The Effect of Coronavirus Anxiety and Intolerance of Uncertainty on Cyberchondria During The Coronavirus Disease 2019 Pandemic in Türkiye

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ABSTRACT

Objective: The aim of this study was to examine the effects of coronavirus anxiety and intolerance of uncertainty on cyberchondria in individuals' during conditions of global pandemic.

Methods: The cross-sectional study was performed on individuals living in Turkey. Data were collected online by the snowball sampling method, and 402 people were included in the research. The data in the study were obtained using an introductory information form and three scales—the Cyberchondria Severity Scale, Coronavirus Anxiety Scale, and Intolerance of Uncertainty Scale. Descriptive statistics, Pearson correlation analysis, and multiple regression analysis were used to analyze the data.

Results: A positive correlation was found between coronavirus anxiety, cyberchondria severity ($r = 0.308$) ($P < .01$), and intolerance to uncertainty ($r = 0.184$) ($P < .01$). Similarly, it was determined that there is a positive relationship between intolerance of uncertainty and cyberchondria ($r = 0.289$) ($P < .01$). It was determined that the level of coronavirus anxiety and intolerance of uncertainty affected the cyberchondria severity score and explained 14.6% of the total variance.

Conclusion: As a result of the study, it was revealed that the coronavirus anxiety and intolerance of uncertainty were affected by cyberchondria severity. It is believed that sharing accurate, nonmisleading information in online environments and supporting individuals mentally in preventing risk factors for cyberchondria during an epidemic period will help to overcome the uncertainty experienced.

Keywords: COVID-19, pandemic, cyberchondria, anxiety, intolerance of uncertainty

Introduction

Coronavirus disease 2019 (COVID-19) is a global pandemic caused by the SARS-CoV-2 coronavirus that has affected the whole world.[1] From the moment the outbreak begins to spread, society is faced with its physical, psychological, and social consequences.[2] The rising number of cases and deaths due to the outbreak causes increased levels of anxiety related to coronavirus in individuals within the society. It has been found that news about the outbreak and information acquired through social media during this period result in anxiety symptoms.[3]

The crisis caused by the pandemic has led to an increase in sharing information about the complications and spread of the disease via social media. The accuracy of the shared information can help reduce individuals' concerns.[4] The rapid dissemination of information during the outbreak has positive effects in the way of allowing individuals to understand the severity of the threat. From the moment the outbreak became a global problem, information about safety behaviors has been communicated to individuals via mass media.[5] Individuals who experience and become aware of such an outbreak for the first time follow this information to protect their health. Online searching for information on disease symptoms is quite common.[6] While accessing medical information using online sources is a useful and accessible strategy for most people, online searching can turn into a pathological behavior, cyberchondria, when it becomes excessive and repetitive.[7] Cyberchondria is associated with health

anxiety, obsessive compulsive disorder, hypochondriasis, and game addiction that are among other behavioral disorders. The psychological mechanisms underlying these diseases include anxiety sensitivity, intolerance to uncertainty, low self-esteem, pain catastrophizing, and certain metacognitive beliefs.[8] In an outbreak, heightened perception of threat and fear of the disease that is poorly understood, difficulties in coping with uncertainty, online misinformation about the outbreak, overload of information acquired from online sources, and online reassurance seeking for health-related issues are contributing factors for cyberchondria.[9] During the COVID-19 pandemic, the behavior of seeking information on social media has increased among individuals, and the higher level of information overload has resulted in experiencing a greater level of cyberchondria.[10] The literature has revealed that an increased level of anxiety associated with coronavirus leads to a greater level of cyberchondria.[5,11] Uysal Toraman et al[12] also emphasized the relationship between COVID anxiety and cyberchondria. In a study conducted with medical students, it was found that as the level of coronavirus anxiety increased, the level of cyberchondria increased.[13] To prevent a more prevalent occurrence of cyberchondria that may result from misinformation, the dissemination of accurate information is quite important during an outbreak.[14] Another factor associated with cyberchondria is intolerance of uncertainty. In literature, it was determined that there is a positive relationship between cyberchondria and intolerance to uncertainty during the pandemic period.[15,16]

Ambiguities such as the end of the COVID-19 pandemic and the return to prepandemic life may result in intolerance of uncertainty among individuals. In their study, Geçgin and Sahranç[17] established that intolerance of uncertainty had an effect on psychological well-being and that these two constructs were negatively associated. Accordingly, psychological effects of the COVID-19 pandemic, which are quite common, are likely to trigger intolerance and mental health problems in individuals. As it is understood from the findings of the studies carried out during the pandemic process, it is seen that cyberchondria is associated with uncertainty and COVID anxiety. However, it was thought that determining the effect of both variables on cyberchondria would be useful for intervention studies to prevent the formation of cyberchondria in the management of future pandemic situations.

Aim
The study aim was to examine the effects of Coronavirus anxiety and intolerance of uncertainty on cyberchondria among individuals who had been living in Turkey during the pandemic.

Methods

A descriptive cross-sectional design was implemented in this study, and the study population consisted of individuals aged 18-65 years, living in Turkey. The study sample was selected by snowball sampling. The study inclusion criteria were being an individual aged 18-65 years who was literate, who had access to the internet, and who agreed to participate in the research. The study data were collected online. Online forms were shared with individuals from WhatsApp groups on social media platforms (such as Facebook, Instagram, and Twitter). A total of 409 individuals agreed to participate in the study, but 7 individuals were excluded because they did not meet the inclusion criteria, leaving 402 participants. The study data were collected between February 12, 2021, and March 17, 2021.

Data Collection Tools
A descriptive data form and the Cyberchondria Severity Scale, Coronavirus Anxiety Scale, and Intolerance of Uncertainty Scale were used to collect study data. The total number of questions was 65 in the data collection forms.

Descriptive Data Form
The form gathered participant information such as age, sex, type of family, marital status, income status, occupation, work experience, parental status, number of children, level of education, watching/reading news about COVID-19, chronic diseases, and COVID-19 diagnosis. The descriptive data form was consisting of 15 questions.

Cyberchondria Severity Scale
The scale is a psychometric tool developed by McElroy and Shevlin[18] to assess cyberchondria, which is defined as a form of anxiety characterized by excessive health-related online search. The scale consists of 33 items scored on a 5-point Likert-type scale, and it has 5 subscales, which are compulsion (3, 6, 8, 12, 14, 17, 24, and 25 items), distress (5, 7, 10, 20, 22, 23, 29, and 31 items), excessiveness (1, 2, 11, 13, 18, 19, 21, and 30 items), reassurance (4, 15, 16, 26, 27, and 32 items), and mistrust of medical professionals (9, 28,and 33; all items reverse score). There is no cutoff point for the scoring of the scale. A higher score indicates a higher level of cyberchondria. The tool was adapted into Turkish by Uzun and Zencir.[19] The Cronbach's alpha for the Turkish form of the scale was 0.89.[19] The present study found the Cronbach's alpha for the total cyberchondria severity scale to be 0.91.

Coronavirus Anxiety Scale
This scale is a self-reported mental health screening tool for dysfunctional anxiety associated with the coronavirus crisis. The scale was developed by Lee.[20] The Turkish adaptation of the scale was carried out by Evren et al.[21] It is rated on a 5-point scale from 0 (not at all) to 4 (almost every day) based on experience in the past 2 weeks. A total score ≥ 9 indicates coronavirus-related dysfunctional anxiety. High scores on a particular item or high overall scale score (≥ 9) may indicate that the individual's problematic symptoms may require further evaluation and/or treatment. In this study, the Cronbach's alpha coefficient of the coronavirus anxiety scale was found to be 0.85.

Intolerance of Uncertainty Scale
This is a 5-point Likert-type measurement tool and consists of a total of 12 items. The scale has subdimensions of "prospective anxiety" and "inhibitory anxiety." The scale was developed by Carleton, Norton, and Asmundson.[22] Its Turkish validity and reliability were carried out by Sarıçam et al.[23] Higher scores from the scale indicate a high level of intolerance to uncertainty. Prospective anxiety subscale consists of 7 items (1-7 items), and inhibitory anxiety subscale consists of 7 items (8-12 items). In the Turkish version, the Cronbach's alpha internal consistency coefficient was 0.88 for the overall scale; it was found to be 0.84 for the anxiety subdimension and 0.77 for the inhibitory anxiety subdimension.[23] In this study, the Cronbach's alpha coefficient for the Intolerance of Uncertainty Scale was 0.91, 0.83 for the prospective anxiety subdimension, and 0.89 for the inhibitory anxiety subdimension.

Data Collection
The study data collection was started after ethics committee approval. The online form was distributed by the researchers via WhatsApp and other social media (Facebook, Instagram). To reach different segments for data diversity, the participants were asked to share the form with other individuals meeting the criteria and to invite them to participate in the study.

Data Evaluation
The data were analyzed using the software package SPSS version 25.0 (IBM SPSS Corp.; Armonk, NY, USA). Descriptive statistics were presented using number, percentage, mean, SD, and minimum–maximum values. The distribution of data was analyzed by kurtosis and skewness values. The relationship between cyberchondria severity scores, coronavirus anxiety scores, and intolerance of uncertainty scores was examined by Pearson's correlation analysis. The predictors

of cyberchondria severity scores were assessed by multiple linear regression analysis. Multicollinearity was assessed using VIF and tolerance values. Since the VIF value should be < 10.0, it was determined that the models created met this condition.[24]

Ethical Considerations

To conduct the study, first permission was obtained from the Turkish Ministry of Health Scientific Research Platform. Afterwards, an application was submitted to the Human Research Ethics Committee, which decided that the study was ethically acceptable (No: 2021/25, Date: 03.02.2021). The principle of voluntary participation and the study criteria were explained to participants in the online form.

Results

Table 1 presents descriptive characteristics of the study participants. The mean age of the participants was 32.94 ± 10.26 years (minimum: 18, maximum: 63). Among the participants, 74.9% were female, 52.0% were married, 83.6% had a nuclear family, 51.5% had no children, 60.9% had a bachelor's degree, 74.1% perceived their income as at the medium level, and 59.0% were working. Regarding the responses

Table 1. Descriptive Characteristics of the Participants

Characteristics of the participants	n	%
The average age 32.94 ± 10.26 (minimum–maximum: 18-63)		
Gender		
Female	301	74.9
Male	101	25.1
Marital status		
Single	209	52.0
Married	193	48.0
Family type		
Nuclear family	336	83.6
Extended family	49	12.2
Broken family	17	4.2
Status of having a child		
Yes	195	48.5
No	207	51.5
Educational status		
High school and below	33	8.3
Associate degree	39	9.7
Bachelor's degree	245	60.9
Postgraduate	85	21.1
Perceived income status		
Low	28	7.0
Medium	298	74.1
High	76	18.9
Working status		
Yes	237	59.0
No	165	41.0
Watching/reading news about COVID-19		
Very stylish	80	19.9
Chic	141	35.1
Sometimes	167	41.5
None	14	3.5
Status of being diagnosed with COVID-19		
Yes	70	17.4
No	332	82.6
Presence of chronic disease		
Yes	70	17.4
No	332	82.6
COVID-19, coronavirus disease 2019.		

Table 2. Mean Scores, Minimum–Maximum Values and Correlation Coefficients of the Scales

		$\bar{x} \pm SS$	Minimum–Maximum	1	2	3	4	5	6	7	8	9	10
Cyberchondria Severity Scale	1. Compulsion	12.12 ± 5.06	8-32	—									
	2. Distress	17.29 ± 5.95	8-37	0.631**	—								
	3. Excessiveness	23.23 ± 6.03	8-38	0.443**	0.628**								
	4. Reassurance	13.76 ± 4.74	6-26	0.480**	0.618**	0.667**							
	5. Mistrust of the medical professional	6.21 ± 2.87	3-15	0.109*	0.020	-0.084	-0.025						
	6. Total score	72.62 ± 18.29	33-128	0.769**	0.870**	0.816**	0.809**	0.160**					
Coronavirus anxiety	7. Total score	1.24 ± 2.37	0-16	0.238**	0.312**	0.221**	0.188**	0.122*	0.308**				
Intolerance of uncertainty	8. Prospective anxiety	23.10 ± 5.70	7-35	0.092	0.302**	0.273**	0.147**	-0.127*	0.232**	0.140**			
	9. Inhibitory anxiety	14.91 ± 5.00	5-25	0.197**	0.360**	0.268**	0.204**	-0.014	0.311**	0.207**	0.729**		
	10. Total Score	38.01 ± 9.96	12-60	0.152**	0.353**	0.291**	0.187**	-0.080	0.289**	0.184**	0.939**	0.920**	-

**p < .01.
*p < .05.

Table 3. Multiple Linear Regression Analysis Results for the Prediction of Cyberchondria Severity Score

Variable	*B*	Beta	95% Confidence Interval		*P*	Adjusted *R*^{2}
			Lower Bound	Upper Bound		
Fixed	53.334		46.780	59.888	<.001	0.146
Intolerance of uncertainty	0.441	0.240	0.271	0.611	<.001	
Coronavirus anxiety	2.038	0.264	1.325	2.751	<.001	
Method: Enter.						

of the participants to the questions about COVID-19, 41.5% were following the news about COVID-19, 82.6% had not been diagnosed with COVID-19, and 82.6% did not have any chronic disease.

The mean Cyberchondria Severity Scale score of the participants was 72.62 ± 18.29. Regarding the subscales, the mean score was 12.12 ± 5.06 for "compulsion," 17.29 ± 5.95 for "distress," 23.23 ± 6.03 for "excessiveness," 13.76 ± 4.74 for "reassurance," and 6.21 ± 2.87 for mistrust of medical professionals.

The mean Coronavirus Anxiety Scale score was 1.24 ± 2.37, and the mean Intolerance of Uncertainty Scale total score was 38.01 ± 9.96. The mean score on "prospective anxiety," one of the subscales of the Intolerance of Uncertainty Scale, was 23.10 ± 5.70, and the mean score on "inhibitory anxiety" was 14.91 ± 5.00 (Table 2).

When the relationship between the variables was examined, the Coronavirus Anxiety Scale score was found to have a positive correlation with the scores on the Cyberchondria Severity Scale ($r = .308$) and the Intolerance of Uncertainty Scale ($r = .184$) ($P < .01$). Similarly, there was a positive correlation between the Intolerance of Uncertainty total score and the Cyberchondria Severity total score ($r = .289$).

The multiple linear regression analysis revealed that the scores on the Coronavirus Anxiety and Intolerance of Uncertainty Scales had a positive and significant relationship with the Cyberchondria Severity Scale score and explained 14.6% of the total variance (Table 3).

Discussion

The results of the study, which aimed to examine the effects of coronavirus anxiety and intolerance of uncertainty on cyberchondria in individuals' during the pandemic, were compared with the literature.

The study found that the total mean score for Cyberchondria behavior was 72.62 ± 18.29. In the literature, the mean score of cyberchondria varies between 60 and 75.[25] In the literature, while the results of the studies where the mean scores of cyberchondria are above the average,[26] there are also study servers where the mean scores of cyberchondria are below the average.[11,27]

A positive correlation has been observed between cyberchondria, intolerance to uncertainty, and coronavirus anxiety. In the study conducted by Yılmaz et al[28] with 430 individuals, there was a positive correlation between the concepts of cyberchondria, ambiguity intolerance, and anxiety, similar to our research finding. There are also different studies in the literature showing a significant relationship between intolerance of uncertainty and cyberchondria.[27,29,30] The study of Jokic-Begic et al[5] also showed that the higher the coronavirus anxiety, the stronger the cyberchondria. These findings may also confirm the widely accepted assumption that excessive media consumption is associated with increased anxiety during the COVID-19 pandemic.[31] Specifically, individuals experiencing health-related anxiety may seek easy-access information on the Internet as a way of coping.[26] Ambiguity intolerance can strengthen both threat perception and uncertainty perception, thus leading to greater participation in safety behaviors (for example, controlling behavior).[32-35]

Few studies in the literature investigating the relationship between coronavirus anxiety and cyberchondria have also included similar concepts such as health anxiety. The research by Jungmann et al[11] determined that individuals with high health anxiety also have high COVID anxiety. Norr et al[30] found that searching for health-related information on the Internet increases the level of anxiety, and there is a relationship between health anxiety and cyberchondria. Bajcar et al[36] also found that individuals with high health anxiety use the Internet frequently to get medical information. A meta-analysis conducted in 2019 also revealed a positive relationship between health anxiety and cyberchondria.[37]

The regression analysis result in the current study showed that the intolerance of uncertainty and coronavirus anxiety parameters significantly predicted the cyberchondria score. Unlike our research finding, a similar study from the literature stated that the intolerance of uncertainty parameter does not determine cyberchondria, but anxiety does.[28] In the literature, a study having similar results to the current paper states that intolerance of uncertainty and coronavirus anxiety are predictors of cyberchondria behavior.[27]

When looking at the research findings from the current study as well as those reported in the literature, it can be suggested that the factor causing anxiety generated by cyberchondria behavior is ambiguity intolerance. According to the identified risk factors, knowledge is prominent in reducing uncertainty. In this context, it can be proposed that excessive use of the Internet can increase anxiety, it is essential to access information from accurate sources, and access to concrete/correct and reputable knowledge will reduce cyberchondria behavior.

Limitations
There are several limitations in this study. First, because the data were collected online, participants who did not have online access could not be accessed. For this reason, the study cannot be generalized to all individuals. Another limitation of the study is that it is cross-sectional, so it includes the date range in which the data were collected.

Conclusion

The current findings in this study revealed that coronavirus anxiety and intolerance of uncertainty affect cyberchondria during the pandemic period. According to this effect obtained in the study, sharing and disseminating the right information due to its direct effect on individuals in terms of mental health will contribute to individuals to be more selective and to cope with uncertainty more effectively. Considering the development of cyberchondria in individuals with high levels of anxiety, it is recommended to teach anxiety coping skills. It is also recommended to support individuals in accessing consistent and accurate information from appropriate environments.

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