,23} are focused on the effect of health information sources on fear of COVID-19, there is no comprehensive study investigating how fear of COVID-19 shapes the use, preference, and reliability perceptions of health information sources, in short, information seeking behavior. To the best of the present researcher's knowledge, there is only one study²⁴ that has examined the effect of fear on the use of online information sources. For that reason, the present study comprehensively examined

how the fear of COVID-19 affects a large number of information sources (nine of them), including online information sources (the Internet). Considering the specified gaps, this study aimed to a) to determine the health information sources that university students used and trusted the most during the pandemic, b) to determine the correlations between university students' perception of reliability of health information sources and their use, and c) to determine the effects of fear of COVID-19 on the perception of the reliability and the use of health information sources in university students.

MATERIALS AND METHODS

Data Collection Tools

In the study, the Fear of COVID-19 Scale (FCV-19S) and the Health Information Sources Survey were used as data collection tools. The FCV-19S was developed by Ahorsu et al.²⁵ and the Turkish validity and reliability study was carried out by Ladikli et al.²⁶ The Cronbach's alpha value of the scale was 0.86; therefore, the scale was seen to have good fit values as a result of confirmatory factor analysis. The Cronbach's alpha coefficient was 0.90 for this study. The FCV-19S consists of seven items and a single dimension and is a five-point Likert-type (1=strongly disagree, 5=strongly agree). Subjects with high scores are assumed to experience high fear.

The list of health information sources used in the study was taken from the Turkey Health Literacy research.²⁷ In addition to these sources, "Scientific article" and "Other (please specify)" options were added by the researcher. Participants were asked how much they trusted and used these information sources during the pandemic. The participants' trust in and use of health information sources were evaluated separately and rated between 0 and 10. Here, "0 points" indicates the least trusted or used and "10 points" the most trusted or used health information source.

Population and Sample

The population of the study consisted of all students enrolled in a state university in Turkey. The study population consisted of 23,786 university students, of which 7,575 studied for an Associate degree, 13,773 for a Bachelor degree, and 2,438 for a Master's degree. A random sampling method was used in the study. The questionnaires were hand-delivered to the students by the researcher and a surveyor and retrieved the same day. The questionnaire collection was carried out between 10.06.2022 and 20.06.2022; 323 students were reached. Informed consent was obtained from all volunteering students. The study was approved by the Niğde Ömer Halisdemir University Ethical Commission. The ethics committee permission required to perform the study was obtained on 28 April 2022 with decision number 2022/05-05.

Data Analysis

The Statistical Package for Social Sciences for Windows (SPSS) 20.0 program was used to analyze the data. The characteristics of the students and the distribution of the mean scale scores were analyzed using numbers, percentages, and mean $\pm$ standard deviation values. Pearson correlation coefficient was used to determine the relationships between the perception of the reliability of health information sources and their use. Simple linear regression analyzes were used to determine the effects of fear of COVID-19 on the perceptions of the reliability and the use of health information sources.

RESULTS

Based on Table 1, approximately two-thirds of the participants were female (63.5%), the income status of the participants was moderate (62.5%), and 68% had never been infected with COVID-19. The students' mean age was 23.72 ± 6.38 years and about three-quarters of them were in an undergraduate program (72.4%); many were afraid of infecting a family member with COVID-19 (75.4%). The participants' mean FCV-19S score was 2.30 ± 0.93 .

Table 1. Characteristics of the participants (N = 323)

Characteristics	Categories	n	%	Mean $\pm$ SD ^a
Gender	Male	118	36.5	23.72 $\pm$ 6.38
	Female	205	63.5	
Age	18-20 years	94	29.4	
	21-23 years	161	50.3	
	[?]24 years	65	20.3	23.72 $\pm$ 6.38
Marital status	Married	42	13.1	
	Single ^b	279	86.9	
Income status	Low-very low ^c	58	18.4	23.72 $\pm$ 6.38
	Moderate	197	62.5	
	Good-very good ^d	60	19.1	
Type of education	Associate degree	41	12.7	23.72 $\pm$ 6.38
	Bachelor's degree	234	72.4	
	Master's degree	48	14.9	
Having been infected with COVID-19	Yes	103	32.0	23.72 $\pm$ 6.38
	No	219	68.0	
Fear of infecting a family member with COVID-19	Yes	242	75.4	23.72 $\pm$ 6.38
	No	79	24.6	
FCV-19S Mean Score				2.30 $\pm$ 0.93

^aStandard Deviation

^b 276 never married, 1 widow, 2 separated/divorced

^c 40 bad, 18 very bad

^d 55 good, 5 very good

Table 2 provides the evaluation of the students regarding the perception of reliable health information sources and use of health information sources. The information source with the highest reliability perception mean score was the doctor (7.10 $\pm$ 2.74), whereas the one with the highest usage was the Internet (7.98 $\pm$ 2.77). Although the Internet was the most-used health information source, it was only sixth (5.82 $\pm$ 3.22) in terms of reliability perception. The mean perception of nurses as reliable information source (7.10 $\pm$ 2.74) was second highest and their use as such (6.50 $\pm$ 3.07) was third highest. Radio was the lowest in terms of reliability perception (3.59 $\pm$ 2.80) and mean usage (2.27 $\pm$ 2.70). Since the number of participants evaluating health information sources in the “other category” was quite low ($n = 4-12$ people) only descriptive findings were given and no further analysis was performed. As the Minister of Health ranked as the highest source of information in terms of reliability perception (9.00 $\pm$ 1.34) and mean usage (9.36 $\pm$ 0.92), the environment was ranked as worst source of information in terms of reliability perception (3.50 $\pm$ 4.15) and usage (4.81 $\pm$ 4.09). The mean reliability perception of scientists (8.25 $\pm$ 3.50) and mean usage (7.67 $\pm$ 3.21) were also high.

Table 2. Distribution of the participants’ health information sources reliability perception and mean usage

Health information sources	Perception of reliability Mean $\pm$ SD	Use Mean $\pm$ SD
1. Television	4.65 $\pm$ 3.03	5.68 $\pm$ 3.48
2. Radio	3.59 $\pm$ 2.80	2.27 $\pm$ 2.70
3. Newspapers/magazines	4.65 $\pm$ 2.87	3.59 $\pm$ 2.99
4. Scientific articles	6.92 $\pm$ 3.10	5.04 $\pm$ 3.41
5. Internet	5.82 $\pm$ 3.22	7.98 $\pm$ 2.77
6. Doctor	8.05 $\pm$ 2.54	7.38 $\pm$ 2.85
7. Nurse	7.10 $\pm$ 2.74	6.50 $\pm$ 3.07

Health information sources	Perception of reliability Mean±SD	Use Mean±SD
8. Pharmacist	6.49±2.82	5.67±3.27
9. Other health professionals	6.09±2.93	5.35±3.38
10.1. Other-Minister of Health (<i>n</i> = 12)	9.00±1.34	9.36±0.92
10.2. Other-Environment (family, friends) (<i>n</i> =16)	3.50±4.15	4.81±4.09
10.3. Other-Scientists (<i>n</i> = 4)	8.25±3.50	7.67±3.21

The intercorrelations of the students' perceptions of reliability of health information sources as well as the intercorrelations of the use of health information sources are shown in Table 3. In the correlation coefficients matrix, the lower left side of the main diagonal represents the correlation coefficients between the perceptions of reliable health information source, and the upper right side of the main diagonal represents the correlation coefficients between health information source usage. The evaluation based on the correlation between the students' perceptions of reliable health information sources showed that the correlation coefficient between the students' perception of the pharmacist as reliable health information source and the perception of the nurse as a reliable health information source was the highest ($r = 0.82$; $p < 0.001$). In order of the values, the correlation coefficient between pharmacists and other healthcare professionals ($r = 0.75$; $p < 0.001$) and the correlation coefficient between doctors and nurses ($r = 0.72$; $p < 0.001$) were close. Correlations between reliability perceptions of health workforce information sources (doctor, nurse, pharmacist and other health workers) were generally higher (0.51–0.82); all of these were statistically significant ($p < 0.001$). In addition, in terms of reliability perception, the correlation between television and radio, which is denoted as “traditional” media, was moderate and statistically significant ($r = 0.64$; $p < 0.001$). An evaluation made based on the correlations between the students' use of health information sources showed that the correlation coefficient between the use of pharmacists and nurses was the highest ($r = 0.80$; $p < 0.001$). This is followed by the correlation between doctors and nurses ($r = 0.74$; $p < 0.001$). Intercorrelations between the use of the health workforce as information sources (doctor, nurse, pharmacist, other health workers) was generally higher (0.53–0.80); all these values were statistically significant ($p < 0.001$).

Table 3. Intercorrelation coefficients of health information source reliability perceptions and uses

Health Health															
in- for- ma- tion	in- for- ma- tion	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use
Perception of reli- abil- ity	1 Television	1	2	2	3	3	4	4	5	5	6	6	7	7	8
	2. Radio	0.64**	0.64**	1	1	0.61**	0.61**	0.32**	0.32**	-	-	0.11*	0.11*	0.21**	0.21**

Health in- for- ma- tion sources	Health in- for- ma- tion sources	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use	Use
3. Newspapers/magazines	0.49**	0.49**	0.64**	0.64**	1	1	0.50**	0.50**	-	-	0.17**	0.17**	0.27**	0.27**	0.27**
News-papers/magazines									0.03	0.03					
4. Newspapers/magazines	0.08	0.08	0.31**	0.31**	0.47**	0.47**	1	1	-	-	0.26**	0.26**	0.26**	0.26**	0.26**
Sci-entific articles									0.06	0.06					
5. Internet	0.33**	0.33**	0.09	0.09	0.13*	0.13*	-	-	0.03	0.03	1	1	0.15*	0.15*	0.15**
6. Doctor	0.24**	0.24**	0.15**	0.15**	0.26**	0.26**	0.29**	0.29**	0.35**	0.35**	1	1	0.74**	0.74**	0.74**
7. Nurse	0.20**	0.20**	0.21**	0.21**	0.25**	0.25**	0.21**	0.21**	0.27**	0.27**	0.72**	0.72**	1	1	1
8. Pharmacist	0.20**	0.20**	0.21**	0.21**	0.27**	0.27**	0.17**	0.17**	0.25**	0.25**	0.63**	0.63**	0.82**	0.82**	0.82**
9. Other health professionals	0.22**	0.22**	0.16**	0.16**	0.14**	0.14**	0.9	0.9	0.30**	0.30**	0.51**	0.51**	0.71**	0.71**	0.71**

* The correlations are significant at the $p < 0.05$ level.

** The correlations are significant at the $p < 0.001$ level.

The comparison of the relationships between the perception of reliability and the use of health information sources is shown in Table 4. The values (bolded) in the main diagonal of the correlation coefficients matrix are the correlations between each information source's own perception of reliability and use. The correlation coefficients in the lower left side of the main diagonal express the correlations between the perception of reliability of health information sources and the use of health information sources; the upper-right side of the main diagonal is the opposite. For example, the value 0.51 in the first column and second row of the correlation coefficients matrix was the correlation coefficient between "perception of radio reliability and television usage." The 0.29 value in the first row of the second column, which is symmetrical, was the correlation coefficient between "radio use and perception of television reliability." Generally, the correlation coefficients between the perception of reliability and the use of the same information sources were the highest. Although all of these correlations were statistically significant: the highest correlation among these was between the reliability perception and the use of television ($r = 0.63$; $p < 0.001$) while the lowest correlation was between the reliability perception and the use of newspapers/magazines ($r = 0.36$; $p < 0.001$).

Table 4. Correlation coefficients between the reliability perception and the use of health information sources

Health in-formation sources	Health in-formation sources	Use													
		1	2	2	3	3	4	4	5	5	6	6	7	7	8
Perception of reliability	Television	0.63**	0.63**	0.29**	0.29**	0.14*	0.14*	-0.04	-0.04	0.24**	0.24**	0.13*	0.13*	0.16**	0.16**
	2. Radio	0.51**	0.51**	0.53**	0.53**	0.30**	0.30**	0.11*	0.11*	0.17**	0.17**	0.16**	0.16**	0.22**	0.22**
	3. Newspapers/magazines	0.35**	0.35**	0.30**	0.30**	0.36**	0.36**	0.22**	0.22**	0.18**	0.18**	0.21**	0.21**	0.22**	0.22**
	4. Sci-entific articles	0.09	0.09	0.18**	0.18**	0.23**	0.23**	0.57**	0.57**	0.18**	0.18**	0.19**	0.19**	0.13*	0.13*
	5. Internet	0.15**	0.15**	0.02	0.02	-	-	-	-	0.51**	0.51**	0.11	0.11	0.11*	0.11*
	6. Doctor	0.17**	0.17**	0.03	0.03	0.11	0.11	0.19**	0.19**	0.34**	0.34**	0.47**	0.47**	0.45**	0.45**
	7. Nurse	0.14*	0.14*	0.09	0.09	0.14*	0.14*	0.17**	0.17**	0.30**	0.30**	0.43**	0.43**	0.56**	0.56**
	8. Pharmacist	0.12*	0.12*	0.08	0.08	0.16**	0.16**	0.13*	0.13*	0.29**	0.29**	0.45**	0.45**	0.53**	0.53**
	9. Other health professionals	0.15**	0.15**	0.10	0.10	0.14*	0.14*	0.16**	0.16**	0.31**	0.31**	0.41**	0.41**	0.49**	0.49**

* The correlations are significant at the $p < 0.05$ level.

** The correlations are significant at the $p < 0.001$ level.

Table 5 presents the results of simple linear regression analyses applied to determine the effect of the mean score of the FCV-19S on the perception of reliability and the use of health information sources. Based on these results, the effects of fear of COVID-19 on the perceptions of health information sources' reliability on radio and newspaper/journal were statistically significant ($p < 0.05$). A one-unit increase in fear of COVID-19 caused a 0.60-unit increase in the perception of radio as a safer source, and it caused a 0.49-unit increase in the perception of newspapers/magazines as a safer source. All the effects of fear of COVID-19 on the use of health information sources were statistically significant ($p < 0.05$). Although the fear of COVID-19 had a negative effect on internet use, the effects on the use of other health information sources were positive. Based on these results, a one-unit increase in fear of COVID-19 decreased internet use by 0.38 units, but increased television use by 0.44 units, radio use by 0.51 units, newspaper/magazine use by 0.37 units, scientific article use by 0.39 units, doctor use by 0.54 units, nurse use by 0.83 units, pharmacists use by 0.77 units, and use of other health professionals by 0.61 units ($p < 0.05$).

Table 5. The effects of fear of COVID-19 on reliability perception and use of health information sources

Dependent variables	Health information sources	Health information sources	Health information sources
	Perception of reliability b_j^a	Perception of reliability $S(b_j)^b$	Perception of reliability β^c
Constant	3.95	0.45	
Television	0.31	0.18	0.09
Model fits:	$R^2 = 0.009$ $F = 2.87$ $s = 3.02$	$R^2 = 0.009$ $F = 2.87$ $s = 3.02$	$R^2 = 0.009$ $F = 2.87$ $s = 3.02$
Constant	2.21	0.41	
Radio	0.60	0.17	0.20
Model fits:	$R^2 = 0.041$ $F = 13.28$ $s = 2.74$	$R^2 = 0.041$ $F = 13.28$ $s = 2.74$	$R^2 = 0.041$ $F = 13.28$ $s = 2.74$
Constant	3.53	0.42	
Newspapers/magazines	0.49	0.17	0.16
Model fits:	$R^2 = 0.025$ $F = 8.18$ $s = 2.84$	$R^2 = 0.025$ $F = 8.18$ $s = 2.84$	$R^2 = 0.025$ $F = 8.18$ $s = 2.84$
Constant	6.17	0.46	
Scientific articles	0.32	0.19	0.10
Model fits:	$R^2 = 0.010$ $F = 3.07$ $s = 3.09$	$R^2 = 0.010$ $F = 3.07$ $s = 3.09$	$R^2 = 0.010$ $F = 3.07$ $s = 3.09$
Constant	6.14	0.48	
Internet	-0.14	0.19	-0.04
Model fits:	$R^2 = 0.002$ $F = 0.511$ $s = 3.22$	$R^2 = 0.002$ $F = 0.511$ $s = 3.22$	$R^2 = 0.002$ $F = 0.511$ $s = 3.22$
Constant	8.08	0.38	
Doctor	-0.01	0.15	-0.01
Model fits:	R^2 [?] 0.001 $F = 0.01$ $s = 2.54$	R^2 [?] 0.001 $F = 0.01$ $s = 2.54$	R^2 [?] 0.001 $F = 0.01$ $s = 2.54$
Constant	6.62	0.41	
Nurse	0.21	0.16	0.07
Model fits:	$R^2 = 0.005$ $F = 1.60$ $s = 2.74$	$R^2 = 0.005$ $F = 1.60$ $s = 2.74$	$R^2 = 0.005$ $F = 1.60$ $s = 2.74$
Constant	5.80	0.42	
Pharmacist	0.30	0.17	0.10
Model fits:	$R^2 = 0.010$ $F = 3.16$ $s = 2.81$	$R^2 = 0.010$ $F = 3.16$ $s = 2.81$	$R^2 = 0.010$ $F = 3.16$ $s = 2.81$
Constant	5.59	0.44	
Other health professionals	0.22	0.18	0.07
Model fits:	$R^2 = 0.005$ $F = 1.51$ $s = 2.93$	$R^2 = 0.005$ $F = 1.51$ $s = 2.93$	$R^2 = 0.005$ $F = 1.51$ $s = 2.93$

Note: The independent variable is the FCV-19S Mean Score

^a Regression coefficient

^b Standard error

^c Standardized regression coefficient

DISCUSSION

This study reveals a range of important findings about the evaluation of the effects of fear of COVID-19 on the reliability perceptions and the use of health information sources in university students studying at a state university in Turkey. In this study, which included 323 university students, the mean of the participants' fear of COVID-19 was 2.30 ± 0.93 which was generally lower than other studies²⁸⁻³¹ conducted in Turkey. As the participants in the current study were all university students and that these students were younger and had higher self-confidence compared to the participants in other studies, and because the chaos and uncertainty of information gradually disappeared during the research period, these factors may have been effective in this result.

In this study, the most used health information source by the participants was the Internet. The rate of

individuals using the Internet in Turkey in 2022 was 85%; for university graduates, this rate was 99%.³² Of Americans 72% and 83% of Europeans use the internet as a source for health information.¹⁴ As in the present study, many studies^{12,16,22,33} found that social media and online information sources, and therefore the Internet, were the most-used information sources in the pandemic. The Internet may be used for various reasons, whereas TV and radio programs only provide information at certain times of the day, the internet allows us to get information instantly whenever we want. Commonly used devices such as smartphones and computers play the most important role in obtaining information on the Internet. The Internet is often preferred because it provides easy access to information.⁹ Although the Internet was the most-used health information source in the current study, it was only sixth in terms of reliability perception. In addition, as their fear of COVID-19 levels increased, university students used the Internet less to access health information. According to Gallegati et al.⁶ the rate of those who used social media was 47%; however, the rate of those who relied on them was only 5.3%. Szmuda et al.⁷ reported that content quality of YouTube videos about COVID-19 was low. In a study²⁰ conducted in Turkey, those who used social media and online sources for information had a higher fear of COVID-19. According to Superio et al.³⁴ those who used Facebook as health information source had higher levels of severe/extreme fear. Although relying on the news provides some means of control in chaotic times, continuous access can cause negative psychological, emotional, and physical distress among users. Sultana et al.²⁴ found that fear of COVID-19 triggers avoidance of online information. Although the Internet is the most used health information source, it is not one of the most trusted sources and it can be said that the infodemic is especially effective in reducing its use with fear.

After the Internet, the participants mostly used doctors as their health information source. Additionally, doctors were the most trusted source of health information. As the fear of COVID-19 levels among the participants increased, they used doctors more as a source of information. Szmuda et al.⁷ determined that doctor talks were among the most watched videos on YouTube and according to the content quality analysis, all the highest rated videos belong to doctor speakers. Gallegati et al.⁶ found that the group that mostly includes doctors (family doctor/other physicians/pharmacists) was the most-trusted health information source. Chen et al.⁴ reported that physicians had a more positive image after the pandemic than previously. Because doctors provide evidence-based information and they have a high level of health knowledge and experience, these attributes may have been effective in making doctors one of the most trusted and one of the most-used sources of information.

Although nurses were the third most-used health information source after the internet and doctors, they were the second most-trusted health information source after doctors. In addition, with the increase in the level of fear increased the use of nurses the most ($b = 0.83; p < 0.05$). People mostly preferred to receive information about the symptoms, diagnosis, treatment, and measures against the spread of COVID-19 during the pandemic.⁹ Alsharif³⁵ determined that approximately three-quarters of the nurses (71.90%) had sufficient and good knowledge about the causes, transmission, symptoms, treatment, and death rate of COVID-19. El-Monshed et al.³⁶ found that the vast majority of nurses (81.6%) had an acceptable level of knowledge of COVID-19. In times of crisis, evidence-based information plays a key role in helping nurses deliver the best care.³⁷ Since nurses, like doctors, provide evidence-based information and have knowledge and professional experience, their training may have been effective in making them one of the most-trusted and used sources of information.

Pharmacists had a moderate level of use and reliability perception; however, their perception of reliability was slightly higher. As the fear of COVID-19 levels of the participants increased, they used the pharmacist more as a source of information. In another study⁶ the group of health professionals, including pharmacists, was the most-trusted source of health information. Similar to this study, in the mentioned study, the rate of those who used the group of pharmacists as a source of information was lower (32.8%); however, the rate of those who trusted them was higher (61.8%). Among health professionals, pharmacists are highly educated people and have good knowledge of the ingredients and use of drugs. Pharmacists have improved health communication and can convey information to their customers while practicing their profession; these factors may have affected the formation and development of trust among people.

Scientific articles were the third-lowest health information source in terms of usage, but third-highest in terms of reliability perception. In other words, although university students do not widely use scientific articles as a health information source, they have relatively higher trust in this information source. In addition, as the fear of COVID-19 levels of the participants increased, they used scientific articles much more to acquire health information. Gallegati et al.⁶ found that the group of scientific articles or medical, health and wellness websites was the second most-used and the first most-trusted source of information. Doganer and Zhang⁹ reported that among the most-watched YouTube videos, those with scientific content were watched more, and these had a higher reliability. Scientific articles have scientific content and are well known by university students, they may have been effective in achieving high reliability. Therefore, it can be said that scientific sources are perceived as more reliable.

Radio and newspapers/magazines were the least-used and least-trusted sources of information. However, their use also increased with increases in fear. According to Gallegati et al.⁶ TV/Radio was a moderately used (54.6%) but a less-trusted (29.0%) information source. Karahan et al.²⁰ found in their study conducted in Turkey that the information sources least used by the participants were radio and newspapers. Alnohair et al.³³ also reported that radio was the least-used source of information. According to Mamun²² the use of the newspaper as a source of information was relatively low and using newspapers as a source of COVID-19 information is associated with lower fears of COVID-19. Interestingly, in the current study, as the fear of COVID-19 levels of the participants increased, their confidence in only radio and newspapers/magazines as health information sources increased. Less use of these sources of information may have been effective in producing that result. Jain⁸ reported that high exposure to news led to lower levels of trust. Chao et al.³⁸ found that the use of new media rather than traditional media was associated with negative psychological outcomes. The fact that no newspaper was distributed during the peak of the COVID-19 pandemic, the decrease in interest in traditional media, the increase in internet usage and the shift of rating wars to the online environment may have had an impact on the current results.

The use of television and the perception of reliability were at a moderate level. In some studies^{20,28} conducted in Turkey, television was one of the sources of information most preferred during the pandemic. Because the participants were older in the afore-mentioned studies may have been effective in the preference of television. In the current study, the use of television for accessing health information increased as the fear of COVID-19 level increased. In a study²⁰ conducted in Turkey, those who used television as a source of information reportedly had a higher fear of COVID-19.

When a general evaluation is made in terms of reliability perception and usage, generally the correlations between reliability perception and use of the same information sources were higher. As the trust of the participants in the related health information source increased, the use of that source also increased. The highest of these was between the reliability perception and the use of television. When an evaluation is made separately and within themselves in terms of reliability perception and use of health information sources, the correlations between health workforce information sources (doctor, nurse, pharmacist, other health professionals) were generally higher. In addition, the perception of reliability and the use of health workforce information sources were generally higher than other health information sources. Doganer and Zhang⁹ found that videos containing information provided by health professionals were watched more frequently than other videos. Superio et al.³⁴ reported in their study conducted with university students in the Philippines that medical personnel were the most reliable source of health information among interpersonal channels. In the current study, the media itself may have been effective in using and trusting health workforce information resources more than traditional media. The media have used the pandemic as an opportunity to increase the positive image of physicians.⁴ While many people stayed at home due to restrictions, the media portrayed all healthcare professionals, especially doctors and nurses, who had to work in healthcare institutions, as heroes; that has increased the respect, trust, and interest in them.

CONCLUSION

The most-used health information source was the internet and the most-trusted health information source was the doctors. The nurses were the source of information whose use increased the most, along with the

increase in fear. Therefore, to prevent the infodemic and maximize citizens' compliance with the rules in the pandemic, it is important to increase provide accurate information and communicate effectively for citizens and to increase doctor talks, nurse talks, and scientific videos of health professionals on the Internet, social media, traditional media, and other mass media. Citizens should be encouraged to use the websites of official organizations when searching for information about COVID-19 on the Internet. Governments, health organizations, policy makers and health managers should make use of new media tools such as electronic news media and social media, as well as official websites and traditional media, to disseminate the rules to be followed, and preventive and protective measures to be taken in crises such as pandemics.

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