

## Investigating the Relationship between Cyberchondria Level and Perceived Stress in Young Adults

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### ABSTRACT:

**Purpose:** The aim of this study was to investigate the relationship between cyberchondria level and perceived stress in young adults.

**Material and Methods:** This descriptive and relational study was conducted with 547 students studying at a university between September and November 2019. The data of the study were collected through the Personal Information Form, Cyberchondria Severity Scale (CSS), and Perceived Stress Scale (PSS).

**Results:** It was determined that 92.1% of the students were in the age group of 18-24 years and 70.9% were female. 73.5% of the participants stated that they spend 1-5 hours a day on the internet, 31.8% stated that they always used the internet in health-related issues, and 17.4% stated that they believed to have an undiagnosed disease. It was found that PSS total mean score was 27.6±7.1 and CSS total mean score was 38.2±8.0.

**Conclusion:** A positive correlation was determined between the cyberchondria severity scale total score and the perceived stress scale total score.

**Keywords:** Cyberchondria, Young Adults, Perceived Stress

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### INTRODUCTION

Cyberchondria, which is defined as the modern version of hypochondria, is regarded as a sub-branch of hypochondria since it is characterized by one's searching about his/her disease or complaint on internet environment (online) and establishing diagnosis and treatment plant for him/her (Elciyar and Taşçı, 2017; Gençer et al., 2018; Jungmann et al., 2020; Starcevic and Berle, 2013). Hypochondriac patients, who think that they have a disease and it cannot be revealed with constant disease anxiety and physical complaints even though they do not have any disease in their body, can visit hospitals until they are diagnosed with the diseases they think

they exist. If no diagnosis is established, they feel insecure towards the doctor, analysis or hospital and they do continuous search from different sources (doctor, hospital, herbalist, journal etc.) and they can plan their treatment according to these sources (Elciyar and Taşçı, 2017; Hocaoğlu, 2015; Hart and Björgvinsson, 2010). In their study, Elciyar and Taşçı observed that 70% of the participants spent more than 4 hours a day on the internet and 45.8% were seen to believe that the internet is as knowledgeable as doctors (Elciyar and Taşçı, 2017).

While hypochondriac patients are characterized by visiting doctors and with repeated analyses, cyberchondria is characterized by acting according to

the information available on the internet sources about their current condition (Elciyar and Taşçı, 2017; Hocaoglu, 2015). Cyberchondriac patients search their existing symptoms on the internet and determine their own diagnosis on the internet without a doctor. They often plan their treatment with the information they find on the internet (Altındış et al., 2018; Batigün et al., 2018; Ertaş et al., 2020; Fergus and Spada, 2017; Starcevic, 2017). In some studies, it is seen that the term Dr. Google is expressed in such diagnosis and treatment planning (Jungmann et al., 2020; Jutel, 2017).

Since cyberchondriac people frequently follow the changes in their body, they exaggerate the changes they notice (pulse, respiratory, rash, etc.) and think that they will have bad results, resulting in increasing their anxiety levels (Fergus and Spada, 2017; Gül et al., 2016). In the study conducted by Doherty-Torstrick et al., in 2016, they reported that online health information searches made by the individuals with moderate-high level of health anxiety in order to eliminate their anxiety increased their complaints (Doherty-Torstrick et al., 2016). In another study conducted by Singh and Brown, they stated that while the individuals with high health anxiety did more search and spent more time searching for online health information, there was no decrease in their anxiety levels (Singh and Brown, 2016). Individuals with high anxiety levels take the sources suggesting severe disease diagnosis from simple symptoms (headache=cerebral haemorrhage, fatigue=cancer, etc.) as basis without even questioning the accuracy of the information they find on the internet. Considering that the most frequently read and clicked pages are usually opened in the online search results, it should not be ignored that every information given on the internet is not correct and does not reflect the facts (Altındış et al., 2018; Ertaş et al., 2020; Starcevic, 2017). Even if they are trustable sites or the association sites for specific diseases (such as Turkish Society of Cardiology, etc.), it is recommended not to generalize the information given on their pages to the whole society. Diagnosis and treatment should be planned by doctors in a personalized or multi-disciplinary approach in line with the characteristics of the individual (Elciyar and Taşçı, 2017; Gençer et al., 2018).

If the online health search is in a controllable way, it is also seen to have positive effects. Situations like searching online health information, adapting to the treatment plan determined by the doctor, exercising regularly, gaining adequate and balanced eating habits, learning personal hygiene rules, etc., can be used positively. Otherwise, the diagnosis and planned treatment without a doctor's approval may also bring along a worse prognosis for individuals (Altındış et al., 2018; Ertaş et al., 2020). Since cyberchondria is a current and ongoing problem and carries a vital importance in terms of its risks and it has been slightly studied in Turkey, it is necessary to conduct researches on this subject.

### **Research questions**

- Is there a difference between the cyberchondria levels of young adults and their socio-demographic characteristics?
- Is there a difference between the perceived stress levels of young adults and their socio-demographic characteristics?
- Is there a relationship between the cyberchondria levels of young adults and their perceived stress levels?

### **MATERIAL and METHODS**

#### **Purpose Type of the Study**

The aim of this study is to investigate the relationship between cyberchondria level and perceived stress in young adults. This study was conducted in descriptive and relational type.

#### **Sampling and participant**

The population of the study was composed of students studying in a university in southeastern Turkey, Faculty of Education (n=695), Vocational School (n=560), and Psychology Department (n=417) between September and November 2019. The sample of the study was composed of 547 students who met the inclusion criteria, were attending the courses between the dates of study and were determined with representing power of the population of 90%, effect size of 0.25, and 5% error rate at confidence interval of 95% as a result of the power analysis.

### **Inclusion criteria**

Aged 18 and above, studying at the university where the research was conducted, students who attended classes during the study period and volunteered to participate in the research were included in the study.

### **Exclusion criteria**

Students under the age of 18, who did not study at the university where the research was conducted, and who did not volunteer to participate in the research were not included in the study.

### **Data Collection Tools**

The data were collected by using Personal Information Form, Cyberchondria Severity Scale Short Form (CSS-15) and Perceived Stress Scale (PSS-14).

**Personal Information Form:** It is a form containing information about the characteristics like age, gender, marital status, their major, and spending time on the internet.

**Cyberchondria Severity Scale Short Form (CSS-15):** It is a 33-item scale developed by McElroy and Shevlin in 2014. (McElroy and Shevlin, 2014). The short form of the scale was prepared by Barke et al. (2016) created by (Barke et al., 2016). The Turkish validity and reliability of the short form of the scale was performed by Uzun et al., in 2016 (Uzun et al., 2017). SCÖ-15 is a 15-item scale consisting of five dimensions (difficulty, excessive anxiety, extremism, reassurance, and distrust of the doctor). Cronbach's alpha coefficient of CSS-15 was found as 0.62. Minimum and maximum scores of the scale is 15 and 75 points, respectively. High scores obtained from the scale which has no cut-off values also signify high cyberchondria level (Uzun et al., 2017). In the present study, the Cronbach's alpha coefficient was found to be 0.70.

**Perceived Stress Scale (PSS-14):** It is a scale developed by Cohen et al., (1983) to measure how stressful a person perceives several situations in his/her life. (Cohen et al., 1983). The scale, adapted to Turkish by Eskin et al., (2013), is composed of 14

items (Eskin et al., 2013). Scores of PSS-14 vary between 0 and 56. The high score obtained from the scale indicates that the individual's stress perception is high. The Cronbach's alpha coefficient of the scale was determined to be 0.84 (Eskin et al., 2013). In the present study, Cronbach's alpha coefficient was found to be 0.78.

### **Data Collection**

The study was conducted between September and November 2019. The questionnaire was applied to the students who agreed to participate in the study at the out-of-course times. The researcher informed the students about the purpose of the study, the questionnaire was distributed to the students and they were asked to fill out the forms under the supervision of the researcher. It took an average of 15-20 minutes to implement the questionnaire.

### **Statistical Analysis**

The data of the study were evaluated using SPSS 21.0 package program. Number, mean, standard deviation, percentage distribution, Chi-Square, t-test, one-way analysis of variance (ANOVA), and Pearson's Correlation Analysis were used to analyse the data. The value of  $p < 0.05$  was accepted for statistical significance.

### **Ethical Approval**

Necessary approval was obtained before starting the study (Ethics committee number: 2019/97; Date: 14.06.2019). Institutional permission was obtained from the Rectorate of the University where the study will be conducted after obtaining the necessary ethics committee approval. After the participants were informed about the purpose of the study, their consent was obtained. Participation in the research was based on volunteerism. This study was conducted based on Principles of Declaration of Helsinki.

### **RESULTS**

In the present study conducted to investigate the relationship between cyberchondria level and perceived stress in young adults, it was determined that 92.1% of young people were aged between 18-24 years, 70.9% were female, 95.2% were single and

49.2% were students in the healthy department of the vocational school (justice, dialysis, anaesthesia), 30.3% were students in the teaching department (English, preschool, special education), 13.7% were students in the psychology/psychological counselling and guidance (PCG) department.

It was found that 73.5% of the participants stated that they spent 1-5 hours a day on the internet, 48.1% were using the internet occasionally for the health-related issues, 31.8% were always using internet for health-related issues and 17.4% believed that they had an undiagnosed disease. When there is a health problem, 33.1% of the participants stated that they did search on the internet first, 61.2% stated that the internet is sometimes useful and 22.1% stated that it is always useful for health-

related issues (Table 1).

A statistically significant difference was found between the Cyberchondria Severity Scale scores of the young people and their status of using internet in health-related issues, their thoughts of having an undiagnosed disease, behaviours they do first when there was a health problem, their status of believing that the internet is useful in the subject related to their health ( $p < 0.05$ ) (Table 1). A statistically significant difference was determined between the Perceived Stress Scale scores and the young people's gender, age, marital status, time they spend on the internet during the day, their thoughts of having an undiagnosed disease and the behaviours they do first when there is any health problem ( $p < 0.05$ ) (Table 1).

**Table 1.** Comparison of CSS and PSS mean scores of the young people according to sociodemographic and some characteristics (n=547)

	CSS				PSS	
	n	%	X±SD	Significance	X±SD	Significance
<b>Gender</b>						
Female	388	70.9	38.4±8.1	*t=0.875	28.2±7.3	t=3.062
Male	159	29.1	37.7±7.6	p=0.382	26.2±6.5	<b>p=0.002</b>
<b>Age</b>						
18-24	504	92.1	38.2±7.8	*t=-0.510	27.8±7.1	t=2.047
25-31	43	7.9	38.8±9.8	p=0.610	25.5±7.4	<b>p=0.041</b>
<b>Department</b>						
Justice	37	6.8	37.2±8.9	**F=2.329	29.1±8.1	F=2.194
Vocational school of higher education - health	269	49.2	37.9±7.6	p=0.074	26.8±6.9	p=0.088
Teaching	166	30.3	39.5±7.8		28.3±7.4	
Psychology/PCG	75	13.7	37.0±8.8		28.1±7.0	
<b>Marital status</b>						
Married	26	4.8	37.1±9.7	*t=-0.696	23.8±6.3	t=-2.788
Single	521	95.2	38.1±7.9	p=0.487	27.8±7.1	<b>p=0.005</b>
<b>How many hours a day do you spend on the internet</b>						
1-5 hours	402	73.5	38.0±8.1	**F=0.816	27.2±7.2	F=3.470
6-10 hours	128	23.4	38.4±7.3	p=0.443	29.0±6.8	<b>p=0.032</b>
11-15 hours	17	3.1	40.5±10.1		26.3±7.7	
<b>Do you use the internet on health-related issues?</b>						
Never	14	2.6	33.5±12.5		23.6±9.0	
Rarely	96	17.6	35.0±7.4	**F=15.591	26.9±7.2	F=2.339
Sometimes	263	48.1	37.8±7.4	<b>p=0.000</b>	27.6±7.1	p=0.073
Always	174	31.8	41.1±7.7		28.3±6.9	
<b>Do you believe that you have an undiagnosed disease?</b>						
Yes	95	17.4	40.0±7.9	*t=2.462	31.1±6.8	t=5.254
No	452	82.6	37.8±7.9	<b>p=0.014</b>	26.9±7.0	<b>p=0.000</b>
<b>What do you do first when you have any health problem?</b>						
I search on the internet	181	33.1	41.4±7.2		30.3±6.5	
I go to doctor	260	47.5	36.8±7.5	**F=15.771	26.6±7.4	F=6.715
I consult my relatives	97	17.7	36.6±8.4	<b>p=0.000</b>	27.6±6.8	<b>p=0.000</b>
I don't do anything	9	1.6	34.0±13.0		30.0±7.1	
<b>Do you believe that the internet is useful for the issues related to your health?</b>						
I think it's always useful	121	22.1	41.0±7.4		27.3±6.1	
I think it is not useful.	36	6.6	33.7±8.2	**F=9.954	26.6±7.0	F=0.427
I think it is useful from time to time	335	61.2	37.6±7.3	<b>p=0.000</b>	27.8±7.3	p=0.734
undecided	55	10.1	38.9±10.6		27.8±8.3	

\*Independent Samples t-test, \*\*ANOVA test PSS=Perceived Stress Scale, CSS=Cyberchondria Severity Scale  
PCG= Psychological Counselling and Guidance

**Table 2.** Distribution of young people’s behaviours of using internet for health-related issues (n=547)

	Yes		No	
	Number	%	Number	%
I use the Internet to search for information about disease symptoms	288	52.7	259	47.3
I use the Internet to search for information about medications and their side effects	229	41.9	318	58.1
I use the Internet to search for information about doctor and hospital preferences	101	18.5	446	81.5
I use the Internet to read comments for doctor and hospital preferences	68	12.4	479	87.6
I use the internet to make an appointment	177	32.4	370	67.6
Do you diagnose any disease with the information you obtain from the internet when you have any health problem?	185	33.8	362	66.2
With the information you have obtained from the internet, do you make tests without the doctor's request?	37	6.8	510	93.2
Do you use any non-physician medication with the information you obtain from the internet in case of any health problem?	52	9.5	495	90.5
Does the information you get from the internet prevent you from applying to the health institution when you have any health problems?	45	8.2	502	91.8
Do you use the internet for alternative treatment methods when you have any health problem?	329	60.1	218	39.9
Did you ever leave physician treatment due to internet information?	23	4.2	524	95.8
Do you do search on the internet before contacting the doctor when you have a health problem?	418	76.4	129	23.6
Do you search the source of the information when you search on the internet?	323	59.0	224	41.0

**Table 3.** CSS and PSS Total and Subscale scores of the students (n=547)

	Min-Max	X±SD
<b>CSS Total</b>	17-66	38.2±8.0
CSS Compulsion Subscale	3-15	4.9±2.4
CSS Distress Subscale	3-15	6.4±2.7
CSS Extremism Subscale	3-15	9.0±2.7
CSS Reassurance Subscale	3-15	8.1±3.0
CSS Mistrust of Medical Professional	3-15	9.6±2.3
<b>PSS Total</b>	4-54	27.6±7.1
PSS Insufficient Self-Efficacy Subscale	1-28	12.1±4.4
PSS Stress Subscale	1-28	15.5±4.9

PSS=Perceived Stress Scale, CSS=Cyberchondria Severity Scale

**Table 4.** Correlation of CSS and PSS Total and Subscale Scores (n=547)

	1	2	3	4	5	6	7	8
CSS Compulsion (1)	r							
	p							
CSS Distress (2)	r	0.289						
	p	<b>0.000</b>						
CSS Excessiveness (3)	r	0.001	0.428					
	p	0.973	<b>0.000</b>					
CSS Reassurance (4)	r	0.109	0.351	0.412				
	p	<b>0.011</b>	<b>0.000</b>	<b>0.000</b>				
CSS Mistrust of Medical Professional (5)	r	-0.022	0.012	0.108	0.107			
	p	0.608	0.771	<b>0.011</b>	<b>0.012</b>			
PSS Insufficient Self-Efficacy (6)	r	0.014	0.199	-0.076	-0.032	-0.125		
	p	<b>0.001</b>	<b>0.000</b>	0.076	0.462	<b>0.003</b>		
PSS Stress (7)	r	0.048	0.133	0.169	0.146	0.077	0.160	
	p	0.264	<b>0.002</b>	<b>0.000</b>	<b>0.001</b>	0.072	<b>0.000</b>	
PSS Total (8)	r	0.122	0.215	0.069	0.081	-0.025	0.732	0.798
	p	<b>0.004</b>	<b>0.000</b>	0.105	0.059	0.564	<b>0.000</b>	<b>0.000</b>
CSS Total (9)	r	0.437	0.719	0.682	0.713	0.373	0.037	0.197
	p	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	0.392	<b>0.000</b>

Pearson Correlation Analysis, PSS=Perceived Stress Scale, CSS=Cyberchondria Severity Scale

It was found that 76.4% of the young people stated that they did search on the internet before applying to a physician when there was a health problem, 59% stated that they sought the source of the information when they did a search on the internet, 52.7% stated that they used the internet for searching information about the disease symptoms, 33.8% stated that they diagnosed the disease with the information they obtained from the internet when they experienced a health problem, 60.1% stated that they used internet for alternative treatment methods when they had any illness, 41.9% stated that they used the internet for searching information about the medications and their side effects (Table 2).

It was found that Perceived Stress Scale Total mean score was  $27.6 \pm 7.1$  and the Cyberchondria Severity Scale total mean score was  $38.2 \pm 8.0$  (Table 3).

A positive correlation was found between Perceived Stress Scale total score and the Cyberchondria Severity Scale total score ( $r: 0.159$   $p: 0.000$ ) (Table 4).

## DISCUSSION

Since the internet has become an important source of information about health today, online health information is widely used by internet users (Dagar et al., 2019; Te Poel et al., 2016). It has been suggested that searching health information from the internet may disturb some users and further strengthen the anxiety of individuals having distress about their health despite its general benefit (Te Poel et al., 2016). Since the access to computer-based health services is easy, cyberchondria is seen to emerge as a phenomenon recently (Wijesinghe et al., 2019). For this reason, this study aimed to investigate the relationship between cyberchondria level and perceived stress in young people.

In this study, cyberchondria scores of female students were determined to be higher than male students. In their studies, Ertaş et al., Uzun et al., Barke et al., also stated that female students had higher cyberchondria scores (Barke et al., 2016; Ertaş et al., 2020; Uzun et al., 2017). The results of the present study are similar to the literature. Female students' characteristics of searching diseases from the internet for themselves as well as for their family and relatives, their sensitivity about diseases,

questioning the physician's diagnosis and treatment are higher than male students, which may cause their cyberchondria scores to be higher than male students. In their study, Lupton and Maslen, stated that women sought about health information from the internet not only for themselves but also for their relatives (Lupton and Maslen, 2019).

In this study, it was determined that cyberchondria levels increased as the time spend on the internet in a day increased. In their study, Ertaş et al., stated that cyberchondria levels increased as the time spend on the internet increased (Ertaş et al., 2020). On the other hand, in another study, Rice stated that individuals exhibited more health information searching behaviour as the time they spent on the internet increased (Rice, 2006). The results of the present study are similar to the literature. Spending more time to search disease due to long times spent on the internet might be the reason of increased cyberchondria levels. It was determined that the perceived stress scores increased as the time spend on the internet in a day increased. The increase in the stress level of an individual might be caused by obtaining more information while doing more search on the disease and the anxiety and uncertainty caused by these information.

It was determined in this study that the cyberchondria levels of the individuals who always used internet about health-related issues were higher and the severity scale mean score was  $41.1 \pm 7.7$  (above average). In the study conducted by Altındış et al. with university employees, Cyberchondria Severity Scale mean score was reported to be  $35.44 \pm 7.48$  (Altındış et al., 2018). It is seen that the scale mean score obtained in the present study was higher than the study by Altındış et al. The habit and frequency of using the internet on health-related issues and the idea of controlling health through the internet can be effective on the result.

It was found in this study that cyberchondria levels of the students who believed that they had an undiagnosed disease were higher. The fact that the individual search on the internet about disease symptoms due to his/her obsessions about his/her health, presence of people around who constantly believe that they are ill or do search diseases on the

internet, behaviour of constantly searching disease online because of mistrusting physician and treatment might be effective on cyberchondria level. Stress levels in individuals who believed to have an undiagnosed disease were found to be high. The idea of constantly having a disease, uncertainties a person has about the extent and severity of the disease he/she believes to have can increase the stress level.

Cyberchondria Severity Scale mean score of the students who said that they sought on the internet when they had health-related problems was found to be  $41.4 \pm 7.2$  (above average). It was stated in the study conducted by Altındış et al., with university employees that Cyberchondria Severity Scale mean score was  $33.74 \pm 7.18$  (Altındış et al., 2018). The scale mean score in the present study was seen to be higher than the score in the study of Altındış et al. Trusting the health information on the internet, concerns about health, uncertainty caused by the disease information obtained from the internet and the associated more information-seeking behaviour can be effective on cyberchondria scores. For some people, searching medical information on the internet has the potential of leading to more uncertainty and therefore increasing health anxiety for individuals (Fergus, 2013).

In the present study, Cyberchondria Severity Scale total mean score was found to be  $38.2 \pm 8.0$ . In the study conducted by Batı et al. with students, Cyberchondria levels were determined to be  $36.98 \pm 7.69$  (Batı et al., 2018). Although the results show similarities, the scores were seen to be higher in the present study. It can be thought that the individual's internet addiction, obsessions about his/her health, easy access to a large number of medical information via his/her own internet, efforts on diagnosing him/herself, searching information about the disease on the internet due to mistrusting the diagnosis and treatment given by physician can be effective on cyberchondria levels.

In the present study, a positive correlation was found between cyberchondria level and perceived stress. An individual's constant search for disease symptoms on the internet, idea of having an undiagnosed disease, and anxiety and fear about his/her health can increase cyberchondria levels.

Finding different disease tables when a person search on diseases and confusing because of this information, and the idea of having these diseases may increase stress level. Cyberchondria causes anxiety and problems due to excessive search of online health information (Makarla et al., 2019). It is argued that many people do not trust medical professionals and believe that it is safer to self-diagnose. According to these people, searching for new information or verifying existing information, seeing it as solidarity and support as well as anxiety and fear are among the reasons for searching online health information (Elciyar and Taşçı, 2017).

## CONCLUSION

As a result of this study, it was found that cyberchondria levels of female students were higher than male students, cyberchondria and stress levels increased as the time spent on the internet in a day increased, cyberchondria and stress levels were higher in students who believed to have an undiagnosed disease, and cyberchondria levels of individuals who always used the internet about health-related issues were higher. It was also determined that there was a positive correlation between cyberchondria level and perceived stress in individuals.

In accordance with the results obtained at the end of the study, the effect of cyberchondria levels on the health of the individual and society should be determined and for this purpose, studies with high representation power and more participants should be conducted. In addition, the effect of cyberchondria levels on the use of limited resources should be determined and the intervention methods should be found based on the obtained results. Nurses need to protect young people from health anxiety by educating them on access to information about diseases and information security on the internet. Nurses should evaluate whether young people use internet resources related to diseases and the reliability of the resources reached, guide them about reliable and up-to-date resources, and periodically check their cyberchondria levels. Nurses should provide necessary assistance to students at risk in terms of cyberchondria before the current situation worsens or becomes irreversible and

should direct them to the relevant units for professional help when necessary.

### Limitations of the Study

The research is limited to the data obtained from students studying at a university in a certain time period and attending classes on the dates when the data collection tools were applied. For this reason, the data obtained can be generalized to students studying at the university where the research was conducted.

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### Conflict of Interest

There is no conflict of interest.

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