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Coronavirus anxiety and cyberchondria among teachers during the COVID-19 pandemic: an online survey

Coronavirus anxiety and cyberchondria

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Abstract
This study aimed to determine anxiety and cyberchondria and to investigate the links between anxiety and cyberchondria among teachers. This cross-sectional and descriptive study was conducted with 250 teachers. Data were collected using demographic information form, Cyberchondria Severity Scale and Coronavirus Anxiety Scale Short Form. The mean age of the teachers was 40.40 ± 8.83 years. The anxiety mean score was 7.70 ± 3.67, cyberchondria severity mean score was 73.47 ± 20.59. There were significant positive correlations between anxiety about COVID-19 and cyberchondria($r = 0.423$, $p < 0.001$). Researchers must determine whether there is a benefit in further solving these relationships and reducing and preventing intervention in cyberchondria and anxiety; they must focus on results which increase anxiety, and investigate the correlation between cyberchondria, anxiety and behavior.

Keywords Anxiety · COVID-19 · Cyberchondria · Psychiatric Care

Introduction

Today, with developing technology, the internet makes access to information easier, and it is becoming used more than traditional methods to reach health-related information (Fergus, 2014; Napoli, 2012). In the United States, 72.7% of adults use the internet to get information on medical subjects (Health Information National Trends Survey, 2019). Similarly, it is reported that 80% of people living in Asian countries search for health information on the internet (Wang & Lee, 2020). According to data from the Turkish Statistics Institute (2019), 66.9% of internet users search for information on health and disease on the internet. Internet searching behaviors about health and disease information increase but unproven, old or conflicting information can have negative consequences (Muse et al., 2012). One of the most important of these is raising people's anxiety levels because of wrong or mistaken information (Baumgartner & Hartmann, 2011; Fergus, 2014).

Health anxiety is the anxiety people experience when they misinterpret any situation relating to their health (Taylor & Asmundon, 2004; Muse et al., 2012). The increase in health anxiety in people searching for health information on the internet has been called cyberchondria by Taylor and Asmundson (Taylor & Asmundon, 2004). Cyberchondria is defined as "excessive or repeated internet searching carried out to search for health information because of worries or anxiety on health topics, which however increases the worry and anxiety" (Elciyar & Taşçı, 2017). Repeated searches to relieve anxiety and worry felt with regard to health can make the situation worse, and bring on cyberchondria (Altındiş et al., 2018).

All times of pandemic, such as the current Covid-19 pandemic, result in a rise in fear, anxiety and stress levels (Harper et al., 2020). In a study conducted in China in January and February 2020 with 1210 participants in 194 cities

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using an online questionnaire, it was reported that approximately half of the participants ranked the psychological effects of the outbreak as moderate or severe, approximately one in three reported moderate to severe anxiety, and 16% experienced moderate to severe depressive symptoms (Wang et al., 2020). In a study by Huang and Zhao (2020) it was reported that during the Covid-19 outbreak, 1/3 of participants showed symptoms of anxiety, and 1/5 showed depression and sleep problems.

It has been reported in the literature that young people, women, educated people and those who are better off than the general population are the group which is at risk of cyberchondria (McManus et al., 2014; Uzun & Zencir, 2016). White and Horvitz found that women searched more than men for information on the internet for an illness diagnosed by a doctor, and also that women felt more anxiety than men after searching on the internet for health-related information (White & Horvitz, 2009). At the same time, it is reported that people who make health searches on the internet look at medical conditions which are less likely but which might have serious consequences, rather than ones which are more likely but which are benign. In this way, the health anxiety of cyberchondriac individuals and their use of the health services increases (Elciyar & Taşçı, 2017; Fergus, 2014). Fox and Duggan found that 46% of people searching for health information online felt the need to consult health personnel in connection with the information which they had acquired (Fox & Duggan, 2013). Berezovska et al. reported that 30% of people making health-related searches online used the health services, and that these people spent more on health (Berezovska et al., 2010). Thus, considering both the physiological and psychological health problems which are caused and the health expenditure, it is necessary to understand cyberchondria better.

There is a close relation between health and education. In bringing up generations who are educated in matters of health, teachers with a sufficient level of education are also of importance. (Reimers & Schleicher, 2020). Teachers also have an important place in protecting and improving the health of children and young people and creating a healthy society. Teachers have great responsibilities during the pandemic to protect the health of students, to prevent infectious diseases, and to relieve anxieties. (Reimers & Schleicher, 2020). In order for teachers to be a role model for students, they must first control their own health anxieties and worries. Thus, it is of importance to determine the levels of anxiety and cyberchondria experienced by teachers during the pandemic. The aim of this study was to determine anxiety and cyberchondria and to investigate the links between anxiety and cyberchondria among teachers in Turkey during the COVID-19 pandemic.

Research questions

Is there a relationship between teachers' cyberchondria and coronavirus anxiety?

What are the factors affecting teachers' cyberchondria?

What are the factors affecting teachers' anxiety?

Method

Participants and procedures

This cross-sectional and descriptive study was conducted as an online survey among teachers between December 2020 and February 2021 during the COVID-19 pandemic period. The research population consisted of 307 teachers in three primary schools, a secondary school and a high school in Izmir's central districts. Since it was aimed to reach the entire population, no sampling method was used. The study included 250 teachers who filled out the online questionnaires. In the power analysis performed as a result of the study, it was determined that 250 people were sufficient to represent the sample with a 5% error level and 95% confidence interval. The inclusion criteria of the research were having worked as a teacher for at least one year in one of the schools and volunteering to participate in the study. Individuals with a psychiatric disorder (anxiety, depression, obsessive-compulsive disorder, etc.) diagnosed by a physician were excluded from the study, and this information was obtained in line with the person's statement.

Instruments

The data were collected through Google Forms on online platforms (e.g. WhatsApp, email). The online, self-developed questionnaire contained three sections. The first section covered demographic information form, the second section consisted of the Cyberchondria Severity Scale (CSS), and third section was the Coronavirus Anxiety Scale Short Form.

Demographic information form

This was prepared by the researchers in line with the literature (Altındiş et al., 2018; Elciyar & Taşçı, 2017; Uzun & Zencir, 2016), and included 13 items related to the sociodemographic characteristics of the participants: age, gender, marital status, educational status, working experience, whether they had a chronic disease, whether they had been

diagnosed with COVID-19, and whether they had a relative diagnosed with COVID-19.

Cyberchondria Severity Scale (CSS)

This is a 33-item self-reporting and five-point Likert type scale ranging from 1 (never) to 5 (always) developed by McElroy and Shevlin to assess behavior of seeking health-related information from the internet (McElroy & Shevlin, 2014). The scale was adapted to Turkish by Uzun and Zencir (Uzun & Zencir, 2016). It has five subscales: compulsion, distress, excessiveness, reassurance seeking and mistrust of medical professionals. Items are added together to obtain the total score, which ranges from 0 to 165. Higher scores indicate high levels of cyberchondria. The Cronbach alpha for the subscales ranges from 0.65 to 0.85, and is 0.89 for the total score. The Cronbach's alpha of the scale was 0.92 in the present study.

Coronavirus anxiety scale short form

The scale is a self-report scale comprising five items, developed by Lee (Lee, 2020). The scale was adapted to Turkish by Biçer et al. (Biçer et al., 2020). Items of the scale are rated on a four-point Likert type scale (0 = never, 1 = rarely, less than a day or two, 2 = a few days, 3 = more than seven days, and 4 = almost every day in the last two weeks). The highest score that can be obtained from the scale is 20, and scores of 9 and above indicate that anxiety is high. The Cronbach alpha for the scale was 0.83, and it was 0.90 in the present study.

Ethical considerations

Ethical permission was obtained from the University Ethics Committee (Date and Number: 10.09.2020-07/03/663) and the Provincial Directorate of National Education (Date and Number: 26.11.2020- 17,274,973). After the consent of school principals was obtained, the teachers were sent a link. The teachers were informed that their participation was optional, that they had the right to leave the study at any time, and that all their data would be anonymous and confidential. An informed consent statement was attached to the front part of the questionnaire and was obtained from all teachers at the beginning of the online questionnaire. The study procedures were in compliance with the Helsinki Declaration.

Statistical analysis

All data analyses were performed using the Statistical Package for Social Sciences 22.0 (SPSS). Percentages, means and standard deviations were used as descriptive statistics. The normalcy of the data was examined with the Shapiro-Wilk test. The results of this test indicated that the mean scores of the scales were not normally distributed.

Spearman correlation coefficients were used to investigate the relationship between the research variables. The differences in coronavirus anxiety and cyberchondria based on sociodemographic characteristics were analyzed using the Mann Whitney U test. The statistical significance level was set at 0.05.

Results

The teachers' demographic characteristics are presented in Table 1. The mean age of the teachers was 40.40 ± 8.83 years (min:23, max:61), 87.2% of them were female and 77.2% were married, and the majority of the sample had a bachelor's degree (84.8%). Their work experience was 17.32 ± 9.15 (min: 1, max: 42) years, and 17.6% had at least one chronic disease; 25.2% smoked, and 63.6% evaluated their health as good. Also, 8.4% of the teachers had been diagnosed with COVID-19 and 58.4% had a relative who had been diagnosed with COVID-19.

The anxiety mean score the teachers obtained from the scale was 7.70 ± 3.67 (min: 5, max:25) (Table 2). According to the cyberchondria severity scale, the average score on the CSS was 73.47 ± 20.59. The cyberochondria mistrust and excessiveness subscales had the highest scores, and the compulsion subscale had the lowest score (Table 2).

Table 3 shows the relationships between COVID-19 anxiety and cyberchondria. It was determined that there were significant positive correlations between anxiety about COVID-19 and cyberchondria ($r = 0.423$, $p < 0.001$) and the compulsion subscale ($r = 0.468$, $p < 0.001$), the distress subscale ($r = 0.449$, $p < 0.001$), excessiveness ($r = 0.250$, $p < 0.001$), and reassurance ($r = 0.238$, $p < 0.001$).

Looking at Coronavirus anxiety according to the teachers' characteristics, it was seen that those who were single had higher anxiety than those who were married ($Z = 1.987$, $p = 0.048$), while no significant difference was seen with other variables (Table 4).

It was found that there was no statistical difference in cyberchondria levels according to the teachers' gender, age, marital status, presence of a chronic disease, smoking, health self-perception, or being diagnosed with Covid-19 ($p > 0.05$), but there was a statistical difference in cyberchondria levels according to their education status and having a

Table 1 Teachers' descriptive characteristics

Descriptive characteristics	N	%
Gender	218	87.2
Female	32	12.8
Male		
Marital status	57	22.8
Single	193	77.2
Married		
Education level	212	84.8
Bachelor	38	15.2
Master		
Presence of a chronic disease	44	17.6
Yes	206	82.4
No		
Smoking	63	25.2
Yes	187	74.8
No		
Health Self-Perception	55	22.0
Bad-Medium	159	63.6
Good	36	14.4
Very good		
Diagnosed with COVID-19	21	8.4
Yes	229	91.6
No		
Having a relative diagnosed with COVID-19	146	58.4
Yes	104	41.6
No		
Total	250	100.0

Table 2 Mean scores and standard deviations of anxiety and cyberchondria (n = 250)

Variables	Mean	SD	Min-Max	Item mean
Anxiety	7.70	3.67	5–25	1.54–0.73
CSS	73.47	20.59	38–137	2.24–0.54
CSS: compulsion	12.82	6.38	8–40	1.60–0.80
CSS: distress	17.00	6.94	8–37	2.25–0.87
CSS: excessiveness	21.02	6.24	8–36	2.63–0.78
CSS: reassurance	14.79	5.67	6–30	2.42–0.94
CSS: mistrust of medical professional	6.83	3.34	3–15	2.28–1.11

Abbreviations: CSS, Cyberchondria Severity Scale

Table 3 Correlations for anxiety of COVID-19 and cyberchondria

CSS Scale	Coronavirus Anxiety r
CSS Total Scale	0.423*
Compulsion	0.468*
Distress	0.449*
Excessiveness	0.250*
Reassurance	0.238*
Mistrust of medical professional	0.027

Abbreviations: r: Spearman correlation analysis, *p < 0.001; CSS: Cyberchondria Severity Scale

relative diagnosed with Covid-19 (p < 0.05). Cyberchondria levels were higher in teachers with degree-level education and those with a relative diagnosed with Covid-19 (Table 4).

Table 4 Teachers' characteristics and comparison of anxiety and Cyberchondria

Descriptive characteristics	Anxiety	Cyberchondria
Age	r = 0.069, p = 0.276	r = 0.116, p = 0.067
Work Experience	r = 0.109, p = 0.084	r = 0.076, p = 0.230
Gender	Mean (X ± SD)	Mean (X ± SD)
Female	7.86 ± 3.63	73.61 ± 20.84
Male	6.59 ± 3.81	72.53 ± 19.06
	Z = 1.834 p = 0.068	Z = 0.276 p = 0.783
Marital status	8.54 ± 3.85	74.61 ± 20.05
Single	7.45 ± 3.59	73.13 ± 20.78
Married	Z = 1.987 p = 0.048*	Z = 0.476 p = 0.635
Education level	7.77 ± 3.83	74.70 ± 21.05
Bachelor	7.32 ± 2.66	66.63 ± 16.39
MA	Z = 0.700 p = 0.485	Z = 2.242p = 0.026*
Presence of a chronic	7.98 ± 2.95	75.21 ± 18.69
disease	7.64 ± 3.81	73.10 ± 20.99
Yes	Z = 0.551 p = 0.582	Z = 0.614 p = 0.540
No		
Smoking	7.02 ± 3.45	70.56 ± 19.64
Yes	7.93 ± 3.72	74.45 ± 20.85
No	Z = 1.717 p = 0.087	Z = 1.302 p = 0.194
Health Self-Perception	8.14 ± 3.53	76.73 ± 22.49
Bad-Medium	7.57 ± 3.71	72.55 ± 19.98
Good-Very good	Z = 1.019 p = 0.309	Z = 1.330 p = 0.185
Diagnosed with	7.33 ± 3.13	65.52 ± 16.93
COVID-19	7.73 ± 3.72	74.20 ± 20.80
Yes	Z = 0.404 p = 0.686	Z = 1.870 p = 0.061
No		
Having a relative diag-	7.87 ± 3.67	76.60 ± 21.23
nosed with COVID-19	7.46 ± 3.68	69.08 ± 18.88
Yes	Z = 0.866 p = 0.387	Z = 2.891 p = 0.004*
No		

Abbreviations: r: Spearman correlation analysis; Z: Mann Whitney U test; *p < 0.05

Discussion

This study provides information about anxiety and cyberchondria in a group of teachers during the Covid-19 pandemic, and the relationship between them.

The anxiety of teachers was low. In a study by Jungmann and Witthöft (2020) it was reported that half of the participants were at a moderate or severe level of Covid anxiety (Jungmann & Witthöft, 2020). It was reported in a study by Wang et al. that approximately half of the participants ranked the psychological effect of the outbreak as moderate or severe, and approximately one third experienced moderate to severe anxiety (Wang et al., 2020). Huang and Zhao concluded that one third of participants displayed symptoms of anxiety, and one fifth showed depression and sleeping problems (Huang & Zhao, 2020). The low level of

participants' anxiety found in our research compared with other studies is thought to derive from its having been conducted at a later stage of the pandemic.

According to the cyberchondria severity scale, the teachers had a moderate level of cyberchondria. They had a high score on the subscales of lack of trust and excessiveness, and a low score on the subscale of compulsion. In a study by Jokic-Begic et al. it was found that 46% of those participating in the research made frequent searches during the Covid-19 pandemic, that these individuals increased their searching behavior during the pandemic, and that during the second wave of the pandemic this rate was 75% (Jokic-Begic et al., 2020). In a study by Laato et al. it was found that as individuals' exposure to knowledge and information seeking behavior concerning the Covid-19 pandemic increased, their cyberchondria levels also increased (Laato et al., 2020). Similarly, in a study conducted in Taiwan, it was reported that as the negative effects of the pandemic increased, information seeking behavior and the severity of cyberchondria related to it also increased. (Husnayain et al., 2020). Also it has been concluded in some studies that health anxiety arising from the pandemic has increased the severity of cyberchondria, and that such people have a greater tendency to search for information on the internet (Hashemi et al., 2020; Jungmann & Witthöft, 2020). In the Covid-19 pandemic, factors such as the difficulty of accessing reliable sources of information, not being able to choose between excessive knowledge and unnecessary knowledge, or continual new information on Covid-19 have increased the online search for information in this period. (Startevic et al., 2021). The findings of our study confirm this.

In answer to our research question, we found that the teachers' coronavirus anxiety levels were positively related to all cyberchondria dimensions. It was seen that coronavirus anxiety levels had a stronger relation to the compulsion and distress subscales of cyberchondria, and a weaker relation to excessiveness, reassurance and mistrust of the medical profession. Similarly, in a study with 1615 people conducted in Germany, Jungmann and Witthöft (2020) found a positive correlation between Covid-19 anxiety and cyberchondria total and subscales. The strongest correlation was found between anxiety and cyberchondria distress. Similarly, in another study conducted during the pandemic, Jokic-Begic et al. (2020) found a correlation between anxiety and cyberchondria, and reported that cyberchondria had an effect on anxiety. It has been reported that high cyberchondria causes more security search behavior, and that it further increases anxiety. This effect was found to be particularly strong in the first three weeks of the pandemic. In addition, it was found in another study conducted in the pandemic that excessive use of the media increased anxiety (Garfin et al., 2020). In a systematic review study, Vismara et al. (2020) found that cyberchondria played an important role in increasing anxiety, distress, and obsessive compulsive behavior. Hashemi et al. (2020) in a study conducted in Iran, found that Covid-19 anxiety affected cyberchondria, and that cyberchondria affected Covid-19 anxiety. Starcevic et al. (2021) in a model of cyberchondria during the Covid-19 pandemic, reported that fear of Covid-19 and a perception of increasing threat, along with the difficulties of coping with the uncertainties of Covid-19, affected online search behavior concerning Covid-19. In studies conducted outside the period of the pandemic also, a correlation between cyberchondria and health anxiety is mentioned (Brown et al. 2019; McMullan et al. 2019; Norr et al. 2014; Singh & Brown, 2016). In our study also, a correlation was found between anxiety and cyberchondria during the Covid-19 period, which can make a contribution to the literature.

Examining the level of coronavirus anxiety in relation to the teachers' characteristics, it was seen that those who were single had a higher level of anxiety than those who were married. Age and education level had no effect on their Covid-19 anxiety. In particular, the lack of difference in anxiety according to the teachers' education level can be explained by the fact that the education levels of the group members were close to each other and high. Jungmann and Witthöft (2020) found in a study that anxiety did not vary according to education level. Stanton et al., (2020) reported that adults with a low education level and those between the ages of 18 and 45 had higher scores in one or more psychological distress states. Jungmann and Witthöft (2020) similarly found that the anxiety of those aged 30–59 years was higher, and this was because of thinking about their families and because of work and financial problems. In the present study there was no correlation between participants' gender and Covid-19 anxiety, but Jungmann and Witthöft (2020) found a difference according to gender – women had greater anxiety than men – and other studies have also found that women have more anxiety (Jungmann & Witthöft, 2020; Moghanibashi-Mansourieh, 2020; Qiu et al., 2020; Stanton et al., 2020).

It was determined that the teachers showed a statistical difference in cyberchondria levels according to their education levels and whether they had a relative diagnosed with Covid-19. Teachers with a degree-level education and those with a relative diagnosed with Covid-19 had a higher level of cyberchondria. In a study by Maftei and Holman a correlation between cyberchondria and age and being female was found, but it was reported that this correlation was limited and stated that the group defined as young adults between the ages of 30 and 44 years were more active in seeking health-related information on the internet (Maftei & Holman, 2020). However, the correlation between cyberchondria and age and gender was limited (Barke et al., 2016).

Limitations of the study

The study has certain limitations. One of these is that the results cannot be generalized to the whole population of Turkey. The research population consisted of teachers in five schools in only a city. Another limitation is that the research was conducted specifically with teachers, that is, those with a high level of education. Future research should be conducted with people with different levels of education. As Covid-19 anxiety and cyberchondria levels were self-reported, the answers given by the participants were accepted as correct. A further limitation is that when it considered that this was a cross-sectional type of study, it was not possible to determine whether cyberchondria was affecting Covid-19 anxiety or whether Covid-19 anxiety was affecting cyberchondria. Future research should determine whether cyberchondria increases the risk of anxiety.

Conclusions

The results of the study illustrate the correlation between cyberchondria and Covid-19 anxiety during the pandemic in a group composed of teachers with a high level of education. Considering that there is not enough research on cyberchondria, and more specifically that there is a need for research to explain the potential relationship with Covid-19 anxiety, it is thought that this research is an important step forward in the literature.

Today, cyberchondria is increasing as a significant public health problem, and the pandemic has especially supported this increase. Increasing awareness of cyberchondria is important in reducing the negative effects of present and future medical situations, and in developing preparedness. In order to protect people from cyberchondria, it is necessary to teach them to access reliable information, to be able to distinguish wrong information, and to obtain adequately evidence-based information. The online health information literacy levels of internet users must be raised.

Looking forward, researchers must determine whether there is a benefit in further solving these relationships and reducing and preventing intervention in cyberchondria and anxiety; they must focus on results which increase anxiety, and investigate the correlation between cyberchondria, anxiety and behavior.

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Declarations

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