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ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

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Health Anxiety and eHealth Literacy as Predictors of Cyberchondria in Women

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ABSTRACT

Purpose: This study aimed to investigate whether women's cyberchondria levels differ according to some socio-demographic demographic characteristics and the effect of health anxiety and e-health literacy on cyberchondria levels.

Methods: The descriptive and cross-sectional study was conducted between December 2022 and March 2023 with women who applied to the gynecology outpatient clinic of a state hospital. The purposive sampling method was used, and 178 women were included in the study. The data were collected using a personal information form, Cyberchondria Severity Scale (CSS), Health Anxiety Inventory (HAI), and eHealth Literacy Scale (eHEALS). ANOVA, t-test, Pearson correlation, and hierarchical linear regression analysis analyzed the data.

Results: In this study, the cyberchondria levels of the participants differed according to some socio-demographic characteristics ($p< 0.05$). The participants' mean score was 28.25 ± 8.45 on the CSS, 18.93 ± 10.78 on the HAI, and 25.65 ± 9.05 on the eHEALS. There was a positive and moderate relationship between the level of cyberchondria and health anxiety ($r= 0.416$; $p=0.001$) and e-health literacy ($r= 0.378$; $p=0.001$). Hierarchical regression analysis revealed that spending six hours or more on the Internet per day ($\beta = 0.130$), health anxiety ($\beta = 0.319$) and e-health literacy ($\beta = 0.273$) were predictors of cyberchondria ($p< 0.05$), and these variables explained 35% of the variance in cyberchondria ($F=14.279$; $p=0.001$).

Conclusion: The study provides new findings in health-related Internet use research and contributes to the ongoing debate on the possible predictors of cyberchondria.

Keywords: Cyberchondria, eHealth literacy, health anxiety, health literacy, women

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Kadınlarda Siberkondriyanın belirleyicileri olarak sağlık kaygısı ve e-sağlık okuryazarlığı

ÖZET

Amaç: Bu araştırmada kadınların siberkondri düzeylerinin bazı sosyo-demografik özelliklere göre farklılık gösterip göstermediğini ve sağlık anksiyetesi ve e-sağlık okuryazarlığının siberkondria düzeyine etkisini belirlemek amaçlanmıştır.

Yöntem: Tanımlayıcı ve kesitsel nitelikteki yapılan araştırma bir devlet hastanesinin kadın hastalıkları polikliniğine başvuran kadınlar ile Aralık 2022-Mart 2023 tarihleri arasında gerçekleştirildi. Amaçlı örnekleme yöntemi ile araştırmaya 178 kadın dahil edildi. Araştırmanın verileri kişisel bilgi formu, Siberkondri Ciddiyeti Ölçeği (SCÖ), Sağlık Anksiyetesi Ölçeği (SAÖ) ve E-sağlık Okuryazarlığı Ölçeği (E-SOÖ) ile toplantı. Verilerin analizinde ANOVA, t-testi, Pearson korelasyon ve hiyerarşik doğrusal regresyon analizi kullanıldı.

Bulgular: Araştırmada katılımcıların siberkondriya düzeyleri bazı sosyo-demografik özelliklerine göre farklılaştığı belirlendi ($p< 0,05$). Katılımcıların SCÖ puan ortalaması $28,25 \pm 8,45$, SAÖ puan ortalaması $18,93 \pm 10,78$ ve E-SOÖ puan ortalaması $25,65 \pm 9,05$'di. Kadınların siberkondriya düzeyi ile sağlık anksiyetesi ($r= 0,416$; $p=0,001$) ve e- sağlık okuryazarlık ($r= 0,378$; $p=0,001$) düzeyi arasında pozitif ve orta düzeyde bir ilişki saptandı. Hiyerarşik regresyon analizi ile günde altı saat ve üzeri internette zaman harcama ($\beta = 0,130$), sağlık anksiyetesi ($\beta = 0,319$) ve e-sağlık okuryazarlığının ($\beta = 0,273$) siberkondrianın yordayıcıları olduğu belirlendi ($p< 0,05$) ve bu değişkenler siberkondriadaki varyansın %35'ini açıkladı ($F=14,279$; $p=0,001$).

Sonuç: Araştırmada sağlıkla ilgili internet kullanımı araştırmalarında yeni bulgular ortaya koymuş ve siberkondriyanın olası belirleyicileri konusunda devam eden tartışmalara katkıda bulunmuştur.

Anahtar Kelimeler: Siberkondriya, e-sağlık okuryazarlığı, sağlık anksiyetesi, sağlık okuryazarlığı, kadın

Rapid information and communication technology developments have enabled individuals to access online information easily (1–3). Individuals can find a variety of health-related topics (healthy habits, diseases, risk factors, etc.) online, compare the collected information across multiple online sources (health forums, corporate websites, blogs, etc.), and interact with health professionals or services via social media (3–5). It is emphasized that studies on gender-specific differences in the use of digital health technologies are limited, and the existing literature indicates that women conduct more internet searches for health-related information than men (5–9). In addition, information sites, online discussion groups, forums, etc., on health and medical topics are often addressed to or created by women, often focussing on women-specific diseases (female cancers) (7,10) pregnancy (11) and parenthood (9).

Access to online health information has potential benefits in educating women about the nature, causes, prevention, and treatment of certain health conditions (2,3,6,9,12). However, uncontrolled online sharing of all kinds of true or false information (8) may cause exposure to confusing, unreliable, contradictory information and increase health anxiety (3). Health anxiety refers to excessive, unwarranted fear provoked by a perceived health threat (13). Online health information seeking can expose users to potentially harmful consequences (such as self-diagnosis and self-treatment) (8,14) and lead to increased levels of health anxiety (ranging from no anxiety to pathological anxiety), characterized by fears and worries about perceived symptoms (4,14).

Therefore, eHealth literacy, which consists of individuals' ability to access and use high-quality information online, navigate various information sources, and think critically about media and science issues, has become a public health priority (12,15). eHealth literacy is the ability to search, find, understand, and evaluate health information from digital sources to identify or solve a health-related problem (15). eHealth literacy is known to play a mediating role in improving individuals' health management, controlling and preventing diseases, facilitating the identification of symptoms and treatment options, and simplifying communication between health professionals and patients (6,12,16).

The irregular, low-quality, incomplete, or inaccurate health information exposed to by women with low eHealth literacy in online environments may cause increased health anxiety associated with excessive or repeated online searches (6). This phenomenon, termed "cyberchondria," is characterized by frequent and repetitive medical information seeking online and is associated with the exacerbation of anxious thoughts and feelings about health (17). If anxiety intensifies, it can lead to search cessation, or vice versa, and encourage further online research (3,14,18). Cyberchondria is considered an abnormal pattern of behavior rather than the presence of a condition or diagnosis (3,4) and is known to be particularly prevalent in people with high levels of health anxiety (2–4,14). Cyberchondria can turn into a behavior that aims to reduce the fear of illness and regain confidence in health (16,17). Paradoxically, the situation experienced by the person may become an even more significant source of anxiety (2,3,17).

In summary, previous studies have emphasized that the Internet is an enormous and widespread source of health and medical information and that women participate in health-related online activities more than men (6,18). Repeatedly searching for health information on the Internet and not evaluating the information obtained with a critical approach may increase health anxiety and cyberchondria severity. However, the possible influence of health anxiety and eHealth literacy on cyberchondria is still under-researched. Moreover, previous studies have not examined the severity of cyberchondria and the effect of health anxiety and e-health literacy on cyberchondria, especially in a sample of women searching for online health information in the last three months, taking into account the socio-demographic characteristics of women. This study aimed to determine whether women's cyberchondria levels differ according to some socio-demographic characteristics and the effect of health anxiety and e-health literacy on the cyberchondria level.

Research Questions

1. What are the socio-demographic characteristics affecting participants' cyberchondria level?

2. What is the participants' level of cyberchondria, health anxiety, and e-health literacy?

3. What is the relationship between participants' cyberchondria levels and health anxiety and e-health literacy levels?

4. How do health anxiety and e-health literacy levels affect participants' cyberchondria levels?

MATERIALS and METHODS

Type of Study

The study was conducted as a descriptive cross-sectional design.

Settings and Participants

The study was conducted in the gynecology outpatient clinic of a state hospital located in the district center of Ankara between 1 December 2022 and 1 March 2023. The study population consisted of women who applied to the gynecology outpatient clinic on the data collection dates. G*Power 3.1.9.2 (Franz Faul, Universitat Kiel, Germany) was used to determine the sample size of women. It was planned to include 157 women in the sample of the study with 12 (10 descriptive variables; 2 independent) predictor variables, with an effect level of medium (0.15), a power level of 90%, and a significance level of 0.05. A total of 190 women were evaluated in terms of eligibility for the study, and 12 women were not included in the study sample because they did not meet the research criteria (10 women were not willing to participate in the study, and two women were illiterate). The research was completed with 178 women. According to the power analysis at the end of the research, this research was completed at a 94% power level.

Purposive sampling was utilized for the study's sample selection. In accordance with the purpose of the study, the inclusion criteria for the sample were as follows: willingness to participate in the study, literacy, age between 18 and 64, female gender, and reporting internet health information searches within the previous three months. Women who declined to participate were excluded from the study.

Data Collection

The second author collected the data for the study. The purpose of the study was explained to the women who met the inclusion criteria, they were given information about the study, and those who consented to participate signed an informed consent form. In an empty room in the outpatient clinic, the participants completed the forms. Each data collection period lasted approximately twenty minutes, and pandemic rules were adhered to. Participants were assured that only the researchers would have access to their data and that their personal information would be kept private.

Data Collection Tools

Personal information form, Cyberchondria Severity Scale, eHealth Literacy Scale, and Health Anxiety Inventory were used in the research data.

Personal information form

This form, which the researchers developed by reviewing the literature (1,3,14,19,20), consists of 10 questions, including socio-demographic characteristics such as age, education, and time spent daily on the internet.

Cyberchondria Severity Scale - Short Form

The scale was developed by McElroy et al. in 2019 to measure cyberchondria, a form of anxiety characterized by excessive health research on the internet (21). The Turkish validity and reliability study of the scale was carried out by Söyler et al. (22). The scale is a five-point Likert-type and consists of 12 items. The scoring of the scale is between 1-5 for each item, and a high score indicates a high level of cyberchondria severity. A minimum score of 12 and a maximum score of 60 can be obtained from the scale. The Cronbach's alpha value of the Turkish scale was 0.862 (22); in this study, Cronbach's alpha value was found to be 0.840.

Health Anxiety Inventory

The scale was developed by Salkovskis et al. (13) in 2002 to measure the health anxiety of individuals, and the Turkish validity and reliability study was conducted by Aydemir et al. (23). The scale is a four-point Likert-type and consists of 18 items. The scoring of the scale is between 0-3 for each item, and a high score indicates a high level of health anxiety. The lowest score of 0 and the highest score of 54 can be obtained from the scale. The Cronbach's alpha value of the Turkish scale was 0.91 (23); in this study, Cronbach's alpha value was found to be 0.840.

eHealth Literacy Scale

The scale was developed by Norman and Skinner (15) to measure individuals' e-health literacy, and the Turkish validity and reliability study was conducted by Gencer (24). The scale is a five-point Likert-type and consists of 8 items. The scoring of the scale is between 1-5 for each item, and a high score indicates a high level of e-health literacy. A minimum score of 8 and a maximum score of 40 can be obtained from the scale. The Cronbach's alpha value of the Turkish scale was 0.863 (24); in this study, Cronbach's alpha value of the scale was found to be 0.840.

Statistical Analysis

Data were analyzed using SPSS version 20.0 (Chicago, IL, USA). The Kolmogorov-Smirnov test was used to determine the conformity of continuous variables to normal distribution. Participants' descriptive characteristics, cyberchondria, health anxiety, and eHealth literacy were analyzed using descriptive statistics. ANOVA or t-test, and Bonferroni post hoc tests were used to analyze differences in cyberchondria according to participants' descriptive characteristics. Correlations between variables were determined using Pearson correlation coefficients. Hierarchical linear regression analyses were performed to examine whether cyberchondria level was associated with descriptive characteristics, health anxiety, and eHealth literacy. Only variables with p-value p<0.05 in univariate analysis were included in the multivariate analysis. During the analyses, the variables were divided into three models. Each model was analyzed using multiple linear regression assumptions such as correlation coefficients between variables, variance inflation factor, Durbin-Watson statistics, and tolerance. p<0.05 was considered statistically significant.

RESULTS

Socio-demographic characteristics of the participants

The descriptive characteristics of the participants in the study are shown in Table 1. When the table is analyzed, the mean age of the participants was 34.94 ± 11.40 years, and the majority were women aged between 18-30 years. 53.4% of the participants were university graduates or higher, 61.8% were married, 64.6% were not working, and 44.4% perceived their income as equal to their expenses. In addition, although most participants did not have any chronic disease, 68.5% had a first-degree relative with a chronic disease. The majority of the participants (30.3%) reported that they spent between 2-3 hours daily on the Internet, 58.4% did not believe that the information about health on the Internet was accurate, and 77.5% did not make health-related decisions based on the information obtained from the Internet.

Univariate analysis of socio-demographic characteristics associated with cyberchondria

Table 1 shows univariate analyses of socio-demographic factors associated with cyberchondria severity. According to socio-demographic factors, there were statistically significant differences in the cyberchondria levels of the participants (age, marital status, time spent on the internet daily, believing that health-related information on the internet is accurate, and making health-related decisions according to the information obtained from the internet). Participants aged between 18-30 years (t= 3,397; p = 0.036), single (t= -2,597; p = 0.010), spending 6 hours or more on the internet daily (F= 11,986; p = 0.001), believing that health-related information on the internet is accurate (t= 4,270; p = 0.001) and making health-related decisions based on information obtained from the internet (t= 4,829; p = 0.001) had higher cyberchondria levels.

Table 1. Comparison of cyberchondria levels according to socio-demographic characteristics of the participants (n=178)

Characteristics	n	%	Mean ± SD	Statistical Analysis
Age				
Mean±SD (year) : 34.94 ± 11.40				
18-30 (1)	83	46.6	29.81 ± 8.42	**t= 3.397 p= 0.036 (1>3)**
31-40 (2)	40	22.5	28.08 ± 6.53	
41-65 (3)	55	30.9	26.04 ± 9.29	
Education status				
Primary education	31	17.4	9.32 ± 1.67	F= 0.736 p= 0.481
High School	52	29.2	8.47 ± 1.17	
University and above	95	53.4	8.16 ± 0.84	
Marital Status				
Married	110	61.8	26.97 ± 8.33	**t= -2.597 p= 0.010**
Single	68	38.2	30.31 ± 8.29	
Employment status				
Working	115	64.6	27.41 ± 8.21	t= -1.795 p= 0.074
Not working	63	35.4	29.78 ± 8.72	
Perceived economic situation				
Income less than expenditure	62	34.8	28.74 ± 8.14	F= 0.285 p= 0.753
Income equals expenditure	79	44.4	28.28 ± 8.96	
Income more than expenditure	37	20.8	27.41 ± 7.96	
Chronic illness				
Yes	42	23.6	26.27 ± 10.04	t= -1.727 p= 0.086
No	136	76.4	28.85 ± 7.85	
Chronic disease in first-degree relatives				
Yes	122	68.5	28.11 ± 8.92	t= -0.339 p= 0.735
No	56	31.5	28.57 ± 7.40	
Time spent on the Internet daily				
Less than 1 hour (1)	44	24.7	23.59 ± 7.85	**F= 11.986 p=0.001 (1 < 3,4)**
Between 2-3 hours (2)	54	30.3	26.94 ± 7.19	
4-5 hours (3)	46	25.8	30.59 ± 7.66	
6 hours or more (4)	34	19.1	33.36 ± 8.61	
Believing that health-related information on the Internet is accurate				
Yes	74	41.6	31.34 ± 8.20	**t= 4.270 p= 0.001**
No	104	58.4	26.09 ± 7.96	
Making health-related decisions based on information obtained from the internet				
Yes	40	22.5	31.34 ± 8.20	**t= 4.829 p= 0.001**
No	138	77.5	26.09 ± 7.96	

Abbreviation: SD, standard deviation; t=Independent samples t-test; F = One way analysis of variance (ANOVA).

Descriptive statistics on cyberchondria, health anxiety, and eHealth literacy

Table 2 shows descriptive statistics regarding cyberchondria, health anxiety, and eHealth literacy. The participants' mean scores on the cyberchondria severity scale were 28.25 8.45, the health anxiety inventory was 18.93 10.78, and the e-health literacy scale was 25.65 0.05, as shown in the table. Considering the minimum and maximum values that can be derived from the scales, it is possible to conclude that the participants' cyberchondria and health anxiety levels are moderate, while their e-health literacy is high.

Table 2. Descriptive statistics and correlations among the acceptance of illness and the supportive care needs

Scales	Mean ± SD	Low-High values	Min-Max	Cyberchondria	
				r	p
Cyberchondria	28.25 ± 8.45	12-60	12-52	-	-
Health anxiety	18.93 ± 10.78	0-54	1-72	0.416	0.001
eHealth literacy	25.65 ± 9.05	8-40	8-40	0.378	0.001

Associations among Cyberchondria, health anxiety, and eHealth literacy

Pearson correlation analysis (Table 3) showed that there was a positive and moderate relationship between the cyberchondria scale and health anxiety (r= 0.416; p=0.001) and eHealth literacy (r= 0.378; p=0.001).

Multivariate analysis of factors predicting the level of cyberchondria

The Durbin–Watson (=1.210) test statistics revealed no autocorrelation between the error margins of the model. While satisfying the assumption of normally distributed residuals, the final model was validated (F = 14.279, p = 0.001). In the hierarchical regression analysis for participants' level of cyberchondria, in line with the results obtained from Model 1, descriptive characteristics explained 21% of the variance in cyberchondria (F=8.667; p=0.001). In this model, spending 6 hours or more on the internet daily (β = 0.209, p = 0.004) and making health-related decisions based on information obtained from the internet (β = 0.246, p = 0.003) were significantly associated with cyberchondria. The significance of these variables continued in Model 2 (β = 0.165, p = 0.017; β = 0.160, p = 0.042, respectively). In Model 2, health anxiety (β = 0.334, p = 0.001) explained approximately 10% of the variance in cyberchondria; all significant variables together explained 28% (F = 12.389; p = 0.001). In the final model, the variable of making health-related decisions based on information obtained from the internet (β = 0.147, p = 0.05) lost its significance. Spending 6 hours or more on the internet per day (β = 0.130, p = 0.049), health anxiety (β = 0.319, p = 0.001), and e-health literacy (β = 0.273, p = 0.001) were significantly associated with cyberchondria. The model explained 35% of the variance in cyberchondria (F=14.279; p=0.001).

Table 3. Hierarchical linear regression analysis results regarding determinants of cyberchondria

Variables*	Model 1				Model 2				Model 3			
	B	SE	β	p	B	SE	β	p	B	SE	β	p
Age (1= 18-30 years old)	1.532	1.443	0.091	0.290	0.692	1.362	0.041	0.612	0.480	1.299	0.028	0.712
Marital status (1=Single)	0.239	1.520	0.014	0.875	1.129	1.435	0.065	0.432	0.335	1.380	0.019	0.808
Time spent on the internet daily (1= 6 hours or more)	4.472	1.551	0.209	0.004	3.527	1.465	0.165	0.017	2.788	1.407	0.130	0.049
Believing that health-related information on the internet is accurate (1= Yes)	2.170	1.378	0.127	0.117	2.407	1.292	0.141	0.064	2.195	1.232	0.128	0.077
Making health-related decisions based on information gained from the internet (1= Yes)	4.967	1.639	0.246	0.003	3.225	1.574	0.160	0.042	2.967	1.502	0.147	0.050
Health Anxiety					0.262	0.052	0.334	0.001	0.250	0.050	0.319	0.001
eHealth Literacy									0.254	0.060	0.273	0.001
F (p)	8.677 (0.001)				12.389 (0.001)				14. 279 (0.001)			
R^2	0.21				0.30				0.37			
adjR^2	0.18				0.28				0.35			
R^2-change-					0.10				0.07			

Abbreviations: B, unstandardized coefficients; β, standardized coefficient; SE, standard error.
** Predictor(s) had a statistically significant association with the outcome variable in univariate analysis (P < .05).*
Durbin-Watson: 1.210; Tolerance: 0.587~0.912; Variance inflation factor: 1.094~1.705

DISCUSSION

Little is known about the variables affecting women's cyberchondria level. In this study, it was determined that women's cyberchondria levels differed according to some socio-demographic characteristics, and health anxiety and eHealth literacy had an effect on cyberchondria levels. The current study's results should help fill this gap in the literature.

In the study, women's cyberchondria levels differed according to age and marital status; younger and single women had higher cyberchondria levels. Similar to our research results, it has been reported in the literature that age has a significant negative effect on cyberchondria and that cyberchondria-related behaviors are more common among young people (25,26). In contrast to our results, Özkan et al. (1) and Gioia and Boursier (8) reported that women's age and marital status did not affect the level of cyberchondria. This result of our study may be due to the fact that younger women have unlimited access to the Internet and are more likely to use it frequently, and when we consider the possibility that single women are mostly younger, they are more likely to use the Internet more. In the study, the variables of education, employment, perceived income, and presence of chronic disease (self and first-degree relative) did not cause a difference in women's cyberchondria level. Contrary to our results, it is stated in the literature that cyberchondria levels may differ according to education (1), employment, income status (1,8,25), and the presence of chronic diseases (1,25). The result of the research may be due to the fact that the sample consists of women living in central geography, they have easy access to the internet, and with today's technological opportunities, women of all sociodemographic characteristics have the opportunity to do research on the internet. Research on the relationship between these variables and the cyberchondria level is still needed.

Cyberchondria was moderately severe among the participants of the study. Our research results are similar to the literature (1,14,20). Cyberchondria is a growing public health concern due to the expanding use of the Internet and the potential negative effects of online health searches (2). High levels of cyberchondria can cause mental disorders such as anxiety, depression, stress, and obsessive-compulsive disorders (2,8,25). Individuals with high levels of cyberchondria may frequently apply to healthcare services despite not having any health problem; this may negatively affect communication with healthcare professionals and increase healthcare costs (17). Therefore, to develop strategies to minimize the negative consequences, the study's result is essential in raising awareness about the level of cyberchondria in women.

Participants in the current study had moderate health anxiety. In community-based studies, health anxiety is reported to vary between 3.4-19.8% (16). In contrast to our research results, it is emphasized that the participants' health anxiety level is low in studies whose results are shared regardless of gender differences (16,27). The result of our study may be because our sample is female, as the existing literature emphasizes that women have higher levels of health anxiety (8). Health anxiety may cause individuals to search the internet for reassuring information. However, the information they find may provide more reasons to worry.

Health literacy is also regarded as an important proximal factor influencing health (6,8,28,29). The participants in the study have an above-average level of eHealth literacy. It has been reported that individuals' eHealth literacy ranges from low (28) to medium (20,30) to high (12). Similar to our results, community-based studies conducted in Lebanon (30) and Korea (12) found that participants held a moderate level of eHealth literacy. Bardus et al. discovered that women, notably young women, had a higher eHealth literacy rate than men. Şahin et al. reported that pregnant women had a high level of eHealth literacy (6). The high eHealth literacy level of the women in this study may be a result of their high educational attainment and their youth. Assessing women's eHealth literacy could be a requirement for the development of digital health interventions.

The present study found a positive and moderate relationship between the cyberchondria scale and health anxiety. Health anxiety had a significant effect on cyberchondria as well. A recent meta-analysis summarized the data on the positive association of health anxiety with cyberchondria (3). It is reported that there is a positive relationship between health anxiety and cyberchondria in the literature (2,8,14,27), and health anxiety is a strong predictor of cyberchondriac symptoms (3,8,14). Fergus and Russell emphasized a strong and hidden relationship between cyberchondria and health anxiety (18); Nadeem et al. found that health anxiety contributed to 40% of the variance in cyberchondria (14). Searching for health-related information online is an expected behavior, often accompanied (14) by an initial feeling of relief (18). However, the study's results suggest that women's health anxiety increases the

severity of their internet searches for medical information and that they continue their search behavior despite the related anxiety. Current findings suggest that health professionals should give special consideration to the potential role of health anxiety in cyberchondria.

E-health literacy in searching health-related information online is critical in researching reliable sources and accessing accurate information (1,3,19,20,31). This is because it is claimed that people with cyberchondria tendency increase their anxiety due to the information they discover while trying to relieve their anxiety and produce new anxieties and uncertainties (1,3).The present study stated that there was a relationship between the cyberchondria scale and e-Health literacy, and it had almost as much effect on cyberchondria as health anxiety. According to the regression model, the e-health literacy level explains 7% of the variance in cyberchondria levels. Özkan et al. reported a positive and weak relationship between cyberchondria and digital literacy in healthcare workers and that digital literacy perception explained 2% of the total variance in cyberchondria levels (1). Özer et al. reported that the cyberchondria level explained 12.4% of the variance in eHealth literacy. Deniz (31) and McMullan et al. (3) found a positive relationship between health anxiety and cyberchondria. The study's results predict that as women's eHealth literacy levels increase, they tend to exhibit cyberchondriac behavior. As a result, this tendency will negatively affect women's psychological state.

According to the final regression model, it was found that the variables of daily time spent on the internet, believing that health-related information on the internet is accurate and making health-related decisions based on information gained from the internet, as well as health anxiety and e-health literacy levels had a significant effect on cyberchondria levels. Time spent on the internet, believing that health-related information on the internet is accurate, and health-related decisions based on information gained from the internet are behaviors related to problematic internet use (2,4). In the study, the relationship between cyberchondria and problematic internet use behaviors was as strong as the relationship between cyberchondria and health anxiety and e-health literacy, which are essential for a better understanding of cyberchondria. The definition of cyberchondria does not explicitly refer to problematic use of the internet, although it includes the specific concept of repeated (and thus excessive) online searching (3,4,20). The results of this study showed that health anxiety, e-health literacy, and problematic internet behaviors, highlighted in the literature, explained 35% of the total variance in cyberchondria. Our research is consistent with the results of Starcevic et al., who found a strong relationship between cyberchondria and health anxiety and problematic internet use (2). McMullan et al. found significant relationships between internet searching for health information and cyberchondria (3). The literature emphasizes that people with high anxiety levels search for health information more than those with low anxiety levels (3,18–20,25). People with high levels of health problems are known to stay online more frequently and for more extended periods(2–4,20). These results obtained in the study will guide the planning of interventions to reduce cyberchondria behavior.

CONCLUSION

According to our knowledge, cyberchondria currently has no specific treatment. The results of the study shed light on interventions to reduce the level of cyberchondria by providing a deeper understanding of the cyberchondria phenomenon that may negatively impact the lives of women and the variables that may influence it. The study found that women had moderate levels of cyberchondria, health anxiety, and eHealth literacy. Moreover, cyberchondria levels among women varied based on socio-demographic characteristics. Daily Internet use of six hours or more, health anxiety, and e-health literacy were all significant predictors of cyberchondria. To learn the actual cause of a disease, it is more accurate to consult a health institution or health service provider than to attempt to access and apply every piece of information on the internet. Encouraging women to acquire technological skills that reduce their health anxiety and contribute to their e-health literacy is crucial for preventing cyberchondriac behavior and keeping them current with emerging technologies. In order to reduce cyberchondria in women, interventions based on the findings of this study will be implemented.

Limitations

There are some limitations of the present study. First, the results obtained from the study are based on participants' self-report. Second, since the study was cross-sectional, the causal relationship between cyberchondria, health anxiety, and eHealth literacy could not be determined. In the future, longitudinal studies are recommended. Thirdly, the participants in the study were women admitted to a public hospital, which limits the generalizability of the study. Finally, this study examined a limited number of variables related to cyberchondria's complex and multidimensional nature. In addition to the variables investigated here, other variables (loneliness, depression, number of children, etc.) should be examined.

Ethical Approval

The ethical standards of the Declaration of Helsinki conducted the study. Ethical approval for this study was obtained from the University Non-Interventional Clinical Research Ethics Committee (Date: 01.11.2022; Decision No: GO 22/1107). Verbal and written informed consent was obtained from each participant before conducting the study.

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