

# THE RELATIONSHIP BETWEEN FEAR OF COVID-19 AND LEVELS OF CYBERCHONDRIA AND EVALUATION OF AFFECTING FACTORS

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## Summary

**Background:** The coronavirus disease (COVID-19) pandemic exceeds the level of anxiety in some subjects and turns into fear, which causes an increase in the level of cyberchondria. This study was conducted the relationship between fear of covid-19 and levels of cyberchondria and evaluation of affecting factors.

**Subject and Methods:** This research, which was planned as a descriptive-correlational study, was carried out with 311 volunteers aged 18-65 years, who could be reached through Google Forms.

**Results:** It has been found that cyberchondria and fear of COVID-19 are affected by statements containing some sociodemographic and medical histories of subjects'. Fear of coronavirus significantly and positively predicted cyberchondria ( $\beta=0.37$ ,  $p<0.001$ ).

**Conclusions:** As a result of the study, it was determined that subjects' cyberchondria levels increased together with their fear of COVID-19.

**Keywords:** COVID-19, Fear, Cyberchondria.

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## INTRODUCTION

COVID-19 first appeared in the Wuhan province of China and affected the whole world in a short time (WHO 2021, Can 2020). Although COVID-19 is thought to be transmitted by the droplet route and direct contact, the disease has also been observed to appear in places where there is no evidence of contact with infected people (Desicioğlu & Yavuz 2020, Alp & Unal 2020). The most typical clearly known symptoms of the disease with an average incubation period of 5 days are high fever, dry cough, and fatigue. However, headache, nasal congestion, general pain, loss of sense of taste and smell, diarrhea, redness in the body, and color changes in the fingers can also be observed in some patients (WHO 2021, Can 2020). Pneumonia develops in 20% of COVID-19 cases, and artificial respiration methods are needed (Can 2020).

In the COVID-19 pandemic, as in other diseases, the focus has been primarily on the physical symptoms of sick subjects, and measures have been taken to protect physical health (Baltacı et al. 2021). However, it is known that suddenly emerging epidemics can have various effects on people's behaviors and psychological states (Gökler & Turan 2020). The pandemic may pave the way for new mental disorders or exacerbate the existing

problems (Kardeş 2020). The COVID-19 pandemic may cause subjects to experience anxieties and fears about the outbreak, such as the thought that the outbreaks experienced in the past will repeat, the fear of catching the current disease/death, experiencing economic loss, being quarantined and away from their loved ones, stigma, the inability to protect their loved ones and infecting them with the virus, and the fear of losing their loved ones due to the virus, as well as problems such as feeling obliged to hoard some drugs and protective equipment and living in panic (Kardeş 2020).

Isolation and quarantines applied during the COVID-19 outbreak adversely affect the psychology of subjects and especially increase the level of fear and anxiety and may worsen the existing mental disorders or cause new psychological problems (Kardeş 2020, Bekaroglu & Yılmaz 2020). During this period, many negative symptoms such as irritability, burnout, outbursts of anger, guilt, loneliness, aimlessness, domestic violence, divorce, mood and behavioral disorders, and post-traumatic stress disorder can be observed in subjects.

With the COVID-19 pandemic, changes in the social lives of subjects (staying more at home with isolation and quarantine practices, a decrease in interpersonal relations, etc.), the continuation of work and education

on online platforms have led to an increase in the time spent on the internet (Baltacı et al. 2021, Bekaroglu & Yılmaz 2020). An important reason for the increased use of the internet during this period is the search for health information. A person's anxiety about his/her health status can range from mild to pathological. The higher the anxiety of subjects is, the higher the level of research on health is (Barke et al. 2016, Baumgartner & Hartmann 2011, Erdogan & Hocaoglu 2020). Since health information can be accessed quickly and easily on any subject desired, but this information is contradictory, uncertain and inaccurate, or since subjects can access disease and health information that they have never known, research on the internet can increase the level of health anxiety of subjects and cause them to search the internet repeatedly to relax (Deniz 2020, Erdogan & Hocaoglu 2020). Cyberchondria, which was used for the first time in 2002 and is defined as excessive and abnormal searches on the internet to search for health information due to health concerns, is an abnormal behavior and is considered a disturbing emotional state.

These online searches, done by spending a lot of time on the internet in order to eliminate the anxieties of subjects and obtain health information, can increase both the e-health literacy and the anxiety and worries of a person (Erdogan & Hocaoglu 2020). Moreover, cyberchondria can cause negative consequences such as increasing the congestion and workload of hospitals, wasting resources, wasting the person's time and being directed to wrong treatments (Deniz 2020, Kalip & Çöl 2020, Alpyıldız & Aslan 2020).

Studies on the subject stated that fear and anxiety predicted cyberchondria directly and indirectly (Lin et al. 2020, Liu et al. 2020, Wu et al. 2021, Jungmann et al. 2020, Maftei & Holman 2020, Jungmann & Witthöft 2020). Laato et al. (2020) and Varma et al. (2021) indicated in their studies that cyberchondria was a side effect of the COVID-19 outbreak (Laato et al. 2020, Varma et al. 2021). This study was conducted due to a limited number of studies on the subject reached as a result of the literature review.

## SUBJECTS AND METHODS

### Setting and Study Participants

This research was conducted as a descriptive and correlational study. The study was conducted online Erzurum province in Turkey between February and April 2021. The study population consisted of subjects aged

between 18-65 years, and subjects who used smartphones and social media and also wanted to support the research were included in the sample without sample selection. The study was completed with a total of 311 subjects.

### Data Collection

The data were collected using the personal information form prepared by the researchers and the existing scales on the subject (The Fear of Coronavirus Scale and Cyberchondria Severity Scale). The surveys were created using the Google Documents website, and then the link was shared on the researchers' social media accounts such as Facebook, Twitter, Instagram, blogs, forums, and WhatsApp.

*Personal Information Form:* This form prepared by the researchers consists of 20 questions containing information about the sociodemographic characteristics and medical histories of subjects.

*Fear of Coronavirus (COVID-19) Scale (FCS):* The scale was developed by Ahorsu et al. (2020), and its Turkish validity and reliability studies were performed by Bakioglu et al. (Ahorsu et al. 2020, Bakioglu et al. 2021). The scale consists of 7 items and a single dimension and is graded in a 5-point Likert type (1-Strongly disagree and 5-Strongly agree). The total score obtained from the items of the scale reflects the level of fear of coronavirus experienced by the individual. The scores that can be obtained from the scale vary between 7 and 35, and a high score indicates a high level of fear of coronavirus. Bakioglu et al. found Cronbach's alpha value as 0.88 in their study, and it was found to be 0.87 in this study (Bakioglu 2021 et al.).

*Cyberchondria Severity Scale (CSS):* It is a scale developed by McElroy and Shevlin in 2014 to measure cyberchondria, which is defined as a form of anxiety characterized by doing excessive health research on the internet (McElroy & Shevlin 2014). The scale, whose Turkish validity and reliability studies were conducted by Uzun, consists of 33 items and 5 sub-scales and is graded in a 5-point Likert type (1-Never, 2-Rarely, 3-Occasionally, 4-Frequently, 5-Always).

- Compulsion sub-scale: items 3, 6, 8, 12, 14, 17, 24, 25
- Distress sub-scale: items 5, 7, 10, 20, 22, 23, 29, 31
- Excessiveness sub-scale: items 1, 2, 11, 13, 18, 19, 21, 30
- Reassurance sub-scale: items 4, 15, 16, 26, 27, 32
- Mistrust of medical professional sub-scale: items 9, 28, 33.

The sum of the scores obtained from the items gives the total score of the scale. Items 9, 28, and 33 on the scale without cut-off points are scored inversely, and a high score indicates a high level of cyberchondria. Cronbach's alpha value, which was found to be 0.91 in the study of Uzun was found to be 0.96 in this study (Uzun 2016).

### Data analysis

The study data were analyzed using the SPSS 25.0 (Statistical Package for Social Science) program. In the evaluation of the data, percentage, mean, variance of analysis (ANOVA), independent sample t-test, Mann-Whitney U test (MWU) and Kruskal-Wallis test and simple linear regression analysis were used.

### Ethical issues

Before starting the study, the ethics committee approval dated 31/03/2021 and with protocol number 04/10 was obtained from the Ethics Committee Board of Erzinçan Binali Yıldırım University. Before the data collection, the purpose of the study was briefly explained to the subjects in the survey, and their consent to participate in the study was obtained.

### Limitations and Generalizability of the Study

Conducting the research online, requiring a smartphone and internet constitute the limitations of the study. The results of the study can only be generalized to the group supporting the research.

## RESULTS

A total of 350 people answered the questionnaire, but 39 subjects were excluded from the study due to exclusion criteria (not being between the ages of 18-65 and not answering the questions completely). The final sample consisted of 311 subjects.

### Background information

239 subjects were female (76.8%), and the remaining 23.2% were male. The mean age was  $26.65 \pm 10.12$ . It was determined that 59.2% of the subjects were single, 61.1% had no children, 92.6% had higher education level, 52.4% were employed, 52.1% had a middle income, and 84.9% lived in a nuclear family.

### COVID-19 and Cyberchondria

Table 1 presents the distribution of subjects according to their medical histories. In this context, it was revealed that 81.7% of the subjects did not smoke, 75.9% of them did not have COVID-19, 57.6% of them did not have relatives who had COVID-19, 82.6% of them did not lose a relative due to COVID-19, and 86.5% did research on the internet about COVID-19. It was found that 54.3% of the subjects consulted a physician 1-2 times in the last 1 year, 50.2% perceived their general health level as good, 56.6% did research on the internet before applying to the physician, 39.2% did research on the internet before starting the treatment given by the physician, 65.9% of them did not undergo an examination in the last month, 84.6% of them did not have any examinations other than the physician's recommendation in the last year, and 71.7% of them did not use any medication other than the physician's recommendation in the last 1 year.

Table 2 shows the min-max scores that subjects can receive from the FCS and the CSS and their mean scores. Accordingly, the mean score obtained by subjects from the FCS was  $17.31 \pm 6.03$ , and the mean score they obtained from the Cyberchondria Severity Scale was  $78.27 \pm 26.46$ .

Table 3 presents the distribution of the subjects' sociodemographic characteristics according to the FCS and the CSS mean scores. Accordingly, a statistically significant difference was detected between sex and the total mean score of the FCS and the Distress and the Mistrust of Medical Professional sub-scales of the CSS; between marital status, the status of having children and employment status and the Distress, Excessiveness, Reassurance, Mistrust of Medical Professional sub-scales of the CSS and the total mean score of the scale; between educational background and the Excessiveness sub-scale of the CSS and the total mean score of the scale.

The distribution of subjects' medical histories according to the FCS and the CSS Mean Scores is given in Table 4. Accordingly, a statistically significant difference was found between the number of visits to any physician in the last year, perception of the general health level and doing research on the internet about the complaint before consulting a physician and the total mean score of the Fear of Coronavirus (COVID-19) Scale. Furthermore, a statistically significant difference was determined between smoking and the Compulsion, Distress, and Mistrust of Medical Professional sub-scales of the CSS; between doing research on the internet about COVID-19 and the Distress, Excessiveness, Reassurance, Mistrust of Medical Professional sub-scales of the CSS and the total mean score of the scale; between the number of visits to any physician in the last year and the Excessiveness,

Reassurance and Mistrust of Medical Professional sub-scales of the CSS and the total mean score of the scale; between the preception of general health level and the Compulsion, Distress, Reassurance sub-scales of the CSS and the total mean score of the scale; between doing research on the internet about the complaint before consulting a physician and the Compulsion, Distress, Excessiveness, Reassurance, and Mistrust of Medical Professional sub-scales of the CSS and the total mean score of the scale; between doing research on the internet before starting the treatment given by the physician and the Compulsion, Distress, Excessiveness, and Reassurance sub-scales of the CSS and the total mean score of the scale; between the status of using medications in the last year, except for the physician's recommendation, and the Excessiveness and Mistrust of Medical Professional sub-scales of the CSS and the total mean score of the scale.

Table 5 shows the regression analysis between the mean scores of the FCS and the CSS. According to the results of the simple linear regression analysis, fear of coronavirus significantly and positively predicted cyberchondria ( $\beta=0.37$ ,  $p<0.001$ ). Fear of coronavirus explains 14% of the total variance in cyberchondria ( $R^2=0.142$ , adjusted  $R^2=0.140$ ,  $F=51.311$ ,  $p<0.001$ ) (Table 5).

## DISCUSSION

The aim of the study was to investigate the relationship between the fear caused by the pandemic and cyberchondria. It was observed that the number of cases in Turkey at the time of the study was above 20,000 per day (Republic of Turkey Ministry of Health 2022)

When the research findings were examined, it was revealed that women experienced more fear than men in relation to the pandemic (Table 3). Women are more emotional and sensitive than men. This can cause them to feel negative events more intensely and react negatively. It is thought that the result originates from this. In the study conducted by Bakioğlu et al. (2020) and Šljivo et al. (2020) which supports the result, women's coronavirus fear levels were found to be higher (Bakioğlu et al. 2020, Šljivo et al. 2020). At the same time, there are various research results showing that women have higher levels of anxiety and risk perception regarding the pandemic (Ekiz et al. 2020, Kurt et al. 2020, Ozdin & Ozdin 2020, Wang et al. 2020). Additionally, in the studies carried out by Moghanibashi-Mansourieh (2020), Qui et al. (2020), and Jungmann and Witthöft (2020), it was determined that women felt more anxiety during the pandemic (Moghanibashi-Mansourieh 2020, Qiu et al. 2020, Jungmann & Witthöft 2020). According to sex, it was observed that women scored significantly

**Table 1.** Distribution of Subjects by Medical Histories

Characteristics	n	%
<b>Smoking status</b>		
Yes	57	18.3
No	254	81.7
<b>Status of having COVID-19</b>		
Yes	75	24.1
No	236	75.9
<b>Having family members who have had COVID-19</b>		
Yes	132	42.4
No	179	57.6
<b>Losing a relative due to COVID-19</b>		
Yes	54	17.4
No	257	82.6
<b>Doing research on the internet about COVID-19</b>		
Yes	269	86.5
No	42	13.5
<b>Number of visits to any physician in the last year</b>		
None	53	17.0
1-2 times	166	53.4
3-4 times	71	22.8
5 times and above	21	6.8
<b>Perception of general health level</b>		
Poor	10	3.2
Moderate	105	33.8
Good	156	50.2
Very good	40	12.9
<b>Doing research on the internet about the complaint before consulting a physician</b>		
Yes	176	56.6
No	33	10.6
Sometimes	102	32.8
<b>Doing research on the internet before starting the treatment given by the physician</b>		
Yes	122	39.2
No	88	28.3
Sometimes	101	32.5
<b>Undergoing an examination in the last month</b>		
Yes	106	34.1
No	205	65.9
<b>Having examinations in the last year, except for the physician's recommendation</b>		
Yes	48	15.4
No	263	84.6
<b>Using medications in the last year, except for the physician's recommendation</b>		
Yes	88	28.3
No	223	71.7

higher on the CSS, especially on the Distress and Mistrust of Medical Professional sub-scales. This causes women to question the situation more and seek information due to the high level of anxiety about the disease subjects, including the pandemic. The result is thought to be related to this. Likewise, Uzun (2016) and Barke et al. (2016) found in their studies higher cyberchondria scores in women. (Uzun 2016, Barke et al. 2016) In the study performed by White and Horvitz, it was concluded that women searched

for health information on the internet more and they felt more anxiety after this process than men (White & Horvitz 2009). These studies support the research findings.

In Table 3, it was determined that there was a statistical difference between the sub-scales of the CSS (except for the Compulsion sub-scale) and the total mean scores of the scale according to marital status. According to the result, it was determined that the scores were higher in single subjects. Due to the fact that married subjects have

**Table 2.** Distribution of Subjects According to the Mean Scores of the FCS and the CSS

	Scales	Min-Max	$\bar{X} \pm SD$
FCS		7.00-35.00	17.31±6.03
	Compulsion sub-scale	8.00-40.00	13.97±7.17
CSS	Distress sub-scale	8.00-40.00	17.70 ± 7.67
	Excessiveness sub-scale	8.00-40.00	22.58 ± 7.47
	Reassurance sub-scale	6.00-30.00	13.96 ± 5.87
	Mistrust of medical profesional sub-scale	3.00-15.00	10.05 ± 3.78
	<b>Total</b>	33.00-165.00	78.27 ± 26.46

**Table 3.** Distribution of Subjects Sociodemographic Characteristics According to the FCS and the CSS Mean Scores

Characteristics	FCS	
	( $\bar{X} \pm SD$ )	Test and p-value
Sex		
Female	17.76 ± 5.93	t = 2.431
Male	15.81 ± 6.17	p = <b>0.016</b>
Marital status		
Married	16.64 ± 5.94	t = -1.634
Single	17.77 ± 6.07	p = 0.103
Status of having children		
Yes	16.54 ± 6.01	t = -1.806
No	17.80 ± 6.01	p = 0.072
Educational background		
Elementary and middle education	15.78 ± 6.44	MWU = 2747.5
Higher education	17.43 ± 5.99	p = 0.173
Employment status		
Employed	16.94 ± 6.04	t = 1.136
Unemployed	17.72 ± 6.02	p = 0.257
Perception of income level		
Poor	17.89 ± 7.09	KW = 2.612 p = 0.271
Middle	17.84 ± 6.23	
Good	16.57 ± 5.58	
Household structure		
Living in a nuclear family	17.48 ± 6.15	KW = 1.644 p=0.439
Living in an extended family	15.74 ± 4.91	
Living with a roommate/alone	16.88 ± 5.63	



Table 3 (Continued)

Characteristics	CSS							
	Compulsion		Distress		Excessiveness		Reassurance	
	( $\bar{X} \pm SD$ )	Test and p-value	( $\bar{X} \pm SD$ )	Test and p-value	( $\bar{X} \pm SD$ )	Test and p-value	( $\bar{X} \pm SD$ )	Test and p-value
Scale total score								
( $\bar{X} \pm SD$ )								
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**Table 4.** Distribution of Subjects Medical Histories According to the FCS and the CSS Mean Scores

Characteristics	FCS	
	( $\bar{X} \pm SD$ )	Test and p-value
Smoking status		
Yes	18.05 ± 6.42	t = 1.446
No	17.07 ± 5.93	p = 0.149
Status of having COVID-19		
Yes	18.47 ± 6.65	t = 1.916
No	16.94 ± 5.79	p = 0.056
Having family members who have had COVID-19		
Yes	17.95 ± 6.51	t = 1.626
No	16.83 ± 5.63	p = 0.105
Losing a relative due to COVID-19		
Yes	17.48 ± 6.35	t = 0.231
No	17.27 ± 5.98	p = 0.817
Doing research on the internet about COVID-19		
Yes	17.56 ± 6.00	t = 1.849
No	15.71 ± 6.06	p = 0.065
Number of visits to any physician in the last year		
None	15.51 ± 5.93	KW = 18.947 <b>p = 0.000</b>
1-2 times	16.89 ± 5.64	
3-4 times	19.82 ± 5.87	
5 times and above	16.67 ± 7.51	
Perception of general health level		
Poor	21.50 ± 8.25	KW = 11.872 <b>p = 0.008</b>
Moderate	18.29 ± 6.13	
Good	16.98 ± 5.64	
Very good	14.98 ± 5.80	
Doing research on the internet about the complaint before consulting a physician		
Yes	18.30 ± 6.17	F = 6.297 <b>p = 0.002</b>
No	14.97 ± 5.64	
Sometimes	16.36 ± 5.59	
Doing research on the internet before starting the treatment given by the physician		
Yes	17.71 ± 6.59	F = 2.350 p = 0.097
No	16.14 ± 5.72	
Sometimes	17.84 ± 5.48	
Undergoing an examination in the last month		
Yes	17.78 ± 6.03	t = 0.997
No	17.06 ± 6.04	p = 0.320
Having examinations in the last year, except for the physician's recommendation		
Yes	17.00 ± 5.39	t = -0.385
No	13.37 ± 6.15	p = 0.701
Using medications in the last year, except for the physician's recommendation		
Yes	17.99 ± 5.48	t = 1.251
No	17.03 ± 6.22	p = 0.212

Table 4 (continued)

	CSS					
	Compulsion		Distress		Excessiveness	
	( $\bar{X} \pm SD$ )	Test and p-value	( $\bar{X} \pm SD$ )	Test and p-value	( $\bar{X} \pm SD$ )	Test and p-value
<b>Smoking status</b>						
Yes	16.26 $\pm$ 7.90	t = 2.695	19.60 $\pm$ 9.20	t = 2.072	23.68 $\pm$ 8.32	t = 1.233
No	13.46 $\pm$ 6.91	<b>p = 0.007</b>	17.28 $\pm$ 7.24	<b>p = 0.039</b>	22.33 $\pm$ 7.27	p = 0.219
<b>Status of having COVID-19</b>						
Yes	14.28 $\pm$ 7.52	t = 0.423	18.35 $\pm$ 7.28	t = 0.832	22.96 $\pm$ 6.65	t = 0.502
No	13.88 $\pm$ 7.07	p = 0.672	17.50 $\pm$ 7.79	p = 0.406	22.46 $\pm$ 7.73	p = 0.616
<b>Having family members who have had COVID-19</b>						
Yes	13.86 $\pm$ 7.74	t = -0.233	17.69 $\pm$ 7.82	t = -0.029	22.30 $\pm$ 7.69	t = -0.565
No	14.06 $\pm$ 6.74	p = 0.816	17.72 $\pm$ 7.58	p = 0.977	22.79 $\pm$ 7.33	p = 0.573
<b>Losing a relative due to COVID-19</b>						
Yes	15.48 $\pm$ 9.22	t = 1.705	18.70 $\pm$ 8.55	t = 1.054	23.39 $\pm$ 7.78	t = 0.872
No	13.66 $\pm$ 6.64	p = 0.089	17.49 $\pm$ 7.47	p = 0.293	22.41 $\pm$ 7.41	p = 0.384
<b>Doing research on the internet about COVID-19</b>						
Yes	14.32 $\pm$ 7.35	t = 2.140	18.22 $\pm$ 7.79	t = 3.060	23.28 $\pm$ 7.25	t = 4.299
No	11.79 $\pm$ 5.44	p = 0.033	14.38 $\pm$ 5.90	<b>p = 0.002</b>	18.10 $\pm$ 7.43	<b>p = 0.000</b>
<b>Number of visits to any physician in the last year</b>						
None	13.72 $\pm$ 7.21		15.92 $\pm$ 6.82		19.49 $\pm$ 7.05	
1-2 times	13.78 $\pm$ 6.97		17.68 $\pm$ 7.48		23.08 $\pm$ 7.13	
3-4 times	15.13 $\pm$ 8.05	KW = 3.738	19.54 $\pm$ 8.46	KW = 6.481	24.10 $\pm$ 8.06	KW = 12.688
5 times and above	12.29 $\pm$ 5.04	p = 0.291	16.19 $\pm$ 7.51	p = 0.090	21.29 $\pm$ 7.29	<b>p = 0.005</b>
<b>Perception of general health level</b>						
Poor	17.80 $\pm$ 5.67		25.60 $\pm$ 8.32		27.10 $\pm$ 8.03	
Moderate	15.76 $\pm$ 8.33		19.40 $\pm$ 8.33		23.67 $\pm$ 7.93	
Good	12.85 $\pm$ 6.58	KW = 11.579	16.40 $\pm$ 6.88	KW = 17.539	21.60 $\pm$ 6.97	KW = 7.215
Very good	12.70 $\pm$ 4.94	<b>p = 0.003</b>	16.38 $\pm$ 6.80	<b>p = 0.001</b>	22.45 $\pm$ 7.49	p = 0.065
<b>Doing research on the internet about the compliant before consulting a physician</b>						
Yes	15.26 $\pm$ 7.77		19.53 $\pm$ 8.13		25.83 $\pm$ 6.64	
No	10.91 $\pm$ 5.25	F = 7.672	12.94 $\pm$ 6.02	F = 14.789	13.24 $\pm$ 5.24	F = 70.044
Sometimes	12.74 $\pm$ 6.07	<b>p = 0.001</b>	16.10 $\pm$ 6.22	<b>p = 0.000</b>	20.00 $\pm$ 5.73	<b>p = 0.000</b>
<b>Doing research on the internet before starting the treatment given by the physician</b>						
Yes	16.01 $\pm$ 8.02		19.65 $\pm$ 7.81		25.27 $\pm$ 7.10	
No	11.38 $\pm$ 5.10	F = 11.459	15.20 $\pm$ 6.83	F = 9.061	19.06 $\pm$ 7.27	F = 19.861
Sometimes	13.78 $\pm$ 6.91	<b>p = 0.000</b>	17.53 $\pm$ 7.60	<b>p = 0.000</b>	22.41 $\pm$ 6.82	<b>p = 0.000</b>
<b>Undergoing an examination in the last month</b>						
Yes	14.67 $\pm$ 8.23	t = 1.232	18.16 $\pm$ 8.46	t = 0.754	23.44 $\pm$ 7.92	t = 1.464
No	13.61 $\pm$ 6.54	p = 0.219	17.48 $\pm$ 7.24	p = 0.452	22.14 $\pm$ 7.29	p = 0.144
<b>Having examinations in the last year, except for the physician's recommendation</b>						
Yes	14.15 $\pm$ 7.02	t = 0.183	18.88 $\pm$ 7.93	t = 1.151	23.10 $\pm$ 7.65	t = 0.526
No	13.94 $\pm$ 7.21	p = 0.857	17.49 $\pm$ 7.62	p = 0.251	22.49 $\pm$ 7.45	p = 0.599
<b>Using medications in the last year, except for the physician's recommendation</b>						
Yes	14.68 $\pm$ 7.22	t = 1.192	18.68 $\pm$ 7.53	t = 1.454	34.94 $\pm$ 6.36	t = 2.897
No	13.61 $\pm$ 7.04	p = 0.234	17.26 $\pm$ 7.69	p = 0.147	21.77 $\pm$ 7.74	<b>p = 0.004</b>



Table 4 (continued)

	CSS					
	Reassurance		Mistrust of medical professional		Scale total score	
	( $\bar{X} \pm SD$ )	Test and p-value	( $\bar{X} \pm SD$ )	Test and p-value	( $\bar{X} \pm SD$ )	Test and p-value
<b>Smoking status</b>						
Yes	15.18 $\pm$ 6.78	t = 1.729	9.07 $\pm$ 3.82	t = -2.168	83.79 $\pm$ 31.70	t = 1.748
No	13.69 $\pm$ 5.62	p = 0.085	10.26 $\pm$ 3.74	<b>p = 0.031</b>	77.03 $\pm$ 25.04	p = 0.081
<b>Status of having COVID-19</b>						
Yes	14.47 $\pm$ 6.01	t = 0.850	10.49 $\pm$ 3.83	t = 1.180	80.55 $\pm$ 24.64	t = 0.855
No	13.81 $\pm$ 5.83	p = 0.396	9.90 $\pm$ 3.76	p = 0.239	77.55 $\pm$ 27.02	p = 0.393
<b>Having family members who have had COVID-19</b>						
Yes	13.83 $\pm$ 6.24	t = -0.338	9.38 $\pm$ 3.98	t = -0.848	77.52 $\pm$ 28.06	t = -0.427
No	14.00 $\pm$ 5.59	p = 0.735	10.20 $\pm$ 3.63	p = 0.397	78.82 $\pm$ 25.28	p = 0.670
<b>Losing a relative due to COVID-19</b>						
Yes	14.46 $\pm$ 6.55	t = 0.686	9.74 $\pm$ 3.87	t = -0.650	81.78 $\pm$ 31.30	t = 1.072
No	13.86 $\pm$ 5.72	p = 0.493	10.11 $\pm$ 3.76	p = 0.516	77.53 $\pm$ 25.33	p = 0.285
<b>Doing research on the internet about COVID-19</b>						
Yes	14.51 $\pm$ 5.96	t = 4.225	10.26 $\pm$ 3.66	t = 2.565	80.59 $\pm$ 26.64	t = 4.002
No	10.50 $\pm$ 3.78	<b>p = 0.000</b>	8.67 $\pm$ 4.26	<b>p = 0.011</b>	63.43 $\pm$ 19.79	<b>p = 0.000</b>
<b>Number of visits to any physician in the last year</b>						
None	12.06 $\pm$ 5.62		8.38 $\pm$ 3.98		69.57 $\pm$ 26.35	
1-2 times	13.88 $\pm$ 5.53		10.22 $\pm$ 3.79		78.65 $\pm$ 25.18	
3-4 times	16.01 $\pm$ 6.68	KW = 13.671	11.03 $\pm$ 3.42	KW = 14.839	85.80 $\pm$ 29.17	KW = 10.546
5 times and above	12.52 $\pm$ 4.01	<b>p = 0.003</b>	9.57 $\pm$ 3.12	<b>p = 0.002</b>	71.86 $\pm$ 19.76	<b>p = 0.014</b>
<b>Perception of general health level</b>						
Poor	19.30 $\pm$ 5.17		11.40 $\pm$ 3.24		101.20 $\pm$ 23.25	
Moderate	14.30 $\pm$ 6.42		10.07 $\pm$ 3.48		83.19 $\pm$ 29.12	
Good	13.54 $\pm$ 5.33	KW = 8.808	9.97 $\pm$ 3.88	KW = 1.280	74.37 $\pm$ 24.10	KW = 13.598
Very good	13.40 $\pm$ 6.02	<b>p = 0.032</b>	9.92 $\pm$ 4.30	p = 0.734	74.85 $\pm$ 24.44	<b>p = 0.004</b>
<b>Doing research on the internet about the compliant before consulting a physician</b>						
Yes	15.85 $\pm$ 5.83		10.66 $\pm$ 3.40		87.13 $\pm$ 26.24	
No	9.15 $\pm$ 3.98	F = 28.748	7.39 $\pm$ 4.28	F = 11.363	53.64 $\pm$ 19.91	F = 34.062
Sometimes	12.27 $\pm$ 5.01	<b>p = 0.000</b>	9.83 $\pm$ 3.89	<b>p = 0.000</b>	70.95 $\pm$ 21.00	<b>p = 0.000</b>
<b>Doing research on the internet before starting the treatment given by the physician</b>						
Yes	16.11 $\pm$ 5.69		9.95 $\pm$ 3.39		86.99 $\pm$ 27.12	
No	11.22 $\pm$ 5.20	F = 20.018	9.72 $\pm$ 4.28	F = 0.938	66.58 $\pm$ 22.22	F = 16.777
Sometimes	13.75 $\pm$ 5.64	<b>p = 0.000</b>	10.45 $\pm$ 3.76	p = 0.392	77.92 $\pm$ 25.25	<b>p = 0.000</b>
<b>Undergoing an examination in the last month</b>						
Yes	14.47 $\pm$ 6.39	t = 1.096	10.31 $\pm$ 3.61	t = 0.894	81.06 $\pm$ 29.02	t = 1.337
No	13.70 $\pm$ 5.57	p = 0.274	9.91 $\pm$ 3.87	p = 0.372	76.83 $\pm$ 24.62	p = 0.182
<b>Having examinations in the last year, except for the physician's recommendation</b>						
Yes	14.35 $\pm$ 6.07	t = 0.500	19.52 $\pm$ 3.35	t = 0.949	81.00 $\pm$ 26.38	t = 0.777
No	13.89 $\pm$ 5.84	p = 0.618	9.96 $\pm$ 3.85	p = 0.344	77.77 $\pm$ 26.49	p = 0.438
<b>Using medications in the last year, except for the physician's recommendation</b>						
Yes	14.89 $\pm$ 5.68	t = 1.787	10.76 $\pm$ 3.60	t = 2.076	83.52 $\pm$ 24.71	t = 2.256
No	13.57 $\pm$ 5.89	p = 0.075	9.77 $\pm$ 3.83	<b>p = 0.039</b>	75.97 $\pm$ 26.82	<b>p = 0.025</b>

**Table 5.** Fear of Coronavirus (COVID-19) as a predictor of Cyberchondria

Variable	B	SE	$\beta$	t	p	R <sup>2</sup>	AdjR <sup>2</sup>	F
Cyberchondria	49.623	4.234	0.377	11.719	<b>0.000</b>			
Fear of Coronavirus	1.655	0.231	0.377	7.163	<b>0.000</b>	0.142	0.140	51.311*

\*p<0.001

more roles and responsibilities, it is expected that the time they spend on the internet will be more limited. It is thought that the result is higher due to this in single subjects. However, Altındış et al. (2018), Uzun (2016), and Ozyurt et al. (2020) determined in their studies that the levels of cyberchondria did not differ statistically according to the marital status of the participants (Altındış et al. 2018, Uzun 2016, Deniz 2020, Ozyurt et al. 2020). A significant difference was detected between the CSS sub-scales (except for the Compulsion sub-scale) and the scale's total mean scores of the subjects according to the status of having children. Parents are expected to keep this behavior at a minimum level since spending too much time on the internet will be a negative role model for their children. As a result of this, it is thought that the mean scores of those who do not have children are higher. Güleşen and Beydağı (2021) also found in their study that having children affected the cyberchondria level (Güleşen & Beydağı 2021). However, Güzel and Ozer (2021) found that having children did not affect the cyberchondria level (Güzel & Ozer 2021).

A significant difference was found between the Excessiveness sub-scale of the CSS and the scale's total mean scores of the subjects according to their educational background. Upon examining the scores, it was revealed that the cyberchondria score of those with higher education level was higher. The higher the level of education is, the higher the tendency toward science and technology is. At the same time, with the increase in the level of education, the level of inquiry of subjects increases and the search for information is observed more. It is thought that the result is due to this. Studies on the subject have revealed that cyberchondria is observed in people who are more educated and wealthier than the general population (Lewis 2006, Interactive 2002). In the studies performed by Uzun (2016), Güzel and Ozer (2021), it was determined that cyberchondria scores differed significantly according to educational background (Uzun 2016, Güzel & Ozer 2021). However, in the study of Altındış et al. (2018), it was determined that the level of education did not affect the cyberchondria level (Altındış et al. 2018).

A significant difference was detected between the sub-scales of the CSS (except for the Compulsion sub-scale)

and the total mean scores of the scale, according to employment status. The level of cyberchondria of the unemployed was found to be high. The higher result in unemployed subjects may be due to spending more time on the internet, especially during the pandemic. In the studies conducted by Tarhan et al. (2021) and Güzel and Ozer (2021) on the subject, the level of cyberchondria of employed subjects was found to be higher. (Tarhan et al. 2021, Güzel & Ozer 2021). However, Güleşen and Beydağı (2021) and Ozyurt et al. (2020) found no difference between employment status and cyberchondria (Güleşen & Beydağı 2021, Ozyurt et al. 2020).

As a result of the limited information about the outbreak during the pandemic and the lack of adequate information from official institutions (Bargain & Aminjonov 2020) subjects may have turned to alternative sources (e.g. social media) to obtain information about COVID-19. As a result of this, it is expected that a large amount of information pollution about COVID-19 on various websites (Cuan-Baltazar et al. 2020) or shared on social media will trigger cyberchondria (Laato et al. 2020). Indeed, misinformation about COVID-19 is becoming an increasingly important public health problem (Krause et al. 2020). Based on this information, it is likely that social media is perceived as a reliable source of information regarding COVID-19, searches for more information intensify and the sense of confusion and distress increases, thus contributing to cyberchondria during the pandemic. In this study, the simple linear regression analysis, fear of coronavirus significantly and positively predicted cyberchondria. Fear of coronavirus explains 14% of the total variance in cyberchondria. Accordingly, it was revealed that subjects' cyberchondria levels increased with the fear of COVID-19. In the study carried out by Dykes et al. (2021), it was found that there was a relationship between spending too much time on social media and excessive online searches and COVID-19 anxiety (Dykes et al. 2021). Jungmann and Witthöft detected that the combination of cyberchondria with health anxiety was associated with strong virus anxiety (Jungmann & Witthöft 2020). Garfin et al. also showed in their study that cyberchondria affected the person's perceived seriousness and perceived vulnerability to COVID-19 (Garfin et al. 2020).

## CONCLUSIONS

As a result of the study, it was determined that the cyberchondria levels of subjects increased with the fear of COVID-19. According to the data for 2019, the number of health personnel per a certain number of population in Turkey is considerably below the rate determined by the Organization for Economic Cooperation and Development (OECD). Considering the increased workload during the pandemic, it is important to raise awareness of society on issues such as fear of COVID-19 and cyberchondria, which may unnecessarily increase the workload of healthcare providers. Subjects should be advised to use only reliable sources of information on health-related issues.

**Ethical Considerations:** Does this study include human subjects? NO Before starting the study, the ethics committee approval dated 31/03/2021 and with protocol number 04/10 was obtained from the Ethics Committee Board of Erzincan Binali Yıldırım University. This study was carried out in accordance with the provisions of the Declaration of Helsinki.

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