Cyberchondria in Healthcare Workers: An Example from a Training and Research Hospital

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Article Info	ABSTRACT
Article History **Received:** 10.07.2023 **Accepted:** 06.02.2024 **Published:** 25.12.2024 **Keywords** Health Attitude, Health, Anxiety, Medical Staff.	The current study aims to determine the cyberchondria tendencies among personnel working in a training and research hospital. The study population comprised 1924 hospital employees, from which a minimum sample size of 320 was determined. Data collection involved employing a sociodemographic survey form consisting of 9 questions, alongside the utilization of a 33-question Cyberchondria Severity Scale. The study participants had a mean age of 36.96±8.30, ranging from 19 to 64. Among the study group, 58.75% (n=188) were women, with 66.56% identifying as midwives or nurses, and 16.88% being single. Significant relationships were identified between cyberchondria and education status, occupation, and duration of internet use. However, no significant differences were observed based on age, gender, or marital status. The average Cyberchondria Severity Scale (CSS-33) score was determined to be 78.43 as a result of our study. Our findings revealed that 81.82% of individuals who conducted internet research about their illness before visiting the doctor continued this behavior after the visit, while 33.61% of those who did not initially research their illness searched for information on the internet post-consultation. This underscores the need for a thorough investigation into the reasons behind individuals continuing to seek information after consulting a doctor. Implementing necessary precautions based on these insights could contribute to the improved functionality of the healthcare system and a reduction in health-related anxiety experienced by individuals.

Sağlık Çalışanlarında Siberkondri: Bir Eğitim ve Araştırma Hastanesi Örneği

Makale Bilgisi	ÖZET
Makale Geçmişi **Geliş Tarihi:** 10.07.2023 **Kabul Tarihi:** 06.02.2024 **Yayın Tarihi:** 25.12.2024 **Anahtar Kelimeler** Sağlık Tutumu, Sağlık, Kaygı, Sağlık Çalışanları.	Bu çalışmanın amacı bir eğitim ve araştırma hastanesinde çalışan personelde siberkondri eğilimlerini belirlemektir. Araştırmanın evrenini 1924 hastane çalışanı oluşturmuş olup, örneklem büyüklüğü minimum 320 olarak belirlenmiştir. Veri toplama, 33 soruluk Siberkondri Şiddet Ölçeği'nin yanı sıra 9 sorudan oluşan bir sosyodemografik anket formunun kullanılmasını içeriyordu. Katılımcıların yaş ortalaması 36.96±8.30 (min.19 max.64) olarak hesaplanmıştır. Çalışma grubunun %58.75'i (n=188) kadın, %66.56'sı ebe veya hemşire, %16.88'i bekârdı. Eğitim durumu, meslek ve internet kullanım süresi ile siberkondri arasında anlamlı bir ilişki bulunmuştur. Yaş, cinsiyet ve medeni durum arasında anlamlı bir farklılık bulunamamıştır. Yapmış olduğumuz bu çalışma sonucunda SCÖ-33 puan ortalamasının 78.43 olduğu tespit edilmiştir. Araştırmaya katılanların yaş ortalaması 36,96±8,30 olup, yaşları 19 ile 64 arasında değişmektedir. Çalışma grubunun %58,75'i (n=188) kadın, %66,56'sı ebe veya hemşire, %16,88'i bekârdı. Siberkondri ile eğitim durumu, meslek ve internet kullanım süresi arasında anlamlı ilişkiler tespit edildi. Ancak yaş, cinsiyet ve medeni duruma göre anlamlı bir farklılık gözlenmedi. Yaptığımız çalışma sonucunda Siberkondri Şiddet Ölçeği (SCÖ-33) puanı ortalaması 78,43 olarak belirlendi. Bulgularımız, doktora gitmeden önce hastalığıyla ilgili internetten araştırma yapan bireylerin %81,82'sinin ziyaretten sonra da bu davranışı sürdürdüğünü, hastalığını ilk etapta araştırmayanların %33,61'inin muayene sonrasında internetten bilgi aradığını ortaya koydu. Bu durum bireylerin doktora başvurduktan sonra bilgi aramaya devam etmelerinin arkasında yatan nedenlerin kapsamlı bir şekilde araştırılması gerektiğinin altını çizmektedir. Bu öngörülere dayanarak gerekli önlemlerin uygulanması, sağlık sisteminin işlevselliğinin artmasına ve bireylerin yaşadığı sağlıkla ilgili kaygıların azalmasına katkıda bulunabilir.

INTRODUCTION

In recent years, with advancements in communication, informatics, and other technologies, access to the Internet has become more accessible. Consequently, its usage has rapidly expanded. This service, initially provided through wired lines, has evolved with technologies ensuring uninterrupted internet access via satellites, and concepts like the Internet of Things have started to integrate into our lives.

The increasing dissemination and accessibility of the Internet have radically transformed human life and behavior, making access to information more convenient. Today, people utilize the internet to gather information on various subjects, including health-related issues. In particular, individuals employ it for researching topics such as diseases, drugs, drug side effects, drug usage, drug equivalents, and general health information (Durak-Batigün et al., 2018; Greene & Kesselheim, 2010; Starcevic & Berle, 2013).

The presence of ambiguous, incorrect, and contradictory information on the internet can raise concerns among individuals conducting research in the field of health. Especially when dealing with unfamiliar or minimally known diseases, people may repeatedly engage in research to alleviate these concerns, a phenomenon known as cyberchondria (Altındiş et al., 2018; Starcevic, 2017).

Cyberchondria, prompted by individuals seeking health-related information due to concerns about their well-being, is defined as excessive and repetitive searching behavior on the internet. This behavior, outlined by Starcevic and Berle (2013), not only fails to alleviate anxiety but exacerbates it (Starcevic & Berle, 2013). In simpler terms, cyberchondria manifests as individuals searching for health or disease information online, deeming the information reliable, and subsequently misdiagnosing themselves, thereby generating unnecessary anxiety based on the information acquired (Tarhan et al., 2021).

Research has demonstrated that individuals with a high level of cyberchondria tend to increase their utilization of health services (Fergus, 2014; Tarhan et al., 2021; Tüter, 2019). Consequently, it becomes crucial for society, particularly health professionals, to possess knowledge about cyberchondria (Gürkan et al., 2023).

When reviewing the literature, a limited number of studies were identified focusing on assessing the cyberchondria levels among hospital staff. Conducting studies in diverse locations, timeframes, and with varied sample groups is crucial for advancing the literature on this subject. The current study aims to determine the cyberchondria tendencies among personnel working in a training and research hospital.

METHOD

Research Design

This research is a cross-sectional study conducted in April 2022.

Research Sample

The study universe comprised employees at Malatya Training and Research Hospital between 01.04.2022 and 30.04.2022, including 1280 midwives or nurses, 356 cleaning personnel, 163 security guards, and 125 patient care and patient referral personnel, totaling 1924 employees. The minimum sample size was determined as 320, calculated with a 95% confidence interval, 5% margin of error, and 50% expected frequency (to reach the maximum sample size) using the Epi-info program. To select participants, employees were categorized by their profession and arranged in name-surname order. Utilizing a systematic sampling method with a calculation of

1924/320=6.01, every 6th person after the first (320 people in total) was systematically included in the sample. In cases where individuals could not be reached due to reasons such as assignment, leave, or health reports, the next personnel on the list were included in the study.

Research Instruments and Processes

The sociodemographic characteristics were assessed using a 9-question survey developed by the authors. Additionally, the study employed a questionnaire in 2014, consisting of the Cyberchondria Severity Scale (CSS-33), initially developed by Eoin McElroy and Mark Shevlin, and adapted into Turkish by Uzun. The scale comprises 33 items, with responses graded on a scale of 1 to 5, ranging from 'never' to 'always.' It encompasses five sub-dimensions: Compulsion, Distress, Excessiveness, Reassurance Seeking, and Mistrust of Medical Professionals. CSS is a continuous scale, not a categorical scale. There is no cut-off point. The total cyberchondria score is computed by summing the scores from each question, where a higher score indicates a higher level of cyberchondria. Regarding the reliability of the CSS, the study reports a Cronbach's alpha coefficient of 0.89 in the main scale and ranges between 0.65 and 0.85 in the subscales (McElroy & Shevlin, 2013; Uzun, 2016).

Data Analysis

The statistical analyses were conducted using the SPSS 25 software package. The normal distribution of the data was assessed through the Kolmogorov-Smirnov test. Descriptive statistics were employed, presenting numbers with their percentages and means with their standard deviations. The association between categorical variables was examined using the Chi-Square test, while the means of two independent variables were assessed with the t-test. Analysis of Variance (ANOVA) was employed to evaluate the averages of more than two independent variables. The Tukey test was applied to identify the specific group or groups responsible for any detected differences resulting from the variance analysis. Furthermore, the Pearson Correlation test was utilized to ascertain the relationship between continuous variables.

RESULTS

The participants had a mean age of 36.96±8.30 (min. 19, max. 64). In the study group, 58.75% (n=188) were women, 66.56% were midwives or nurses, and 16.88% were single. Notably, 61.88% (n=198) of participants conducted research on their medical conditions on the internet before consulting a doctor, while 63.44% (n=203) engaged in such research after their medical visit (Table 1).

Table 1

Demographic Characteristics of the Working Group

Variable		n	%
Gender	Female	188	58.75
	Male	132	41.25
Age	18-34	117	36.56
	35-44	141	44.06
	45 and above	62	19.38
Marital Status	Married	255	79.69
	Single	54	16.88
	Separated/Divorced/Widowed	11	3.43
Education Status	Primary school	16	5.00
	Secondary school	27	8.44
	High school	165	51.56
	Associate degree	28	8.75
	Bachelor's degree	73	22.81
	Postgraduate degree	11	3.44
Profession	Midwife or Nurse	213	66.56
	Cleaner	59	18.44
	Security guard	27	8.44
	Patient Care or Patient Referrer	21	6.56
Presence of Chronic Disease in the Family	Yes	142	44.38
	No	178	55.62
Daily Internet Usage Time	<1 h	58	18.13
	1–2 hs	114	35.63
	2–3 h	63	19.68
	3–4 h	36	11.25
	>4 h	49	15.31
Searching for Information about Your Disease on the Internet before Going to the Doctor	Yes	198	61.88
	No	122	38.12
Searching for Information on the Internet after Visiting a Doctor	Yes	203	63.44
	No	117	36.56

While 81.82% (n=162) of those who researched their disease on the internet before visiting the doctor continued to do so after their appointment, only 33.61% (n=41) of those who did not search for information about their disease before seeing the doctor were searching for information on the internet (p<0.001, Table 2).

Table 2

The Situation of Researching Information about the Disease on the Internet Before and After Visiting a Doctor

		After going to the doctor					
		Yes		No			
		Number	%	Number	%	X^2	p
Before Going to the Doctor	Yes	162	81.82	36	18.18	75.648	<0.001
	No	41	33.61	81	66.39		

In assessing the total scores on the cyberchondria scale, a mean score of 78.43±24.69 was obtained. The breakdown of scores in the sub-dimensions is as follows: 16.47±7.67 in Compulsion, 18.08±7.14 in Distress, 20.39±6.41 in Excessiveness, 14.43±5.57 in Reassurance Seeking, and 9.05±3.22 in the Mistrust of Medical Professional sub-dimension (Table 3).

Table 3
Mean Scores and Cronbach's Alpha Values of the Cyberchondria Scale and its Sub-Dimensions

	Mean	Std. Deviation	Minimum	Maximum	Cronbach's alpha
Compulsion	16.47	7.67	8.00	40.00	0.899
Distress	18.08	7.14	8.00	40.00	0.843
Excessiveness	20.39	6.41	8.00	40.00	0.810
Reassurance Seeking	14.43	5.57	6.00	30.00	0.813
Mistrust of Medical Professional	9.05	3.22	3.00	15.00	0.556
Total Scale Score	78.43	24.69	33.00	165.00	0.939

There was no significant difference between CSS mean scores among age groups (p=0.440). While CSS score averages showed minimal variance between women (79.21±22.73) and men (77.31±27.29), no statistically significant difference was observed based on gender (p=0.512). Notably, the mean CSS score of high school graduates (74.11±23.86) was significantly lower than that of primary or secondary school graduates (87.16±28.58) (p=0.002). Additionally, participants with higher daily internet usage exhibited a higher average CSS score (p<0.001). Furthermore, individuals who conducted research on their condition on the internet, both before and after visiting the doctor, had higher average scores compared to those who did not engage in such research (p<0.001) (Table 4).

Table 4
Comparison of Independent Variable's CSS Score Means

		n	Mean	Standard deviation	t/F	p
Gender	Female	188	79.21	22.73	0.657	0.512
	Male	132	77.31	27.29		
Age Group	18-34	117	78.47	25.14		
	35-44	141	79.88	24.53	0.824	0.440
	45 and above	62	75.05	24.27		
Marital Status	Single	54	73.24	24.89		
	Married/Separated/Divorced/Widowed	266	79.48	24.56	2.885	0.090
Educational Status	Primary or secondary school[a]*	43	87.16	28.58		
	High school[b]*	165	74.11	23.86	6.246	**0.002**
	Associate, undergraduate and graduate	112	81.44	23.13		
Profession	Midwife or Nurse	213	77.61	22.52		
	Cleaner[c]*	59	85.31	30.86		
	Security guard[d]*	27	69.56	19.34	2.815	**0.039**
	Patient Care or Patient Referrer	21	78.81	29.07		
Presence of Chronic Disease in the Family	Yes	142	80.93	23.88		
	No	178	76.43	25.21	1.623	0.106

Daily Internet Usage Time	<1 h[e]*	58	74.02	21.68		
	1–2 h[f]*	114	73.04	24.66		
	2–3 h	63	76.41	21.46	7.333	**<0.001**
	3–4 hs[g]*	36	88.58	23.66		
	>4 h[h]*	49	91.33	27.56		
Before Going to the doctor, Searching for Information about Your Disease on the Internet	Yes	198	82.89	22.81		
	No	122	71.19	25.97	4.225	**<0.001**
Searching for Information on the Internet about His Disease after Going to the Doctor	Yes	203	82.61	22.39		
	No	117	71.17	26.83	3.896	**<0.001**

*Group(s) causing the difference, a>b, c>d, e,f<g,h

DISCUSSION

In today's world, marked by a steady rise in internet usage, individuals now have easier access to information. However, navigating through the vast sea of information and discerning the accurate details amid the abundance of data may lead people, especially in segments of with low health literacy, to accept contradictory and false information found on internet sites as genuine. Consequently, this situation can contribute to heightened anxiety levels among individuals who believe the information to be true, prompting them to intensify their internet searches in an attempt to alleviate their increasing anxiety.

The CSS-33 scale, translated into Turkish by Uzun in 2016, indicates that a higher score corresponds to a higher level of cyberchondria. The scale allows for a minimum of 33 and a maximum of 165 points.

As a result of this study, it was determined that the mean CSS-33 score was 78.43±24.69. In similar studies conducted in Turkey using the same scale, CSS-33 average scores ranged from 71.1 to 79.4 (Uzun, 2016; Gökçe and Erbay, 2017; Selvi et al., 2018; Aygün, 2021). Meanwhile, studies conducted abroad have reported an average CSS-33 score ranging between approximately 60 and 79 (Bajcar and Babiak, 2020; Barke et al., 2016; Fergus, 2014; Norr et al., 2015). Our research revealed that the cyberchondria score average was similar to studies conducted domestically and higher than the average reported in studies conducted abroad. Considering that the level of health literacy in Turkey is reported to be lower than in European countries (Sağlık ve Sosyal Hizmet Çalışanları Sendikası, 2014), the observed higher level of cyberchondria in Turkish studies becomes particularly meaningful when correlated with health literacy.

According to the study results, no significant difference was found in the Cyberchondria Severity Scale (CSS) score averages between men and women. This outcome aligns with findings from several studies in the literature (Altındiş et al., 2018; Aygün, 2021; Deniz, 2020; Özyurt et al., 2020; Tarhan et al., 2021). While some studies have reported significant differences between gender and cyberchondria (Barke et al., 2016; Ertaş et al., 2020; Göde and Öztürk, 2023; Rice, 2006; Tiritoğlu, 2019; Tüter, 2019; White and Horvitz, 2009), the variation in results is thought to be influenced by other variables related to the specific sample group under investigation.

In this study, no significant difference was observed in the Cyberchondria Severity Scale (CSS) score averages across different age groups. This finding aligns with results reported in various studies in the literatüre (Deniz, 2020; Doherty-Torstrick et al., 2016). However, some studies have found a significant difference between age and CSS scores (Güleşen & Beydağ, 2020; Türkön & Toraman, 2021; Tüter, 2019; Uzun, 2016).

According to the study results, a statistically significant difference was identified between the education variable and cyberchondria. The mean score of high school graduates (74.11±23.86) was found to be significantly lower than that of primary or secondary school graduates (87.16±28.58) (p=0.002) (Table 3). This outcome is consistent with the findings of Tarhan et al. (2021), who reported a significant difference between education and cyberchondria in their study. Tarhan et al. (2021) concluded that the level of cyberchondria tends to decrease as the level of education increases, a result in line with our study.

In the existing literature, several studies have reported a significant difference between internet use and cyberchondria levels (Ertaş et al., 2020; Gökçe and Erbay, 2017; Tüter, 2019; Uzun, 2016). Consistent with these findings, our study also revealed a significant difference between internet use and cyberchondria levels, except for individuals who used the internet between 2-3 hours. It can be inferred that the level of cyberchondria tends to increase with longer durations of internet use. Specifically, the results indicate that individuals who use the internet for more than 4 hours a day exhibit the highest cyberchondria scores compared to those with less frequent internet use, supporting this perspective.

In a study conducted by Tüter (2019) on patients seeking family medicine, it was found that 76.7% of the participants engaged in pre-doctoral research. Similarly, Elciyar and Taşçı (2017), in their study on university students, reported that 85% of the participants conducted pre-doctoral research. Another study by Altındiş et al. (2018) focused on cyberchondria among university employees and revealed that 85.5% of the participants researched their health issues on the internet before consulting a hospital or physician. Notably, a significant difference was identified between participants who researched their health problems on the internet before consulting a physician and their Cyberchondria Severity Scale (CSS) averages. Those who reported conducting research had higher CSS scores (Altındiş et al., 2018).

In line with these findings, our study indicates that 81.82% (n=162) of participants who searched the internet about their disease before visiting the doctor continued this behavior after the visit. Conversely, only 33.61% (n=41) of those who did not search for information before the visit searched for information after the doctor's appointment (p<0.001). Moreover, the mean score of individuals conducting pre and post-visit internet research was significantly higher than those who did not (p<0.001). These results align with previous studies mentioned above, highlighting the persistent relationship between internet research and cyberchondria.

The rise in cyberchondria levels contributes to heightened anxiety among individuals, prompting increased reliance on healthcare services. The lower number of physicians per capita in Turkey compared to the European average, coupled with a higher rate of applications to health institutions, disrupts the system's functionality and leads to a reduction in the time allocated to patients. Consequently, individuals experience heightened anxiety due to insufficient information about their health. In response, those unable to obtain adequate information from healthcare professionals often resort to repeated searches on the easily accessible internet.

CONCLUSION AND SUGGESTIONS

The cyberchondria levels identified in our research were consistent with findings from other studies conducted in our country. Notably, a significant correlation was observed between internet use and cyberchondria levels, except for individuals who used the internet between 2-3 hours a day. The data indicates a positive relationship between the duration of internet use and increased levels of cyberchondria. Furthermore, our study revealed that higher levels of education were associated with a decrease in cyberchondria. The ability of individuals to navigate and comprehend information amidst the vast content available online is directly tied to their health literacy. Enhancing education and health literacy is believed to play a crucial role in mitigating cyberchondria. The study's findings underscore

the importance of understanding why individuals continue to research their illnesses after consulting a doctor. Addressing this aspect comprehensively and implementing necessary measures could contribute to the smoother functioning of the health system and alleviate health anxiety among individuals. Considering the challenges in monitoring the vast content available on numerous websites, it is advisable for public authorities to establish an official website dedicated to diseases. This platform should be designed with content accessible to individuals of all health literacy levels, providing accurate and comprehensible information. Such an initiative could significantly contribute to promoting informed decision-making and reducing the prevalence of cyberchondria.

LIMITATIONS

The findings of this research are constrained by the specific sample from which it was drawn. It is crucial to note that these results cannot be generalized to encompass all personnel working across the entire country. The limitations arising from the study's design should be duly acknowledged and taken into consideration.

Ethic Approval

Approval for this research was obtained from the Non-Interventional Clinical Research Ethics Committee of Turgut Ozal University through a decision letter dated 29.11.2021, numbered 2021/13. The study was conducted in adherence to the Principles of the Declaration of Helsinki.

Conflict of Interest

No conflict of interest was declared by the authors.

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Authorship Contributions

Design: S.D., M.K., Data Collection or Processing: S.D., M.K., Analysis or Interpretation: S.D., M.K., Literature Search: S.D., M.K., Writing: S.D., M.K.

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