Sapporo Medical Journal
Volume 55, Issue 09, September 2021

A prevalence of Cyberchondria among late adolescence female in Malaysia: A Cross-Sectional Pilot Study

Dulmaa Lkhagvasuren[1,2], Muhammad Shahzad Aslam[3*], Lisha Yi[3], Pravina Selvarajah[4]

[1]Department of Pharmaceutical Chemistry and Pharmacognosy of School of Pharmacy, Mongolian National University of Medical Sciences, Mongolia.
[2]Medicine and Medical Devices Regulatory Agency, Mongolia.
[3*]School of Traditional Chinese Medicine, Xiamen University Malaysia, Malaysia
[4]Geo Resort and Hotel JalanPermai 2, Malaysia

Abstract— Background: The current study aimed to determine the prevalence of Cyberchondria severity among late adolescent female participants and correlate factors that may cause internet-based anxiety among participants. The study investigates model internal reliability, items statistics and correlation between different factors. Methods: The cross-sectional pilot study was conducted between 1st February 2021 till 29th June 2021. The study was conducted under self-administered mode among the late adolescence female general population in Malaysia. The data was collected using the twelve-item Cyberchondria severity scale (CSS-12) to assess the internet searching anxiety among general female populations aged 18-24 years. Results: The total included participants according to the eligible criteria waseighty-eight (n= 88). (36.4%) of the population tended to search for information if they feel unexplained bodily sensation, and (43.2%) of the population tended to read information about the same perceived conditions from different web pages. The internal reliability of the model was (α=0.848), whereas Cronbach's Alpha,based on the standardized item were (α=0.845). A correlation were observed between different factors (i.e. excessiveness, compulsion, distress, reassurance and mistrust). Conclusion: In conclusion, the prevalence of Cyberchondria were moderate in late adolescent female in Malaysia. More attention should be directed toward detecting psychological changes in these vulnerable individuals.

Keywords: Cyberchondria, Cyberchondria severity scale, Anxiety, Internet disorder, Malaysia, Pilot study

1. Introduction

The concept of Cyberchondria can be traced back to an article written by reporter Ann Carrns[1], but it has not determined who coined the term, and this controversy has a 22-year history. The concept first appeared frequently in media reports. It is not a very common concept for mental health clinicians. With the increase in the professional literature of researchers, the attention of online hypoxic syndromes has gradually increased [2][3]. Cyberchondria often appears together with health anxiety & hypochondriasis [4]. Hypochondriasis is the more well-known health anxiety, which signifies that a normal physical condition is misunderstood by oneself as a more serious medical disease, and it may be overtreated[5]. Research data shows that the prevalence of hypochondriasis in the population is between 0.02% and 10% [6][7],[8][9][10][11] can indicate that the prevalence of hypochondriasis is not so scarce.

With the development of science and technology, the popularisation of the Internet, and the transmission of information in the 21st century, people have more ways to obtain information on the Internet, and people will search more excessively, which may lead to an increase in Cyberchondria and health anxiety [8][12]. The concept of Cyberchondria has always been controversial, but it is all about the concept of online health search (OHR) that has a minimal fundamental controversy over

time, as shown in Figure 1.[2], However, it is still difficult to define Cyberchondria, but we will now describe and define Cyberchondria as a relatively multi-dimensional syndrome [3][13]. Cyberchondria Severity Scale (CSS) is a commonly used tool for evaluating Cyberchondria, with 33 projects at its most basic and original, but fewer projects, such as CSS-12, have emerged due to modifications. [14][15].

The emergence of COVID-19 in 2019 has caused varying degrees of damage to global life. It spreads around the world. Research has found that about 48.3% of them get anxiety and a combination of depression and anxiety (CDA) in China, this It also shows that health anxiety will increase during this pandemic, [16][17] the uncertainty of the disease and the persistent fear, which may cause people to search for information on social media [18]. However, the information on the Internet may be full of wrong information, which will cause further anxiety. The network hypochondriasis will become a vicious circle because anxiety and anxiety will encourage people to search for information more, but the unreasonable search will increase anxiety. As COVID-19 continues today, the number of hypothetical online syndromes has become more frequent [18]. It is more severe for people in medical-related industries and prevents new crowns than people in other industries.[12]

With the uncertain epidemic, uncertain information on the Internet, and people constantly paying attention to their health, Cyberchondria Severity Scale (CSS), CSS-12, Short Health Anxiety Inventory (SHAI) and Generalized Anxiety Disorder Assessment (GAD-7) will become a way for people to self-test whether they have Cyberchondria because these assessment forms and judgment methods are public. People are more willing to find solutions regarding the impact of the current epidemic and the restrictions on crowd gathering activities in various countries. While CSS is a standard assessment tool, there are areas for improvement, such as clinical patient reviews and feedback [25]. At this time, the reliability of the evaluation table needs to be evaluated by researchers to reduce the deviation and make the results more reliable. It is more effective for diagnosing the disease, and it is also responsible for the patient. The current study aims to investigate the cross-sectional studies involving Cyberchondria Severity Scale (CSS) questionnaire among late adolescent females in Malaysia.

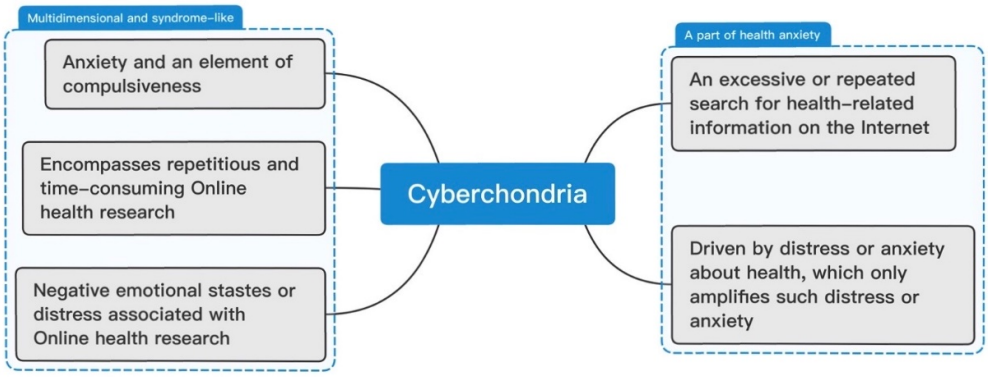

Figure 1. Conceptualization of Cyberchondria

2. Methods

The current study was a pilot scale, descriptive, self-administer, cross-sectional study. The study was conducted from February 2021 till June 2021. The questionnaire was forwarded to the participants by convenience method using survey monkey software. The total of participants who completed the survey were one hundred and fifteen (n=115). There were two missing values (n=2) that were removed. Twenty-five response (n=25) was removed due to ineligibility (such as nationality and

gender). The total number of participant included inside the study were eighty-eight (n=88**).** The data was collected using twelve items Cyberchondria severity scale (CSS-12), coded and entered into the statistical computer program Statistical Package for theSocial Sciences(SPSS) version 28.0.Descriptive analysis was performedto obtain the frequency, means, standard deviations, and percentages for all data. Factors and items were analyzed by reliability analysis. Correlation analysis was performed by usingPearson correlation analysis. The factors involved in the current study consist of excessiveness, compulsion, distress, reassurance and mistrust. The factor excessiveness consists of the following items *(If I notice an unexplained bodily sensation, I will search for it on the Internet; Researching symptoms or perceived medical conditions online distracts me from reading news/sports/entertainment articles online; I read different web pages about the same perceived condition*). The compulsion factor consists of items such as *"researching symptoms or perceived medical conditions online leads me to consult with my GP"and "I enter the same symptoms into a web search on more than one occasion".*Distress is another factor that contains items such as *"I start to panic when I read online that a symptom I have is found in a rare/serious condition". "Researching symptoms or perceived medical conditions online interrupts my work (e.g. writing emails, working on word documents or spreadsheets)" "I think I am fine until I read about a serious condition online" "I feel more anxious or distressed after researching symptoms or perceived medical conditions online" "Researching symptoms or perceived medical conditions online interrupts my offline social activities (e.g. reduces time spent with friends/family)".* Reassurance and mistrust are the following factors consist of items *"I suggest to my GP/medical professional that I may need a diagnostic procedure that I read about online (e.g. a biopsy/ a specific blood test)"*and *"Researching symptoms or perceived medical conditions online leads me to consult with other medical specialists (e.g. consultants)".* The questionnaires also included items regarding sociodemographic data (education, age, marital status, educational level, and employment status). Informed consent had taken online using survey monkey.

3. Results

3.1. Descriptive statistics

The study aimed to determine self-administer descriptive pilot study on Cyberchondria severity among late adolescent females in Malaysia. The researcher uses a validated 5-point Likert-scale Cyberchondria severity scale (1= Always, 2= Usually, 3=Sometimes, 4= Rarely, 5=Never) [19]. The characteristics of the Cyberchondria severity scale (CSS-12) are reported in Table 1.There was no adjustment made inside the questionnaire as the population inside Malaysia had good proficiency in the English language.

Table 1: Cyberchondria severity scale (CSS-12) Questionnaire

Sr. No	Items	Always	Usually	Sometimes	Rarely	Never
1	If I notice an unexplained bodily sensation, Iwill search for it on the Internet	1	2	3	4	5
2	Researching symptoms or perceived medical conditions online distracts me from reading news/sports/entertainment articles online	1	2	3	4	5
3	I read different web pages about the same perceived condition	1	2	3	4	5

4	I start to panic when I read online that a symptom I have is found in a rare/serious condition	1	2	3	4	5
5	Researching symptoms or perceived medical conditions online leads me to consult with my GP	1	2	3	4	5
6	I enter the same symptoms into a web search on more than one occasion	1	2	3	4	5
7	Researching symptoms or perceived medical conditions online interrupts my work (e.g. writing emails, working on word documents or spreadsheets)	1	2	3	4	5
8	I think I am fine until I read about a serious condition online	1	2	3	4	5
9	I feel more anxious or distressed afterresearching symptoms or perceived medical conditions online	1	2	3	4	5
10	Researching symptoms or perceived medical conditions online interrupts my offline social activities (e.g. reduces time spent withfriends/family)	1	2	3	4	5
11	I suggest to my GP/medical professional that I may need a diagnostic procedure that I read about online (e.g. a biopsy/ a specific blood test)	1	2	3	4	5
12	Researching symptoms or perceived medical conditions online leads me to consult with other medical specialists (e.g. consultants)	1	2	3	4	5

There was two missing data (n=2) present at the item-level, and the response were removed. The demographic characteristics were presented in table 2. Most of the participants (47.7%) were aged twenty-four years. (65.9%) of the population were students in universities. The majority of the population (37.5%) are not employed and seeking opportunities to work. (92%) of the population are single.

Table 2: Demographic characteristics of participants

Demographic characteristics		**n(%)**
Age	18 Years	2(2.3)
	19 Years	2(2.3)
	20 Years	5(5.7)
	21 Years	15(17.0)
	22 Years	5(5.7)
	23 Years	17(19.3)
	24 Years	42(47.7)
Education	Primary School	1(1.1)
	Secondary School	3(3.4)
	Diploma	13(14.8)
	College	4(4.5)
	University	58(65.9)
	Professional Course	3(3.4)
	Masters	5(5.7)
	Others	1(1.1)
Employment	Employed full-time	27(30.7)
	Employed part-time	7(8.0)
	Seeking opportunities	33(37.5)
	Prefer not to say	21(23.9)
Relationship status	Single	81(92.0)
	Married	4(4.5)
	Unmarried	2(2.3)
	Divorced	1(1.1)

(36.4%) of the population tended to search for information if they feel unexplained bodily sensation, and (43.2%) of the population tended to read information about the same perceived conditions from different web pages.Participants some time (34.1%) startedto panic when they read online symptoms and thought found as a severe or rare condition. (36.4%) of the population sometimes consult their general practitioners after searching the symptoms or perceived medical conditions. The results shoes that (35.2%) of the population did not interrupt their work, such as working on documents/spreadsheets or writing emails after researching symptoms or perceived conditions. (28.4%) of the populations usually feel more anxious or distressed after researching symptoms or perceived medical conditions online. The study indicates that (34.1%) of the population never impacted their social activities after researching symptoms or perceived medical conditions.(34.1%) The population had never needed any reassurance with general probationers or medical professionals (GP/MP) when asked about reading diagnostic procedures online from general probationers or medical professionals to patient. The results show that participants had a moderate trust in their consultant and rarely (29.5%) consulted with other medical specialists. The complete descriptive statistics on the given items were presented in table 3. The results indicate that the population inside Malaysia (34%) has a moderate anxiety-amplifying effect of online health-related searches.

Sometimes, people feel anxious about their health created or exacerbated by using the Internet to search for medical information.

Table 3: Descriptive statistics

Questions	**Always n(%)**	**Usually n(%)**	**Sometimes n(%)**	**Rarely n(%)**	**Never n(%)**
If I notice an unexplained bodily sensation, I will search for it on the Internet	32(36.4)	22 (25.0)	27(30.7)	6(6.8)	1(1.8)
Researching symptoms or perceived medical conditions online distracts me from reading news/sports/entertainment articles online	9(10.2)	10(11.4)	29(33.0)	29(33.0)	11(12.5)
I read different web pages about the same perceived condition	23(26.1)	38(43.2)	16(18.2)	11(12.5)	0(0.0)
I start to panic when I read online that a symptom I have is found in a rare/serious condition	12(13.6)	18(20.5)	30(34.1)	24(27.3)	4(4.5)
Researching symptoms or perceived medical conditions online leads me to consult with my GP	4(4.5)	12(13.6)	32(36.4)	32(36.4)	8(9.1)
I enter the same symptoms into a web search on more than one occasion	9(10.2)	21(23.9)	30(34.1)	25(28.4)	3(3.4)
Researching symptoms or perceived medical conditions online interrupts my work (e.g. writing emails, working on word documents or spreadsheets)	4(4.5)	12(13.6)	21(23.9)	20(22.7)	31(35.2)
I think I am fine until I read about a serious condition online	13(14.8)	22(25.0)	32(36.4)	18(20.5)	3(3.4)
I feel more anxious or distressed after researching symptoms or perceived medical conditions online	6(6.8)	25(28.4)	25(28.4)	21(23.9)	11(12.5)
Researching symptoms or perceived medical conditions online interrupts my offline social activities (e.g. reduces time spent with friends/family)	4(4.5)	11(12.5)	11(12.5)	32(36.4)	30(34.1)
I suggest to my GP/medical professional that I may need a diagnostic procedure that I read about online (e.g. a biopsy/ a specific blood test)	4(4.5)	9(10.2)	18(20.5)	27(30.7)	30(34.1)
Researching symptoms or perceived medical conditions online leads me to consult with other medical specialists (e.g. consultants)	4(4.5)	10(11.4)	28(31.8)	26(29.5)	20(22.7)

3.2. Item Analysis

The results indicate a good Cronbach's alpha value (α) or coefficient alpha (α=0.848). The results based on standardized items indicate the reasonable value (α=0.845) as mentioned in table 4. There is no need to delete the items according to table 6. The values decrease if the researcher deletes any item range from (α=0.823-0.845). The individual item meansto value, and standard deviation have been given in table 5. The mean scale value from CSS-12 was 37.3295±8.02256, and variance is 64.361 for total items (n=12), as mentioned in table 7. The average scale value for all items is 3.1107.

Table 4: Reliability statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.848	.845	12

Table 5: Item statistics

Item Statistics			
	Mean	Std. Deviation	N
If I notice an unexplained bodily sensation I will search for it on the Internet	2.1136	1.02196	88
Researching symptoms or perceived medical conditions online distracts me from reading news/sports/entertainment articles online	3.2614	1.13961	88
I read different web pages about the same perceived condition	2.1705	.96158	88
I start to panic when I read online that asymptom I have is found in a rare/serious condition	2.8864	1.09787	88
Researching symptoms or perceived medical conditions online leads me to consult with my GP	3.3182	.97728	88
I enter the same symptoms into a web search on more than one occasion	2.9091	1.03542	88
Researching symptoms or perceived medical conditions online interrupts my work (e.g.writing emails, working on word documents or spreadsheets)	3.7045	1.21446	88
I think I am fine until I read about a serious condition online	2.7273	1.05838	88
I feel more anxious or distressed after researching symptoms or perceived medical conditions online	3.0682	1.14265	88
Researching symptoms or perceived medical conditions online interrupts my offline social activities (e.g. reduces time spent with friends/family)	3.8295	1.16680	88
I suggest to my GP/medical professional that I may need a diagnostic procedure that I read about online (e.g. a biopsy/ a specific blood test)	3.7955	1.15628	88
Researching symptoms or perceived medical conditions online leads me to consult with other	3.5455	1.10286	88

medical specialists (e.g. consultants)			

Table 6: Item-total statistics

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
If I notice an unexplained bodily sensation I will search for it on the Internet	35.2159	56.539	.441	.388	.842
Researching symptoms or perceived medical conditions online distracts me from reading news/sports/entertainment articles online	34.0682	54.294	.522	.366	.836
I read different web pages about the same perceived condition	35.1591	61.078	.157	.321	.859
I start to panic when I read online that asymptom I have is found in a rare/serious condition	34.4432	52.663	.658	.599	.826
Researching symptoms or perceived medical conditions online leads me to consult with my GP	34.0114	53.942	.659	.493	.828
I enter the same symptoms into a web search on more than one occasion	34.4205	57.051	.399	.349	.845
Researching symptoms or perceived medical conditions online interrupts my work (e.g.writing emails, working on word documents or spreadsheets)	33.6250	51.065	.681	.645	.823
I think I am fine until I read about a serious condition online	34.6023	56.104	.450	.402	.841
I feel more anxious or distressed after researching symptoms or perceived medical conditions online	34.2614	52.954	.607	.519	.830
Researching symptoms or perceived medical conditions online interrupts my offline social activities (e.g. reduces time spent with friends/family)	33.5000	52.759	.604	.624	.830
I suggest to my GP/medical professional that I may need a diagnostic procedure that I read about online (e.g. a biopsy/ a specific blood test)	33.5341	53.562	.559	.547	.833
Researching symptoms or perceived medical conditions online leads me to consult with other medical specialists	33.7841	55.918	.438	.461	.842

(e.g. consultants)					

Table 7: Scale statistics

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
37.3295	64.361	8.02256	12

3.3. Pearson correlation analysis

The shapiro-wilk significant value was found in consist among all variables such as excessiveness ($p=0.036$), compulsion ($p=0.002$), distress ($p=0.033$), reassurance seeking ($p<0.001$) and mistrust ($p<0.001$). The values must be above 0.05 to test for normal distribution. Pearson co-relation were suggested to observe co-relation between different variables. The results were mentioned in table 8. The results observed a significant relationship between excessiveness, compulsion, distress, reassurance and mistrust in the pilot study. The analysis was conducted two-tailed with significance at 0.01 and 0.05 where applicable.

Table 8: Pearson Correlation

Correlations						
		Excessiveness	Compulsion	Distress	Reassurance	Mistrust
Excessiveness	Pearson Correlation	1	.445**	.477**	.209	.210*
	Sig. (2-tailed)		<.001	<.001	.050	.049
	N	88	88	88	88	88
Compulsion	Pearson Correlation	.445**	1	.545**	.512**	.348**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001
	N	88	88	88	88	88
Distress	Pearson Correlation	.477**	.545**	1	.481**	.348**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001
	N	88	88	88	88	88
Reassurance	Pearson Correlation	.209	.512**	.481**	1	.629**
	Sig. (2-tailed)	.050	<.001	<.001		<.001
	N	88	88	88	88	88
Mistrust	Pearson	.210*	.348**	.348**	.629**	1

	Correlation					
	Sig. (2-tailed)	.049	<.001	<.001	<.001	
	N	88	88	88	88	88
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

4. Discussion

The current study focuses on the prevalence and item reliability of the short version of CSS-12 among Malaysia's late adolescent female population. The questionnaire was adopted from McElroy et al., manuscript studies among undergraduate students of UK universities[19].CSS-12 possesses an excellent internal consistency (α=0.845). This previous support finding aimed to develop and validate an instrument designed to assess parents' web-based health information searching behaviour (standardized alpha=.84) using CSS-15[20].The study support previous finding when examining the relationships among intolerance ofuncertainty, affective responses, e-health literacy, and Cyberchondria (α=0.75)[21].The internal consistency range among subscales was good (α=0.823-0.845) and supporting the previous literature (α=0.73–0.87) [19].

5. Limitation

The studies possess some limitations, such as the sample size is small. The small sample size is because of the nature of the study (Pilot study). The study where conducted in a non-clinical setting. The majority of the population consist of students that lead to homogeneity of the sample. The study was conducted in self-administer mode because of the COVID-19 pandemic, which could lead to selection bias. The study was conducted among late adolescent females, which could lead to gender bias. The current study is a pilot-based cross-sectional study that does not allow conclusions about causal relationships.

6. Conclusion

Despite the following limitations, the researcher demonstrated a moderate internet search related anxiety among late adolescents' females in Malaysia. The pilot implication of the twelve items Cyberchondria severity scale in the Malaysian population supported and can process for a larger population in future studies. The current study is the first on the prevalence of CSS-12 among late adolescent females in Malaysia. The result indicates consistent internal reliability with previous findings and supports the short-scale CSS-12 model in a larger population.

7. Acknowledgment

The study conducted was supported by Xiamen University Malaysia.

8. Author Contribution

DL and MSA were involved in the conceptualization and methodology design of the study. PS was involved in the data collection of the study. MSA performed data analysis. MSA, LY and DL were involved in the writing of the manuscript. All authors approved the manuscript before submission.

9. Reference

[1] Annonymous, "New disorder, cyberchondria, sweeps the internet,"*NZ Herald*, 2001. [Online]. Available: https://www.nzherald.co.nz/technology/new-disorder-cyberchondria-sweeps-the-

internet/PDMVXLTMYGZTIKDMXACTRHG3OI/. [Accessed: 25-Apr-2021].

[2] V. Starcevic and D. Berle, "Cyberchondria: towards a better understanding of excessive health-related Internet use,"*Expert Rev. Neurother.*, vol. 13, no. 2, pp. 205–213, Feb. 2013.

[3] V. Starcevic, D. Berle, and S. Arnáez, "Recent Insights Into Cyberchondria,"*Current Psychiatry Reports*. 2020.

[4] K. J. K. Harding, N. Skritskaya, E. R. Doherty, and B. A. Fallon, "Understanding health anxiety," in *Anxiety Disorders*, H. B. Simpson, Y. Neria, R. Lewis-Fernandez, and F. Schneier, Eds. Cambridge: Cambridge University Press, 2010, pp. 103–115.

[5] C. F. Belling, "Hypochondriac Hermeneutics: Medicine and the Anxiety of Interpretation,"*Lit. Med.*, vol. 25, no. 2, pp. 376–401, 2006.

[6] F. Creed and A. Barsky, "A systematic review of the epidemiology of somatization disorder and hypochondriasis,"*J. Psychosom. Res.*, vol. 56, no. 4, pp. 391–408, Apr. 2004.

[7] J. Bailer *et al.*, “Erfassung von Krankheitsangst mit dem Short Health Anxiety Inventory (SHAI),” *Verhal. Verhal.*, 2013.

[8] K. J. Harding, N. Skritskaya, E. Doherty, and B. A. Fallon, "Advances in understanding illness anxiety,"*Curr. Psychiatry Rep.*, vol. 10, no. 4, pp. 311–317, Aug. 2008.

[9] K. J. Looper and L. J. Kirmayer, "Hypochondriacal concerns in a community population,"*Psychol. Med.*, 2001.

[10] R. Noyes, C. P. Carney, S. L. Hillis, L. E. Jones, and D. R. Langbehn, "Prevalence and Correlates of Illness Worry in the General Population,"*Psychosomatics*, vol. 46, no. 6, pp. 529–539, Nov. 2005.

[11] G. Bleichhardt and W. Hiller, "Hypochondriasis and health anxiety in the German population,"*Br. J. Health Psychol.*, vol. 12, no. 4, pp. 511–523, Nov. 2007.

[12] P. Tyrer, S. Cooper, H. Tyrer, D. Wang, and P. Bassett, "Increase in the prevalence of health anxiety in medical clinics: Possible cyberchondria,"*Int. J. Soc. Psychiatry*, vol. 65, no. 7–8, pp. 566–569, Nov. 2019.

[13] V. Starcevic, S. Baggio, D. Berle, Y. Khazaal, and K. Viswasam, "Cyberchondria and its Relationships with Related Constructs: a Network Analysis,"*Psychiatr. Q.*, vol. 90, no. 3, pp. 491–505, Sep. 2019.

[14] E. McElroy, M. Kearney, J. Touhey, J. Evans, Y. Cooke, and M. Shevlin, "The CSS-12: Development and Validation of a Short-Form Version of the Cyberchondria Severity Scale,"*Cyberpsychology, Behav. Soc. Netw.*, vol. 22, no. 5, pp. 330–335, May 2019.

[15] T. A. Fergus, "The Cyberchondria Severity Scale (CSS): An examination of structure and relations with health anxiety in a community sample,"*J. Anxiety Disord.*, vol. 28, no. 6, pp. 504–510, Aug. 2014.

[16] J. Gao *et al.*, “Mental health problems and social media exposure during COVID-19 outbreak,” *PLoS One*, vol. 15, no. 4, p. e0231924, Apr. 2020.

[17] S. M. Jungmann and M. Witthöft, "Health anxiety, cyberchondria, and coping in the current COVID-19 pandemic: Which factors are related to coronavirus anxiety?,"*J. Anxiety Disord.*, vol. 73, p. 102239, Jun. 2020.

[18] C. M. Coelho, P. Suttiwan, N. Arato, and A. N. Zsido, "On the Nature of Fear and Anxiety Triggered by COVID-19,"*Front. Psychol.*, vol. 11, Nov. 2020.

[19] E. McElroy, M. Kearney, J. Touhey, J. Evans, Y. Cooke, and M. Shevlin, "The CSS-12: Development and Validation of a Short-Form Version of the Cyberchondria Severity Scale,"*Cyberpsychology, Behav. Soc. Netw.*, vol. 22, no. 5, pp. 330–335, May 2019.

[20] A. Barke and B. K. Doering, "Development of an Instrument to Assess Parents' Excessive Web-Based Searches for Information Pertaining to Their Children's Health: The ‘Children’s Health Internet Research, Parental Inventory’ (CHIRPI).,” *J. Med. Internet Res.*, vol. 22, no. 4,

p. e16148, Apr. 2020.

[21] H. Zheng, X. Chen, and S. Fu, “An exploration of determinants of cyberchondria: A moderated mediation analysis,” *Proc. Assoc. Inf. Sci. Technol.*, vol. 57, no. 1, Oct. 2020.