CYBERCHONDRIA AND ASSOCIATED FACTORS AMONG UNIVERSITY STAFF

Üniversite çalışanlarında siberkondri ve ilişkili etmenler

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Abstract

The term "cyberchondria" has been used in the literature for the exacerbation of health anxiety as a result of searching for medical information on the Internet. There are limited studies on the prevalence and potential risk factors of cyberchondria. This study was carried out to determine the level of cyberchondria and related factors in university employees. This cross-sectional study was conducted on 335 academic and non-academic university staff. The data were collected through a questionnaire consisting of 50 questions, 17 of which were related to sociodemographic characteristics and healthcare utilization, and 33 of which were Cyberchondria Severity Scale questions. Multivariate linear regression was used to evaluate factors associated with cyberchondria. The mean cyberchondria score of the participants was 71.1 ± 17.6. The cyberchondria score was higher among staff aged ≤35 ($p=0.001$). It was found that the cyberchondria score was higher in those who watched health-related broadcasts on TV, who received laboratory tests and procedures without a physician's referral and who took medication without a doctor's advice ($p<0.05$). The level of cyberchondria among Pamukkale University employees was moderate. Age, watching health-related broadcasts on TV, receiving laboratory tests and procedures without a physician's referral and taking medication without a doctor's advice were factors associated with cyberchondria.

Keywords: Cyberchondria, health anxiety, internet, university staff, Turkey.

Özet

İnternette tekrarlayan tıbbi bilgi aramanın bir sonucu olarak sağlık anksiyetesinin şiddetlenmesi için literatürde "siberkondri" terimi kullanılmaktadır. Siberkondri sıklığı ve olası risk etmenleri ile ilgili sınırlı sayıda çalışma bulunmaktadır. Bu çalışma, üniversite çalışanlarında siberkondri düzeyi ve ilişkili etmenleri belirlemek amacıyla yapılmıştır. Bu kesitsel çalışma 335 akademik ve akademik olmayan üniversite personeli üzerinde gerçekleştirilmiştir. Veriler, 17'si sosyodemografik özellikler ve sağlık hizmeti kullanımı ile ilgili ve 33'ü Siberkondri Ciddiyet Ölçeği sorusu olmak üzere 50 sorudan oluşan bir anket aracılığıyla toplanmıştır. Siberkondri ile ilişkili faktörleri değerlendirmek için çok değişkenli doğrusal regresyon kullanılmıştır. Katılımcıların ortalama siberkondri puanı $71,1 \pm 17,6$'dır. Siberkondri puanı 35 yaş altı çalışanlarda daha yüksekti ($p=0,001$). Televizyonda sağlıkla ilgili yayınları izleyenlerde, hekim önerisi olmadan tetkik yaptıranlarda ve hekim önerisi olmadan ilaç kullananlarda siberkondri puanının daha yüksek olduğu bulunmuştur ($p<0,05$). Pamukkale Üniversitesi çalışanlarında siberkondri düzeyi orta düzeydedir. Yaş, TV'de sağlıkla ilgili yayınları izlemek, hekim önerisi dışında tetkik yaptırmak ve hekim önerisi dışında ilaç kullanmak siberkondri ile ilişkili etmenlerdir.

Anahtar kelimeler: Siberkondri, sağlık kaygısı, internet, üniversite personeli, Türkiye.

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Introduction

With the increasing use of technology and the internet, health-related information retrieval became easier. According to the International Telecommunication Union, as of the end of 2019, it is estimated that 51% of the world's population, or approximately 4 billion people, are internet users (1). In Turkey, it is estimated that approximately 74% of the population (60 million people) is internet users (2). According to TURKSTAT's "2020 Survey on Information and Communication Technology (ICT) Usage in Households and by Individuals", the rate of internet usage in Turkey is 79.0% (3). Searching for medical information on the Internet has become one of the popular activities on the Internet, with the use of search engines. It is stated that 65.4% of internet users in Turkey seek online health-related information (3). Searching for health information on the internet has advantages such as making people more knowledgeable and competent in making decisions about their health, helping to change and improving health behaviors, it also has disadvantages such as increasing health inequalities and exposing people to false or misleading information (4–7). One of the most important of these disadvantages is that it can increase people's health anxiety (6, 8–10). Recently, the term "cyberchondriasis" has been used to explain the negative consequences of searching for health information on the Internet (11,12).

The exacerbation of health anxiety as a result of repetitive medical information searches on the Internet has been termed "cyberchondria" (13). In addition to causing anxiety, it has been stated that cyberchondria may cause overuse of health services (10). Because people prefer using internet, which is an easier way, to search for solutions to health problems, rather than asking a doctor or health professional. However, these people who search for health information on the Internet often seek the help of a specialist to explain this confusing health information they obtained from the Internet or to make important health decisions regarding diagnosis and treatment (14). Also, reassurance-seeking behaviors, such as visiting health care providers for second opinion, can become a constant response to anxiety (13).

Access to health information and use of health services will increase gradually with the increasing use of the internet. Given both the health problems it causes and its possible economic costs, a better understanding of cyberchondria and associated factors is important and this needs to be investigated (10). Previous studies have shown that cyberchondria is more common in people with higher education levels (15, 16). So, this study was conducted to determine the level of cyberchondria and related factors in university employees.

Material-Method

Participants, Sample Size

This cross-sectional study was conducted at the central campus of Pamukkale University between November and December 2015. A total of 2205 people, including 1073 (48.7%) teaching staff and 1132 (51.3%) non-academic (administrative) staff, constitute the population of this study.

According to the sample size formula based on population size with known population (N=2205, α=0.05, p=0.50, d=0.05), the minimum required sample size for this study was calculated as 328. People who do not have internet access and do not use the internet in any way were not included in the study. In addition, since it may affect the

results, staff working in health-related faculty/institute were not included in the study. The participants were selected from the list of employees taken from Pamukkale University Personnel Department by using simple random sampling method. A total of 335 people, 160 (47.8%) from academic staff and 175 (52.2%) from non-academic staff, were included in the study.

Study was approved by the Pamukkale University Ethics Committee (with the date 2015/4/21 and number 05). Informed consent was obtained from participants. This study was supported by the Pamukkale University Scientific Research Project Fund (Project 2015-TPF-017).

Data Collection, Measurements

The research data were collected by 5 interviewers and prior to the study, the interviewers were trained to avoid interviewer bias. The data were collected through a questionnaire consisting of 50 questions, 17 of which were related to sociodemographic characteristics and healthcare utilization, and 33 of them were Cyberchondria Severity Scale questions. The Cyberchondria Severity Scale (CSS), which was developed by McElroy and Shevlin in 2014, was used to measure cyberchondria, which is the dependent variable of the study (17). The validated Turkish version of the CSS was used in the study (18). CSS is a continuous scale developed to measure the level of cyberchondria and there is no cut-off threshold. CSS is a 5-point Likert-type scale (1-Never, 2-Rarely, 3-Sometimes, 4-Frequently, 5- Always) consisting of 33 items. Items 9, 28 and 33 were reverse coded. The cyberchondria score for each participant was calculated by summing the scores obtained from each item. Each participant can get a minimum of 33 points and a maximum of 165 points from the CSS. Higher scores indicated higher levels of cyberchondria.

All statistical analyses were performed using the R statistical package, version 3.4.3. Descriptive statistics were given as frequencies, percentages, mean and standard deviation. The normality of distribution of the variables was checked using the Kolmogorov-Smirnov test. Independent samples t-test or Mann-Whitney U test was used to compare cyberchondria scores according to binary independent variables, and one-way analysis of variance or Kruskal Wallis test was used to compare cyberchondria scores according to more than two independent variables. A backward multivariate linear regression analysis was performed. In the multivariate analysis with cyberchondria score as a dependent variable, independent variables with statistically significant association on univariate analysis were included in the model. The p value <0.05 was considered statistically significant.

Results

A total of 335 staff participated in the study. The mean age of the participants was 38.2±8.5 years and 60.6% were aged 35 and over. 64.5% of the participants were male. It was determined that 74.0% of participants were married, 22.1% were single, and 55.8% had children under the age of 18. It was found that 75.5% of the participants had a university or higher education level. 36.7% of university staff were smoking. 14.9% of the participants have chronic diseases and 28.4% have a family member with a chronic disease, and 7.2% have a disabled family member. 49.9% of respondents use the internet over 20 hours per week. The socio-demographic characteristics of the participants were shown in Table 1.

Table 1: Sociodemographic characteristics of the participants.

	n	%
Type of staff		
Academic Staff	160	47.8
Non-Academic Staff	175	52.2
Age group		
≤35 years	132	39.4
>35 years	203	60.6
Gender		
Female	119	35.5
Male	216	64.5
Marital status		
Married	248	74.0
Single	74	22.1
Widowed/Divorced/Separated	13	3.9
Having children under age 18		
Yes	187	55.8
No	148	44.2
Educational status		
Primary School	11	3.3
Middle School	18	5.4
High School	53	15.8
University	99	29.6
Master	41	12.2
Doctorate	113	33.7
Smoking status		
Never smoked	212	63.3
Smoke sometimes	35	10.4
Current daily smoker	88	26.3
Having chronic disease		
Yes	50	14.9
No	285	85.1
Having a family member with a chronic disease		
Yes	95	28.4
No	240	71.6
Having a disabled family member		
Yes	24	7.2
No	311	92.8
Weekly time spent on the internet		
≤20 hour	168	50.1
>20 hour	167	49.9

Twenty-eight point seven percent of the participants reported that they have a healthcare professional family member. 9.9% of the staff who participated in the study stated that they "always or often" read health-related newspapers/magazine articles, and 9.3% said that they "always or often" watch health-related broadcasts on TV. 10.1% of the participants attended a health-related meeting in the last year, and

48.4% reported that they had a medical examination in the last month. 22.4% of the university staff stated that they received laboratory tests and procedures without a physician's referral. Among the participants, 37.9% took medication without a doctor's advice in the last year. 8.4% of the participants stated that they used alternative medicine in the last year (Table 2).

Table 2: Participants' health related characteristics.

Variables	n	%
Reading health-related newspapers/magazine articles		
Never	57	17.0
Rarely	134	40.0
Sometimes	111	33.1
Often	26	7.8
Always	7	2.1
Watching health-related broadcasts on TV		
Never	37	11.0
Rarely	117	34.9
Sometimes	150	44.8
Often	22	6.6
Always	9	2.7
Attending a health-related meeting in the last year		
Yes	34	10.1
No	301	89.9
Having healthcare professional family member		
Yes	96	28.7
No	239	71.3
Having a medical examination in the last month		
Yes	162	48.4
No	173	51.6
Receiving laboratory tests and procedures without a physician's referral		
Yes	75	22.4
No	260	77.6
Taking medication without a doctor's advice in the last year		
Yes	127	37.9
No	208	62.1
Using alternative medicine in the last year		
Yes	28	8.4
No	307	91.6

The mean CSS score of all participants was 71.1±17.6. It was found that the CSS score of academic staff (73.2±17.1) was higher than non-academic staff (69.2±17.7) (p=0.035). The cyberchondria score of staff aged ≤35 was statistically significantly higher than participants aged >35 (p=0.001). The mean CSS score of women (73.7±16.3) was found to be marginally significantly higher than men (69.7±18.1) (p=0.05). Cyberchondria score was higher in those whose education level is high school and above (p=0.021) (Table 3).

Table 3: Comparison of participants' cyberchondria scores according to sociodemographic characteristics.

Variables	CSS Score Mean±SD	p value
All participants	71.1±17.6	-
Type of staff		
Academic Staff	73.2±17.1	**0.035**
Non-Academic Staff	69.2±17.7	
Age group		
≤35 years	74.9±17.1	**0.001**
>35 years	68.7±17.4	
Gender		
Female	73.7±16.3	**0.050**
Male	69.7±18.1	
Marital status		
Married	70.8±17.7	
Single	73.0±16.3	0.556
Widowed/Divorced/Separated	67.4±20.2	
Having children under age 18		
Yes	70.3±17.9	0.362
No	72.1±17.0	
Educational status		
Less than High School	64.0±16.1	**0.021**
High School or More	71.8±17.5	
Smoking status		
Never smoked	72.5±17.5	
Smoke sometimes	69.1±17.7	0.168
Current daily smoker	68.6±17.3	
Having chronic disease		
Yes	69.5±17.3	0.489
No	71.4±17.6	
Having a family member with a chronic disease		
Yes	72.1±16.4	0.518
No	70.7±18.0	
Having a disabled family member		
Yes	62.6±16.5	**0.013**
No	71.8±17.5	
Weekly time spent on the internet		
≤20 hour	68.9±17.7	**0.018**
>20 hour	73.3±17.1	

Participants who use the Internet more than 20 hours a week have a higher CSS score (p=0.018). It was found that the mean CSS scores of the participants who read health-related newspapers/magazine articles, those who watch health-related broadcasts on TV, those who attended health-related meetings in the last year were higher (p=0.023, p=0.019, p=0.023, respectively. Among the participants, the CSS score was found to be higher in those who received laboratory tests and procedures in the last year without a physician's referral, those who took medication without a doctor's advice in the last year (p=0.001, p=0.001 respectively) (Table 4).

Table 4: Comparison of participants' cyberchondria scores according to health-related characteristics.

Variables	CSS Score Mean±SD	p value
Reading health-related newspapers/ magazine articles		
Yes (Sometimes+Often+Always)	74.3±16.1	
No (Never+Rarely)	68.7±18.2	**0.023**
Watching health-related broadcasts on TV		
Yes (Sometimes+Often+Always)	73.6±15.7	
No (Never+Rarely)	68.2±19.1	**0.019**
Attending a health-related meeting in the last year		
Yes	76.6±13.8	
No	70.5±17.8	**0.023**
Having healthcare professional family member		
Yes	72.7±18.9	
No	70.5±16.9	0.285
Having a medical examination in the last month		
Yes	72.3±17.1	
No	70.0±17.9	0.222
Receiving laboratory tests and procedures without a physician's referral		
Yes	77.4±19.2	
No	69.3±16.6	**0.001**
Taking medication without a doctor's advice in the last year		
Yes	75.3±16.8	
No	68.5±17.5	**0.001**
Using alternative medicine in the last year		
Yes	75.2±21.2	
No	70.7±17.1	0.196

Multivariate linear regression analysis was conducted to determine factors related cyberchondria. Independent variables included in the regression model according to univariate analyses results. As a result of the multivariate linear regression analysis using the backward method; it was found that "age, watching health-related broadcasts on TV, receiving laboratory tests and procedures without a physician's referral and using drugs other than the recommendation of a physician" were found to be associated factors with cyberchondria (Table 5).

Table 5: Results of Multivariate Linear Regression Analysis* for factors associated with cyberchondria.

Variables	Beta (β)	95% Confidence Interval	p value
Age	-0.158	-0.533 — -0.117	**0.002**
Watching health-related broadcasts on TV			**<0.001**
No	Reference	2.362 — 6.383	
Yes	0.217		
Receiving laboratory tests and procedures without a physician's referral			**0.004**
No	Reference	2.085 — 10.534	
Yes	0.150		
Taking medication without a doctor's advice			**0.008**
No	Reference	1.307 — 8.664	
Yes	0.138		

Backward method used; Adjusted R^2 of the model:0.14; β:standardized regression coefficient.

Discussion

In this study, the mean cyberchondria score of the university staff was found to be 71.1. CSS is a continuous scale and there is no cut-off point. A minimum of 33 points and a maximum of 165 points can be obtained from CSS. Considering the range of points that can be obtained from CSS; the level of cyberchondria of Pamukkale University staff identified to be at a medium level.

Studies conducted using CSS were limited. Cyberchondria scores were found similar to our study in two different studies conducted on adults in the USA [10,19] and in a study conducted with first-year medical school students in Indonesia [20]. However, in a study conducted in Germany by Barke et al., cyberchondria scores were found to be lower than our study [21].

The CSS score was negatively associated with age. As age increases, the cyberchondria score decreases. Although it was not found to be significant in the multivariate regression analysis, univariate analysis revealed that cyberchondria scores were higher in those who spent more than 20 hours a week on the internet. It is stated that cyberchondria is a phenomenon that spreads among the young and middle-aged [15]. In a study conducted with university students in 2014, a positive correlation was found between the time spent on the Internet and health anxiety [16]. In addition, another study found that people who spend more time on the Internet, searched for more health information on the Internet [22]. Rideout found that 68% of young people between the ages of 15-24 obtained health information from the internet and stated that the new generation is a generation of young people who are familiar with the internet and focused on health [23]. According to 2020 TURKSTAT data, "health-related information search" ranked 5th among the activities carried out by people using the internet in the last 3 months, and the frequency of internet use is quite high in people under the age of 35 [3]. These results support the result that we found in our study. The reason why cyberchondria is more common in young people is explained by the fact that this new

generation, who tends to escape from the problems of the health system and has high internet usage rate, prefers to access medical information anonymously and easily from the internet (15).

In this study, it has been found that watching health-related broadcasts on TV is associated with cyberchondria. In addition, according to univariate analyses, it was found that the cyberchondria score was higher in those who read health-related newspapers/magazine articles and attended a health-related meeting in the last year. In the study conducted by Gray et al. on female students aged between 11-17, the majority of the participants stated that health-related issues in the media triggered their internet use (24). This is explained as follows: Reflecting the change in the language of public health and health promotion over the past decade; media focuses on the concept of individuals' self-management and self-monitoring of their own health (25). With this change in public health policies in many western countries, and especially with the change in health presented in the form of "lifestyle" in the media, people were directed to take responsibility for their own health. Many reality shows on TV were created about this. In these programs, it is emphasized that her/his health is under her/her own control. Health problems were mostly discussed on TV and in print media in terms of individual responsibilities rather than the responsibility of the government (15). As a result of all these, people search the internet for health information with the effect of TV programs/news. This may be paving the way for cyberchondria.

The cyberchondria score was higher in those who received laboratory tests and procedures without a physician's referral and who took medication without a doctor's advice. This situation may be related to patient-doctor communication. In a study, a negative correlation was found between cyberchondria and patients' perceptions of personal communicative competence (26). One of the most important factors in the patient-doctor relationship is the patient's perception of the quality of care (27). Poor communication between health professionals and patients, ignoring patients' requests for health information or unsuccessful information exchange can cause a poor-quality patient-doctor communication perception in patients, so this can lead to patient dissatisfaction. As a result of the inadequacy of informing patients, they resort to additional health information resources such as the internet. All of these may lead to cyberchondria in these patients.

Strengths and Limitations

Previous studies mostly investigated the relationships between cyberchondria, internet use and health anxiety. In this study, many variables that may be associated with cyberchondria that have not been examined in previous studies were evaluated. We were able to identify associations between some factors and cyberchondria but, because of cross-sectional design of this study, we cannot infer causal or temporal relationships between variables. Future research should be conducted on different study groups.

Conclusion

In conclusion, the level of cyberchondria among Pamukkale University staff was moderate. Age, watching health-related broadcasts on TV, receiving laboratory tests and procedures without a physician's referral and taking medication without a doctor's advice were found to be factors associated with cyberchondria.

Since there are no reliable health information websites in Turkey, websites such as endorsed by government/medical associations can be the first step in dealing with cyberchondria. Also, health-related

websites should be frequently reviewed by medical professionals, and all relevant stakeholders such as healthcare professionals, academicians and the IT sector should come together and discuss the issue together for a solution. In addition, there is a need for further studies to reveal the potential economic and social costs of the health problems caused by cyberchondria.

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