Cyberchondria and quality of life in anxiety and obsessive-compulsive disorder: A cross-sectional assessment from a tertiary center

Anksiyete ve obsesif kompulsif bozuklukta siberkondri ve yaşam kalitesi: Bir üniversite kliniğinden kesitsel bir değerlendirme

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ABSTRACT

Aim: Cyberchondria refers to excessive internet searches for medical knowledge. Studies evaluating cyberchondria in the psychiatric clinical population are scarce. We aimed to investigate the relationship between cyberchondria and general anxiety, health anxiety, and quality of life scores of patients diagnosed with anxiety disorders or obsessive-compulsive disorder.

Materials and Methods: Sociodemographic, clinical, and internet use-related data of the patients who applied to the psychiatric outpatient clinic of a university hospital were collected. Sixty-one patients with anxiety disorders ($n = 34$), obsessive-compulsive disorder ($n = 22$), or both were included. Hamilton Anxiety Rating Scale (HARS), Cyberchondria Severity Scale (CSS), Anxiety Sensitivity Index-3 (ASI-3), Health Anxiety Inventory Short Version (SHAI), Adult Separation Anxiety Questionnaire (ASA), and Short Form 36 (SF-36) were applied.

Results: Most visited websites were social media (86.9%), more than half of the participants did online research about psychiatric disorders, half of those felt relief, and 10% changed or stopped their medication after online searches. CSS scores were associated with SHAI ($p = .007$), HARS ($p = .022$), absence of psychiatric comorbidity ($p = .005$), and average time spent on the internet per day ($p < .001$) in regression analysis. SF-36 social functioning scores were negatively correlated with CSS scores ($r = -.276$, $p = .036$). Anxiety disorders and obsessive-compulsive disorder patients did not differ significantly in terms of CSS scores ($p = .650$, $t = .457$).

Conclusion: Considering the increasing digitalization and internet use, research is needed to navigate the development of appropriate interventions by examining the concept of cyberchondria and its relationship with mental disorders.

Keywords: Cyberchondria, internet use, anxiety disorders, obsessive-compulsive disorder, quality of life

ÖZ

Amaç: *Siberkondri, tıbbi bilgiye erişim amacıyla yapılan aşırı düzeyde internet araması anlamına gelir. Psikiyatrik klinik popülasyonda siberkondriyi değerlendiren çalışmalar az sayıdadır. Çalışmamızda anksiyete bozukluğu veya obsesif kompulsif bozukluk tanısı alan hastalarda siberkondri düzeyleri ile anksiyete, sağlık anksiyetesi ve yaşam kalitesi puanları arasındaki ilişkiyi araştırmayı amaçladık.*

Gereç ve Yöntem: *Bir üniversite hastanesinin psikiyatri polikliniğine başvuran hastaların sosyodemografik, klinik ve internet kullanımına ilişkin verileri toplandı. Anksiyete bozukluğu (n = 34), obsesif kompulsif bozukluk (n = 22) veya her iki tanının birlikte görüldüğü toplam 61 hasta çalışmaya dahil edildi. Katılımcılara Hamilton Anksiyete Değerlendirme Ölçeği (HADÖ), Siberkondri Ciddiyet Ölçeği (SCÖ), Anksiyete Duyarlılığı İndeksi 3 (ASİ-3), Sağlık Anksiyetesi Ölçeği Kısa Formu (SAÖ-KF), Yetişkin Ayrılma Anksiyetesi Anketi (YAAA) ve Kısa Form 36 (SF-36) uygulandı.*

Bulgular: *En çok ziyaret edilen web sitelerinin sosyal medya (%86,9) olduğu, katılımcıların yarısından fazlasının psikiyatrik bozukluklarla ilgili çevrim içi araştırma yapmış olduğu, araştırma sonrasında yarısının rahatlama hissi yaşadığı ve %10'unun çevrim içi aramalar sonrasında ilaçlarını değiştirmiş veya bırakmış olduğu saptandı. Regresyon analizinde SCÖ puanları SAÖ-KF (p = .007), HADÖ (p = .022), psikiyatrik komorbiditenin olmaması (p = .005) ve günlük internette geçirilen ortalama süre (p < .001) ile ilişkiliydi. SF-36 sosyal işlevsellik puanları ile SCÖ puanları arasında negatif korelasyon görüldü (r = -.276, p = .036). Anksiyete bozuklukları ve obsesif-kompulsif bozukluk tanı grupları arasında SCÖ puanları açısından anlamlı bir fark bulunmadı (p = .650, t = .457).*

Sonuç: *Artan dijitalleşme ve internet kullanımı göz önüne alındığında, siberkondri kavramını ve bunun psikiyatrik hastalıklarla ilişkisini inceleyerek uygun müdahalelerin geliştirilmesine yön verecek araştırmalara ihtiyaç vardır.*

Anahtar Sözcükler: *Siberkondri, internet kullanımı, anksiyete bozuklukları, obsesif kompulsif bozukluk, yaşam kalitesi*

INTRODUCTION

With the widespread use of the internet, access to information on health-related issues has become more common than ever (1). Many users experience feelings of comfort and competence after conducting online health research. At the same time, some describe increased anxiety and stress levels after extensive or repetitive research, which might result in cyberchondria (2).

Cyberchondria is derived from "cyber", referring to internet use, and "hypochondriasis", referring to pathological health anxiety (HA), without any causal implication (3). Several conceptualizations, including cyberchondria being an amplifier of HA, being a form of problematic internet use, or functioning as a safety behavior, exist (2, 4). Despite the view that cyberchondria is a modern version of hypochondriasis, a concept including both anxiety and compulsiveness, defining a syndrome-like phenomenon with multidimensional elements is increasingly supported (4).

Few studies were performed on clinical samples to investigate cyberchondria in the general population (5, 6). Meanwhile, to our knowledge, two studies investigated cyberchondria in psychiatric clinical populations (7, 8). Vismara et al. (2022) compared cyberchondria levels among patients with anxiety disorders (ADs), obsessive-compulsive disorder (OCD), and major depressive disorder (MDD), as well as a group of healthy controls (8). They reported that patients with ADs and OCD showed higher cyberchondria symptom severity than healthy controls and a positive correlation between cyberchondria scores and HA measures. Newby and McElroy (2020) found that patients with illness anxiety disorder and/or somatic symptom disorder (i.e., hypochondriasis) who received internet-delivered cognitive behavioral therapy targeting HA showed improvement in cyberchondria levels after treatment compared to the baseline (7).

In our study, we aimed to examine the characteristics and relationship of cyberchondria with various psychopathological parameters in patients with ADs and/or OCD. We hypothesized that in a clinical sample, levels of cyberchondria would increase as general anxiety (GA), anxiety sensitivity (AS), and HA scores increased. Secondly, we investigated a possible negative relationship between cyberchondria levels and quality of life scores (QoL) of patients diagnosed with ADs and OCD. Finally, based on its compulsive pattern, we presumed that cyberchondria levels would be higher in patients with OCD than in patients with ADs.

MATERIALS AND METHODS

Participants and Sampling

This cross-sectional, analytical, and non-interventional study was conducted at the specialized outpatient clinic for ADs and OCD at Ege University School of Medicine Psychiatry

Department. The Declaration of Helsinki principles were followed. The patients provided written informed consent to participate in this study voluntarily.

All the patients followed up in the specialized outpatient unit were invited to the study sequentially when they attended their routine appointments. Inclusion criteria were being older than 18 years, being literate, and being followed up with any AD and/or OCD in the unit. Exclusion criteria were being pregnant, having active psychotic symptoms, being diagnosed with psychotic disorders, dementia, or bipolar disorders, having mental retardation, and non-voluntariness. The patient recruitment of the study was conducted between July 2018 and October 2019. Ethical approval was obtained from the local committee (Registration Date&Number: 01.06.2018, 18-6.1/28).

Clinical Evaluation and Data Collection Tools

A semi-structured interview was used to collect sociodemographic data, psychiatric history, and information on internet use. The following variables were investigated: age, gender, education level, relationship status, employment status, household members, psychiatric diagnosis, OCD diagnosis and obsession types, psychiatric comorbidities, alcohol consumption, drug consumption, family history for psychiatric disorders, and current medications. Most visited websites (social media, health-related, shopping, gaming, educational), health-related and psychiatry-related research on the internet, and any change in medication after a health-related internet search, as well as average time spent daily on the internet, were asked. Hamilton Anxiety Rating Scale (HARS) was applied to assess overall anxiety levels (9). HARS consists of 14 questions evaluating anxiety levels and is valid and reliable in Turkish (10).

The Turkish version of the Cyberchondria Severity Scale (CSS) was administered to measure cyberchondria severity. This self-report questionnaire consists of 33 items rated on a 5-point Likert scale from 1 (never) to 5 (always), constituting five subscales related to the multidimensional conceptualization of cyberchondria: compulsion, distress, excessiveness, reassurance-seeking, and mistrust of medical professionals (MMP) (11). Total score ranges from 33 to 165, with higher scores indicating higher levels of cyberchondria. Previous studies and a recent systematic review of the CSS found very good to excellent psychometric properties (12). The scale was adapted to Turkish by Uzun and Zencir (2021) with a Cronbach alpha of 0.89 for the total score indicating adequate psychometric properties of validity and reliability (13). In some studies using the CSS, the MMP subfactor was found not to measure cyberchondria, hence removed from the CSS total scores (14). In the current study, both CSS scores were calculated (with and without MMP), and all the statistics were performed accordingly.

Turkish versions of the following self-report questionnaires were administered to evaluate the symptom severity of various cyberchondria-related constructs that pointed out an association with cyberchondria in previous studies. Health Anxiety Inventory Short Version (SHAI) consists of 18 items and is a self-report scale used to determine participants' HA levels (15). Anxiety Sensitivity Index 3 (ASI-3) is an 18-item scale evaluating AS effectively and multidimensionally (16). Adult Separation Anxiety Questionnaire (ASA) is a 27-item questionnaire assessing the symptoms of separation anxiety in adulthood (17). Finally, Short Form 36 (SF-36) is a self-report questionnaire that evaluates patients' QoL parameters within eight dimensions (vitality, physical functioning, bodily pain, general health perceptions, physical role functioning, emotional role functioning, social role functioning, and mental health) (18). All these questionnaires are valid and reliable in Turkish (19–22).

Statistical Analysis

Statistical Package for Social Sciences version 24 was used to analyze data (version 24.0; IBM Corp., Armonk, NY, ABD). The statistical significance threshold value was determined as $p < .05$. Numerical data with normal distribution were presented with mean and standard deviation (SD) values, and with skewed distribution were presented with median and inter-quartile range (IQR) values. Kolmogorov-Smirnov test was used to test normality. Normally distributed numerical data were analyzed using the Student's t-test and the Pearson correlation. Numerical data that failed the normality tests were assessed with the Mann-Whitney-U test and the Spearman correlation. Categorical data were analyzed using Chi-square and one-way analysis of variance tests. A multiple linear regression model was applied to the significantly correlated variables by specifying CSS scores as the dependent variable.

Ethical Considerations

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee at Ege University and with the 1964 Helsinki Declaration or comparable ethical standards. Informed consent was obtained from all individual adult participants included in the study.

RESULTS

Sample Characteristics

Sixty-one cases followed up with the diagnosis of any AD (n = 34), OCD (n = 22), or both AD and OCD (n = 5) were included in the study. Among the baseline characteristics, education duration was significantly longer in the ADs group (Table-1).

Clinical Characteristics

Among 34 patients whose primary diagnosis was any AD, 20 (58.8%) had panic disorder, eight (23.5%) had generalized anxiety disorder, and five (14.7%) had social anxiety disorder. Twenty-seven patients had OCD. The most frequent obsessions were about contamination (46%), religion (14%), and symmetry (10%). Psychiatric comorbidities were detected in 42.6% of the population, and depression (61%) was the primary comorbidity. 91.8% of the sample was currently on medication and using at least one type of antidepressant. Table-1 outlines the clinical characteristics.

Internet Use-related Characteristics

Table-1. shows the internet use-related variables of the sample in comparison between two diagnostic subgroups.

CSS Total and Subscale Scores

The mean CSS score of the sample was 75.95±24.99 (Table-2). Age and CSS total scores were negatively correlated (r = -.370, p = .004). CSS total and subscale scores were not significantly different between gender groups. Total CSS scores were positively correlated with years of education (ρ = .317, p = .015). CSS scores were significantly higher in patients without children (p = .005, t = -2.892). There was no significant difference in CSS scores according to relationship, employment, or household status.

CSS scores were analyzed regarding the psychiatric clinical features of the sample. Patients with comorbid psychiatric conditions showed significantly lower levels of CSS total (p = .020, t = -2.402). CSS scores did not significantly differ regarding antidepressant usage, but patients currently under medication with antipsychotics showed lower levels of CSS (p = .035, t = -2.535). There was no significant difference in CSS scores regarding alcohol consumption, drug use, or psychiatric family history.

CSS total scores were evaluated according to internet-related features of the whole sample. Mean time spent on the internet per day was positively correlated with CSS total (ρ = .597, p < .001). Participants who previously searched about any disease online had significantly higher CSS total scores (p < .001, Z = -4.899). Patients who previously researched any psychiatric disease had significantly higher CSS total scores (p = .029, Z = -2.178) than the remaining. CSS total scores did not show any statistically significant difference between patients who felt relief after health-related online research and those who did not.

CSS Scores between ADs and OCD Groups

There was no significant difference between ADs and OCD groups for CSS (Table-2). In the OCD group, CSS total scores did not significantly differ by obsession type.

Correlations between CSS and SHAI, HARS, ASI-3, ASA Scores

CSS total scores were correlated with HARS (r = .361, p = .005), SHAI (r = .362, p = .005), and ASI-3 (r = .320, p = .014) scores (Table-3). The correlation statistics, which were performed for ADs and OCD groups individually, are presented in (Table-4).

Correlations between CSS and SF-36 Scores

There were no significant correlations regarding SF-36 except physical functioning, vitality, and social role functioning (Table-3). Correlations between SF-36 and CSS scores were evaluated according to diagnostic groups and indicated in (Table-5).

Multiple Linear Regression Model of CSS and Related Variables

A backward stepwise multiple linear regression model was applied, specifying CSS as the dependent variable. Among the related variables, the absence of psychiatric comorbidity (p = .005), higher average time spent on the internet (p < .001), higher SHAI (p = .007), and HARS (p = .022) scores predicted higher CSS scores (Table-6).

Table-1. Sociodemographic, Clinical, and Internet Use-Related Characteristics of the Sample

	All samples (n = 61)	ADs (n = 34)	OCD (n = 22)	Statistics
Age (years: mean ± SD)	38.06 ± 14.13	39.14 ± 2.72	35.86 ± 2.63	$p = .415$ [a], $t = 0.822$
Gender % (n)				
Female	60.7 (37)	52.9 (18)	68.2 (15)	$p = .258$ [b], $\chi^2 = 1.282$
Male	39.3 (24)	47.1 (16)	31.8 (7)	
Education (median, IQR)	14.00, 4	15.00, 4	12.00, 4	**$p = .034$ [c], $Z = -2.122$**
Employment % (n)				
Unemployed	42.6 (26)	41.2 (14)	50 (11)	
Employed	42.6 (26)	38.2 (13)	40.9 (9)	$p = .508$, $\chi^2 = 1.356$
Retired	14.8 (9)	20.6 (7)	9.1 (2)	
Relationship status % (n)				
Single	32.8 (20)	38.2 (13)	27.3 (6)	
Married	55.7 (34)	55.9 (19)	54.5 (12)	$p = .307$, $\chi^2 = 2.363$
Divorced	11.5 (7)	5.9 (2)	18.2 (4)	
Children % (n)				
Yes	50.8 (31)	44.1 (15)	54.5 (12)	$p = .446$, $\chi^2 = 0.582$
No	49.2 (30)	55.9 (19)	45.5 (10)	
Household % (n)				
Family/Partner	59 (36)	52.9 (18)	68.2 (15)	
Parents	26.2 (16)	26.5 (9)	27.3 (6)	$p = .230$, $\chi^2 = 2.936$
Alone	14.8 (9)	20.6 (7)	4.5 (1)	
Psychiatric comorbidity % (n)	42.6 (26)	35.3 (12)	40.9 (9)	$p = .672$, $\chi^2 = 0.180$
Psychiatric family history % (n)	59 (36)	52.9 (18)	68.2 (15)	$p = .258$, $\chi^2 = 1.282$
Current psychotropic medication % (n)				
Antidepressants	91.8 (56)	88.2 (30)	100 (22)	$p = .095$, $\chi^2 = 2.787$
Antipsychotics	21.3 (13)	11.8 (4)	36.4 (8)	**$p = .045$ [d], $\chi^2 = 2.801$**
Mood stabilizers	1.6 (1)	2.9 (1)	-	-
Benzodiazepines	3.3 (2)	2.9 (1)	4.5 (1)	-
Current alcohol consumption % (n)	23 (14)	20.6 (7)	22.7 (5)	$p = .849$, $\chi^2 = 0.036$
Current drug use % (n)	4.9 (3)	5.9 (2)	4.5 (1)	-
HARS scores (mean ± SD / median, IQR)	11.02 ± 4.52	10.50, 5	10.00, 8	$p = .680$, $Z = -0.412$
HARS-psychic (median, IQR)	5.00, 3	6.00, 3	5.00, 3	$p = .492$, $Z = -0.687$
HARS-somatic (mean ± SD)	5.46 ± 2.68	5.47 ± 2.41	5.55 ± 3.29	$p = .922$, $t = -0.098$
Average time minutes spent on the Internet per day (median, IQR)	120.00, 210	120.00, 240	120.00, 210	$p = .324$, $Z = -0.986$
Most visited websites % (n)				
Social media	86.9 (53)	85.3 (29)	86.4 (19)	$p = .911$, $\chi^2 = 0.012$
Health-related	32.8 (20)	29.4 (10)	36.4 (8)	$p = .586$, $\chi^2 = 0.296$
Shopping	21.3 (13)	14.7 (5)	36.4 (8)	$p = .061$, $\chi^2 = 3.515$
Gaming	23 (14)	26.5 (9)	4.5 (1)	$p = .070$, $\chi^2 = 4.376$
Educational	37.7 (23)	44.1 (15)	31.8 (7)	$p = .375$, $\chi^2 = 0.847$
Online research about any disease % (n)	80.3 (49)	85.3 (29)	72.7 (16)	$p = .248$, $\chi^2 = 1.336$
Relief after online research % (n)	36.7 (18)	27.5 (8)	56.2 (9)	$p = .058$, $\chi^2 = 3.604$
Which disease was researched? % (n)				
Anxiety disorders	28.5 (14)	37.9 (11)	12.5 (2)	$p = .094$ [d], $\chi^2 = 3.246$
Obsessive-compulsive disorder	18.3 (9)	-	56.2 (9)	**$p < .001$ [d], $\chi^2 = 20.391$**
Heart diseases	14.2 (7)	24.1 (7)	-	**$p = .040$ [d], $\chi^2 = 4.574$**
Online research about psychiatric disorders % (n)	65.6 (40)	70.6 (24)	59.1 (13)	$p = .375$, $\chi^2 = 0.788$

Relief after online research (about psychiatric disorders) %(n)	50 (20)	45.8 (11)	61.5 (8)	$p = .362$, $\chi^2 = 0.833$
Ever changed medication after online research % (n)	5 (2)	4.1 (1)	7.6 (1)	$p = .546$ [d], $\chi^2 = 0.984$
Ever stopped medication after online research % (n)	5 (2)	-	15.3 (2)	$p = .125$ [d], $\chi^2 = 4.517$

Notes. ADs: Anxiety Disorders, OCD: Obsessive-Compulsive Disorder, IQR: Interquartile Range, SD: Standard deviation, HARS: Hamilton Anxiety Rating Scale,
[a] Independent Samples *t*-test, [b] Chi-square, [c] Mann Whitney-*U* test, [d] Fisher's Exact test.

Table-2. CSS Scores of All Sample, ADs, and OCD Groups

	All samples (n = 61)	ADs (n = 34)	OCD (n = 22)	Statistics
CSS total score (mean ± *SD*)	75.9 ± 24.9	78 ± 25.9	74.7 ± 23.9	$p = .650$ [a], $t = 0.457$
CSS total score without MMP subscale (mean ± *SD*)	65.1 ± 23.4	67.1 ± 24.3	63.9 ± 22.3	$p = .631$, $t = 0.483$
CSS – compulsion (median, IQR)	10.0, 9	10.0, 9	11.0, 7.5	$p = .820$ [b], $Z = -0.228$
CSS – distress (mean ± *SD*)	17.8 ± 6.6	18.8 ± 6.7	17.1 ± 6.2	$p = .361$, $t = 0.921$
CSS – excessiveness (mean ± *SD*)	21.1 ± 8.3	21.2 ± 8.4	21.1 ± 8.4	$p = .952$, $t = 0.060$
CSS – reassurance (mean ± *SD*)	13.1 ± 5.6	13.3 ± 5.8	13.2 ± 5.5	$p = .415$, $t = 0.822$
CSS – MMP (median, IQR)	12.0, 6	12.0, 4.5	12.0, 6.75	$p = .800$, $Z = -0.253$

Notes. ADs = Anxiety Disorders; OCD = Obsessive-Compulsive Disorder: CSS = Cyberchondria Severity Scale; IQR = Interquartile Range; MMP = Mistrust of Medical Professionals; *SD* = Standard Deviation.
[a] Independent Samples *t*-test, [b] Mann Whitney *U*.

Table-3. Correlations between CSS and SHAI, HARS, ASI-3, ASA, SF-36 scores

		HARS Total	HARS Psychic	HARS Somatic	SHAI	ASI-3	ASA	SF-36 Physical Functioning	SF-36 Vitality	SF-36 Social Role Functioning
CSS total score	r	**.361**	**.268**	**.290**	**.362**	**.320**	.213	.252	-.119	**-.276**
	p	**.005**	**.040**	**.026**	**.005**	**.014**	.105	.056	.377	**.036**
CSS total score without MMP	r	**.333**	**.283**	**.331**	**.370**	**.332**	.209	.195	-.172	**-.306**
	p	**.010**	**.030**	**.010**	**.004**	**.011**	.112	.142	.200	**.019**
CSS compulsion	r	.183	.219	.161	.204	**.264**	.015	.023	-.670	**-.297**
	p	.165	.096	.222	.121	**.045**	.909	.866	.623	**.024**
CSS distress	r	**.373**	**.259**	**.328**	**.386**	**.312**	**.257**	**.303**	-.136	-,.186
	p	**.004**	**.047**	**.011**	**.002**	**.017**	**.049**	**.021**	.315	.162
CSS excessiveness	r	**.408**	**.321**	**.307**	**.355**	.247	.150	.168	-.172	**-.292**
	p	**.001**	**.013**	**.018**	**.006**	.062	.258	.208	.200	**.026**
CSS reassurance	r	**.334**	.231	**.269**	.228	**.353**	**.297**	.205	-.111	-.212
	p	**.010**	.079	**.039**	.082	**.007**	**.022**	.122	.410	.110
CSS MMP	r	-.191	-.186	-.098	-.031	-.065	-.056	**.345**	**.329**	.051
	p	.147	.159	.458	.815	.627	.672	**.008**	**.013**	.701

Notes. CSS = Cyberchondria Severity Scale; MMP = Mistrust of Medical Professionals; HARS = Hamilton Anxiety Rating Scale; SHAI = Health Anxiety Inventory- Short Version; ASI-3 = Anxiety Sensitivity Index-3; ASA = Adult Separation Anxiety Questionnaire; SF-36 = Short From-36. *r* = Pearson/Spearman Correlation Coefficient

Table-4. Correlations between CSS and SHAI, HARS, ASI-3, ASA Scores According to Diagnostic Groups

		HARS						SHAI		ASI-3		ASA	
		Total		Psychic		Somatic							
		ADs	OCD	ADs	OCD	ADs	OCD	ADs	OCD	ADs	OCD	ADs	OCD
CSS total score	r	**.345**	.294	.287	.209	.286	.248	**.636**	.306	**.469**	.323	**.395**	.195
	p	**.046**	.208	.099	.377	.101	.291	**<.001**	.189	**.005**	.177	**.021**	.411
CSS total score without MMP	r	**.439**	.330	.327	.220	**.388**	.358	**.574**	.336	**.472**	.354	**.449**	.272
	p	**.009**	.155	.059	.350	**.023**	.158	**.001**	.147	**.005**	.137	**.008**	.246
CSS compulsion	r	.094	.317	.093	.335	.075	.274	.272	.152	**.346**	.299	.017	.114
	p	.595	.173	.599	.148	.675	.242	.120	.523	**.045**	.213	.922	.632
CSS distress	r	.264	.425	.293	.153	.220	.441	**.620**	.256	**.431**	.291	**.405**	.262
	p	.131	.061	.093	.592	.212	.052	**<.001**	.277	**.011**	.227	**.018**	.265
CSS excessiveness	r	**.391**	.250	**.390**	.171	.269	.320	**.617**	.184	**.390**	.269	**.366**	.060
	p	**.022**	.288	**.022**	.471	.123	.169	**<.001**	.437	**.023**	.266	**.034**	.800
CSS reassurance	r	**.418**	.135	**.362**	.044	**.367**	.091	**.386**	.398	**.383**	.443	**.431**	.293
	p	**.014**	.570	**.035**	.854	**.033**	.702	**.024**	.082	**.025**	.057	**.011**	.211
CSS MMP	r	.035	-.520	-.042	-.406	.155	-.368	.171	-.222	.176	-.221	.249	-.381
	p	.845	**.019**	.812	.076	.380	.111	.332	.347	.319	.364	.155	.097

Notes. ADs = Anxiety Disorders; OCD = Obsessive-Compulsive Disorder; CSS = Cyberchondria Severity Scale; MMP = Mistrust of Medical Professionals; HARS = Hamilton Anxiety Rating Scale; SHAI = Health Anxiety Inventory- Short Version; ASI-3 = Anxiety Sensitivity Index-3; ASA = Adult Separation Anxiety Questionnaire. r = Pearson/Spearman Correlation Coefficient.

Table-5. Correlations between CSS and SF-36 subscale scores according to AdDs and OCD groups

		SF-36 bodily pain		SF-36 social role functioning		SF-36 physical functioning		SF-36 general health perceptions	
		ADs	OCD	ADs	OCD	ADs	OCD	ADs	OCD
CSS total score	r	**.442**	.308	.335	.114	.136	.305	.297	.047
	p	**.010**	.186	.057	.633	.450	.192	.093	.843
CSS total score without MMP	r	**.459**	.270	.310	.195	.065	.248	**.372**	.075
	p	**.007**	.250	.079	.410	.719	.291	**.033**	.754
CSS-compulsion	r	**.402**	.203	**.365**	.207	.034	.100	.177	.122
	p	**.020**	.391	**.037**	.381	.850	.674	.325	.609
CSS-distress	r	**.368**	.172	.141	.143	.311	.166	.293	.048
	p	**.035**	.468	.435	.548	.078	.485	.098	.841
CSS-excessiveness	r	**.380**	.209	**.370**	.237	.096	.139	.343	.124
	p	**.029**	.377	**.034**	.315	.597	.560	.051	.601
CSS-reassurance	r	**.448**	.425	**.360**	.059	.041	.443	.105	.030
	p	**.009**	.062	**.040**	.806	.822	.051	.560	.899
CSS-MMP	r	.002	.289	**.391**	**.458**	.091	**.466**	.180	.167
	p	.993	.217	**.025**	**.043**	.616	**.038**	.316	.482

Notes. ADs = Anxiety Disorders; OCD = Obsessive-Compulsive Disorder; CSS = Cyberchondria Severity Scale; MMP = Mistrust of Medical Professionals; SF-36 = Short Form-36. R = Pearson Correlation Coefficient; ρ = Spearman Correlation Coefficient.

Table-6. Regression coefficients and confidence intervals (CI) of variables that have a significant association with CSS scores

Factors [a]	Dependent variable CSS ($R^2 = 0.542$)				Dependent variable CSS without MMP ($R^2 = 0.569$)			
	Regression coefficient (B)		95% CI	p	Regression coefficient (B)		95% CI	p
	Unstandardized	Standardized			Unstandardized	Standardized		
Absence of psychiatric comorbidity	14.788	0.287	4.57-25.00	**.005**	14.321	0.296	5.04-23.59	**.003**
Average time on the internet per day	0.57	0.383	0.02-0.08	**< .001**	0.048	0.348	0.02-0.07	**.001**
SHAI scores	0.776	0.289	0.21-1.33	**.007**	0.754	0.299	0.24-1.26	**.004**
HARS scores	1.370	0.241	0.20-2.53	**.022**	1.620	0.304	0.56-2.67	**.003**

Notes. CSS = Cyberchondria Severity Scale; MMP = Mistrust of Medical Professionals; SHAI = Health Anxiety Inventory- Short Version; HARS = Hamilton Anxiety Rating Scale.
[a] Backward stepwise multiple linear regression analyses.

DISCUSSION

To our knowledge, this study on health-related internet use and cyberchondria in a psychiatric clinical sample is the second of its kind, together with that of Vismara et al. (2022) (8). Our results demonstrated that cyberchondria severity was significantly associated with GA and HA levels. However, AS showed a correlation signal, which failed to come forward in the regression analysis. Our second hypothesis was almost completely unsupported since overall QoL scores were not associated with cyberchondria scores. Meanwhile, social role functioning, a subdomain of QoL, stood out, highlighting the possible impact of ADs, OCD, and related cyberchondria behavior on the social abilities of individuals with lived experience. Lastly, we did not find any difference regarding cyberchondria severity between patients with ADs and OCD.

The current results support previous findings and extend to assessing the impact of cyberchondria on the patients' QoL. Although cyberchondria has been shown to be associated with HA in the general population (2), it has not been studied in a sample with ADs. Cyberchondria may be closely related to compulsiveness, and one of its core features is repetitive and time-consuming online health research resembling obsessive-compulsive behavior (1, 12).

In line with the primary hypothesis, GA, HA, and AS scores increased as cyberchondria levels increased in the whole sample, and the multiple linear regression model showed that HA scores predicted cyberchondria levels, along with GA scores, absence of psychiatric comorbidity and average time spent on the internet per day. This finding is consistent with previous studies (2, 4). Many studies reported a moderate to strong relationship between HA and cyberchondria, with correlation coefficients ranging from 0.50 to 0.67 (12). In this study, the coefficient was 0.36, indicating a weaker correlation. However, a relationship between cyberchondria and anxiety levels was found in the ADs group but not in the OCD group. Considering that both cyberchondria and anxiety levels do not show a statistically significant difference between the two groups, there might be different factors associated with cyberchondria in the OCD group. A recent network analysis reported that the relationship between cyberchondria and HA showed variable values, and the two concepts were closely related but distinct structures (12). Some studies

emphasizing the compulsiveness of cyberchondria reported that contagion obsessions in OCD patients showed a stronger relationship with cyberchondria compared to symmetry obsessions (23). However, the findings of the current study do not support a relationship between obsession types and cyberchondria. There was no significant relationship between cyberchondria and GA, HA, and AS in this group, compared to significant correlations between those variables in the ADs group. Consequently, cyberchondria may indicate a distinct entity with different aspects and may not always be associated with HA. Based on these findings, it seems essential to evaluate the interaction of cyberchondria in cases with OCD by different associated psychopathological variables in future studies.

CSS total scores in this study were compared with the results of two other psychiatric clinical studies. Among patients with illness anxiety disorder and/or somatic symptom disorder (i.e., hypochondriasis), Newby and McElroy (2020) found a higher mean score of CSS than the current study's sample (102.2±21.4) (7). On the other hand, Vismara et al. (2022) reported a CSS mean score of 62.8±20.1 which was lower than in this study's sample (8). Comparing these current results with previous research findings, patients with ADs and/or OCD suffer a lower level of cyberchondria than patients primarily diagnosed with HA or hypochondriasis. Patients with higher levels of cyberchondria might have been referred to the tertiary psychiatric clinic in the present study, which could result in higher CSS means and symptom severity (24).

A critical feature of cyberchondria is a decrease in the person's other daily activities because of health-related internet searches (1). The present study determined that the QoL social functionality scores decreased as cyberchondria severity increased. Other areas of QoL were not related to cyberchondria. This finding is consistent with the results of a study in which cyberchondria and WHO-QOL scale ratings were negatively correlated in a non-clinical sample (25).

The relationship between cyberchondria and QoL is important but relatively understudied. It was reported that pain catastrophizing may contribute to cyberchondria, especially in the context of chronic pain (26). When the two diagnostic groups were examined regarding QoL, as the levels of cyberchondria increased in the group

with ADs, the patients' pain-related QoL decreased. This relationship was not found in the OCD group. Based on this result, it might be helpful to examine the relationship between cyberchondria and pain catastrophizing in future studies for ameliorating adequate interventions aiming at increasing the QoL of individuals with mental disorders.

Zavorotnyy et al. (2020) reported that in a patient group with MDD, extended exposure to health-related internet research was associated with poorer medication adherence (27). In the present study, very few patients who performed health-related internet use changed or stopped their medication. This finding might be interpreted as medication adherence levels were unaffected by cyberchondria and/or health-related internet use. This distinction may be due to the difference in primary diagnostic groups. Kalckreuth et al. (2014) reported that 36.2% of psychiatric patients having health-related internet searches believed that the internet could help them cope with their mental disorders (28). This study supports the current findings in which half of the patients who searched about mental illness on the internet reported relief afterward.

Along with the COVID-19 pandemic, several factors, including the heightened perception of threat and difficulty in coping with uncertainty faced by society and individuals all over the world, have paved the way for the increase in the presence of cyberchondria (29). Various vulnerability factors have been identified in terms of cyberchondria, including personal characteristics such as younger age, female gender, or a history of mental disorder, engagement in some forms of online behavior, such as increased acceptance of online information, increased use of social media, and information overload. In contrast, information about the pandemic and adaptive emotion regulation might serve as buffering factors for anxiety during the pandemic (30). In a recent study, cyberchondria presented a positive correlation with various phenomenology of anxiety (i.e., metacognitive beliefs about anxiety, GA, HA, anxiety about COVID-19) and with depression, OCD symptoms, and problematic

usage of the internet while conversely, QoL showed a negative correlation with cyberchondria (31). The present study was carried out in the pre-pandemic period, and it is important to have these results because the pandemic likely increased cyberchondria.

The limitations of this study should be considered. Due to its cross-sectional design, a causal relationship cannot be mentioned. Most assessment tools consisted of self-report scales, which may cause recall bias. Treatment and treatment response of the clinical sample is uncertain, and even if HARS is used to assess GA levels, it may not provide sufficient information about disease severity and remission status in the OCD group. The sample size is relatively limited, and psychiatric comorbidities might have impacted the results.

Despite all these limitations, the present study might be important in that it examines cyberchondria in a psychiatric clinical sample both as a whole and among different diagnostic groups. The exclusion of cases with comorbid ADs and OCD in the intergroup diagnostic evaluation can be considered one of the strengths of the study for this purpose. Statistical analysis of CSS total scores, both with and without MMP, might be another strength, considering the inclusion or exclusion of MMP did not lead to a significant difference. This study might be the first to evaluate the relationship between QoL and cyberchondria in a clinical psychiatric sample, as it reports guiding findings for future research on this subject.

CONCLUSION

Considering the rapidly progressing digitalization and the significant increase in internet use, especially during and after the COVID-19 pandemic, more research is needed that can shed light on the development of appropriate interventions by examining the concept of cyberchondria and its relationship with ADs, OCD, and other mental disorders.

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