RESEARCH ARTICLE

Exploring cyberchondria and worry about health among individuals with no diagnosed medical condition

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Abstract

Objective: To study the phenomenon of cyberchondria and related worries about health among individuals without any diagnosed medical condition.

Method: The survey-based, cross-sectional study was conducted from January to July 2018 in the twin cities of Rawalpindi and Islamabad, Pakistan, and comprised graduates of either gender aged at least 35 years with access to internet and means of use, and with no current diagnosed medical condition. The self-reporting Cyberchondria Severity Scale was used data-collection along with a demographic sheet. SPSS 21 was used for data analysis.

Results: Of the 150 subjects, 90(60%) were men and 60(40%) were women. A total of 40(26.6%) subjects had low level of cyberchondria, while 35(23.3%) experienced a higher level of it. Mean scores of men on total CSS were slightly higher than those of women ($p>0.05$). Men also scored higher on compulsion, distress, excessiveness and reassurance subsclaes ($p>0.05$ each), whereas women scored slightly higher than men on 'mistrust of medical profession' subscale ($p>0.05$). No significant gender differences were found on cyberchondria and its subscales ($p>0.05$ each).

Conclusion: Doctors / health professionals may benefit from the findings by focussing on their patients who use internet as a major source of medical information.

Keywords: Cyberchondria, Worry, Medical condition. (JPMA 70: 90; 2019).

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Introduction

Health-related information and websites being accessed daily indicate internet to be one of the most popular and important sources for such information.[1,2] According to a survey, internet is used to get an answer for health-related inquiries by more than 75% of the participants in Russia, Mexico, Brazil, China, India, United States (USA), Italy, Australia, and Germany.[3] In addition to the potential benefits of seeking information from the internet, concerns have been raised about the plausible negative effects of the same for its users. Cyberchondria is one of them, defined as "an excessive or repeated online searching for health-related information, which is driven by a need to alleviate distress or anxiety surrounding health, but results, instead, in their worsening".[4]

The symptom picture of cyberchondria has been studied to share common features with defined psychiatric disorders.[5] Some studies suggest that cyberchondria overlaps meaningfully with health anxiety, obsessive compulsive disorder (OCD), and internet addition. However, others do not support the overlapping features.[6,7] In one study, significant relationships involved internet addiction, health anxiety and cyberchondria.[8] Conceptually, cyberchondria refers to experiencing increased anxiety after seeking medical information and addressing health concerns through internet, leading to unhealthy behavioural and emotional outcomes. Several definitions of cyberchondria have been proposed with excessive or repeated online searches for health-related information and health-related anxiety as common features.[9] Cyberchondria consists of four core dimensions: internet searches for medical information repetitively (excessiveness); increased negative affect (distress); interrupted daily living (compulsion): and engendered reassurance seeking. Individuals have tendency to develop disorders such as health-related anxiety and depression in response to the information obtained from online sources.[10] According to a recent research, over half of the walk-in patients in a hospital presented high levels of depressive symptoms who had also searched for their

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health conditions online.[11]

Cyberchondria may also be related to a difficulty in distinguishing between credible and non-credible sources of online information.[12] Online health information content can range from being peer or professionally reviewed to personal blogs, opinions, or anecdotes of other patients. Information quality can vary, and patients may not possess the necessary skills to evaluate medical information and relate it to their own health circumstances.[13] One survey found that 67% of physicians reported dealing with patients who talked about their medical conditions based on the information they gathered from online resources.[14]

People with cyberchondria have differentiated characteristics in terms of their actions and thoughts, including spending hours daily on checking their symptoms online. Studies suggest that people with higher illness anxiety spent more time on the internet, whereas people with mild health anxiety spent relatively less time in a day. With an already present fear of contracting numerous diseases, online medical consultation makes these individuals more anxious about their health. People suffering from high illness anxiety are more likely to exaggerate their perceived disability.[6] One source of information is rarely enough for them, and so they refer to at least two or more websites at a time, which can lead to physical symptoms, like worsening anxiety, increased heart beat, difficulty in breathing and tightness of throat. The more emotionally overwhelmed one feels, the more he or she is likely to spend time searching for the particular symptom, and, the more they search, the more they are convinced that they are experiencing certain illness. At this stage, an individual is more likely to begin to trust the internet and develop mistrust of the physician, thus displaying a common attribute of cyberchondria.[15]

One of the major consequence of the excessive online search for health-related information can be self-medication. Locally, two studies have focussed on the issue of self-medication, and, according to their findings, the percentage of people practising self medication was surprising and upsetting.[16,17] However, cyberchondria has not been previously studied in indigenous context. Searching the internet before going for a medical consultation is a recently growing trend in Pakistan. The current study was planned to find out the level of cyberchondria among individuals without a current diagnosis of medical condition. It also intended to explore the degree of concern about illness among healthy participants in addition to the reasons for which people engage in online search for medical / health-related information.

Subjects and Method

The survey-based, cross-sectional study was conducted from January to July 2018 in the twin cities of Rawalpindi and Islamabad, Pakistan. Using purposive sampling, graduates of either gender aged at least 35 years with access to internet and means of use, and with no current diagnosed medical condition were approached in person in different work settings. Whereas, exclusion criteria comprised of having a close family member with severe medical condition requiring frequent medical services or hospitalization and such family members who have a medical condition which is at terminal stage. Approval for the study was taken from the relevant ethics review committee of the university, located in Islamabad, where the study was carried out.

Cyberchondria Severity Scale (CSS) was used to measure the level of cyberchondria among sample.[12] The 33-item scale has a 5-point Likert response format. Scores on an item ranges from 1 (Strongly Disagree) to 5 (Strongly Agree). Items are divided into five factors; compulsion, distress, excessiveness, reassurance and mistrust of medical professionals. Compulsion factor measures the degree of interruption of daily-life tasks associated with repeated online searching behaviour (e.g., researching symptoms or perceived medical conditions online that hinders an individual's offline work activities). Distress factor relates to assessing the experience of negative affective states due to internet search (e.g., individuals find it hard to stop worrying about symptoms or perceived medical conditions that they researched online). Excessiveness factor pertains to the repetitive nature of online behaviour (e.g., individuals read different web pages about the same perceived condition). Reassurance factor assess the need to seek out a professional opinion (e.g., researching symptoms or perceived medical conditions online leads the individual to consult with the doctor). Mistrust of medical professional factor has all items reverse-keyed. The factor relates to the distrust towards medical services (e.g. individuals trust their general practitioner / medical professional's diagnosis rather than the online self-diagnosis). Items are summed up to obtain the total score, which ranges from 0 to 165, where higher scores represent higher levels of

cyberchondria and vice versa. Each CSS subscale has adequate internal consistency with Cronbach's alpha ranging from 0.75 to 0.95).[12] Permission was taken from the authors of the tool to use it in the current study. The scale was in English language and required 15-20 minutes to complete it.

Information concerning gender, any diagnosed medical condition in immediate family, degree of worry about one's own heath, reasons to use internet for searching health-related information, and frequency of online searching were noted using a demographic sheet. Data was collected in person using a paper-pencil version of the scale. Informed consent was taken from all participants before data collection. Participants were briefed about confidentiality of data and their right to withdraw at any point during the study.

Level of cyberchondria among individuals with no diagnosed medical condition was found out by calculating the percentiles and corresponding raw scores on CSS. Scores falling at or below 25th percentile were indicative of low level of cyberchondria, scores falling above 25th and below 75th percentile were showing moderate level, while scores falling at or above 75th percentile were indicative of high level of cyberchondria.

Data was analysed using SPSS 21. Alpha level of 0.05 was established for significance testing. Preliminary data analysis mainly consisted of reliability coefficient estimation for the total CSS scale and its subscales. Internal consistency method was used to calculate Cronbach's alpha. The data was parametric in nature. Concerning the group differences, t-test and one-way analysis of variance (ANOVA) were calculated to find out significant differences among mean values.

Results

Of the 150 subjects, 90(60%) were men and 60(40%) were women. Overall, 54(36%) subjects reported 'neutral' in response to the degree of worry about their health; 53(35.3%) identified 'easy to access' as the reason to use internet for seeking health-related information; and 75(50%) reported that their search was mostly based on the experience of symptoms (Table 1).

Table-1: Demographic Variables of the Study (n= 150).

S.No.	Variables	Categories	n (%)
1	Gender	Men	90 (60)
		Women	60 (40)
2	Diagnosed medical condition in the family	Yes	101 (67.3)
		No	49 (32.0)
3	Degree of worry about one's health	Least worried	5 (3.3)
		Seldom	20 (13.3)
		Neutral	54 (36.0)
		Often	42 (28.0)
		Extremely worried	29 (19.3)
4	Reasons to use internet	Easy to access	53 (35.3)
		Less costly	8 (5.3)
		Get information at convenient time	45 (30.0)
		Did not feel comfortable to clarify my doubts with physician	19 (12.7)
		Doctor does not provide ample amount of time	25 (16.7)
5	Frequency of searching health-related information	Daily	15 (10.0)
		Weekly	25 (16.7)
		Monthly	16 (10.7)
		Depends on the experience of symptoms	75 (50.0)
		Post consultation	19 (12.7)

Table-2: Level of Cyberchondria among Individuals Having No Diagnosed Medical Condition (n=150).

Categories	Corresponding Raw Score	Levels of Cyberchondria	n (%)
At or below 25th percentile	73 and below	Low	40 (26.66)
Above 25th and below 75th percentile	Between 74-93	Moderate	75 (50.0)
At or above 75th percentile	94 and above	High	35 (23.33)

Table-3: Mean, Standard Deviation (SD) and F-value on Cyberchondria Severity Scale and its Subscales for Degree of Worry about Health (n=150).

Variables	Lst W (n=5) Mean±SD	Seldom (n= 20) Mean±SD	Neutral (n= 54) Mean±SD	Often (n=42) Mean±SD	Ext W (n= 28) Mean±SD	*F*-value	*p*-value
CSS(t)	80.60±30.97	73.30±18.70	79.33±20.24	85.19±16.99	88.43±15.0	2.51	0.04
Subscales							
1. Com	16.40±9.29	15.20±6.38	16.76±5.81	17.69±6.24	17.76±6.24	0.650	0.62
2. Dis	21.0±8.39	17.15±5.77	19.76±6.18	21.33±5.98	21.48±6.06	2.04	0.09
3. Exc	24.80±8.87	21.70±6.53	22.46±7.40	23.0±5.64	26.97±5.94	2.63	0.03
4. Rea	15.60±9.09	15.05±6.32	16.57±6.38	18.19±4.67	20.10±4.37	3.10	0.01
5. MMP	6.40±3.28	7.55±2.89	7.31±2.96	6.83±2.85	6.34±2.75	.814	0.51

Note. CSS (t) = Cyberchondria Severity Scale total; Com = Compulsion; Dis = Distress; Exc = Excessiveness; Rea = Reassurance; MMP = Mistrust to Medical Profession; Lst W= Least worried; Ext W= Extremely worried.

Reliability coefficient Chronbach's alpha values of CSS and its subscales ranged from 0.58 (CSS, mistrust of medical professionals) to 0.91 (CSS total).

A total of 40(26.6%) subjects had low level of cyberchondria, while 35(23.3%) experienced a higher level of cyberchondria (Table 2).

Mean scores of men on total CSS were slightly higher than those of women (p>0.05). Men also scored higher on compulsion, distress, excessiveness and reassurance subscales (p>0.05 each), whereas women scored slightly higher than men on 'mistrust of medical profession' subscale (p>0.05).

Regarding differences in the degree of worry about health and cyberchondria, significant differences were found in terms of CSS total, as well as on excessiveness and reassurance subscales (p<0.05 each). Differences on compulsion, distress, and mistrust to medical profession were non-significant (p>0.05) (Table 3). Individuals who worried excessively about their health had significantly higher mean score on excessiveness (p=0.03) and reassurance (p=0.01) compared to other degrees of distress. Also, 'extremely worried' category differed signicantly from 'neutral' on excessiveness subscale (p=0.04), and 'extremely worried' differed significantly from 'seldom' on reassurance subscale (p=0.02).

Discussion

Study results reveal that a quarter of the sample reported experiencing high levels of cyberchondria, whereas the other half reported moderate levels. Mean item analysis showed that searching symptoms online often distrupt their time spent on social media or searching other useful work-related information along with their time for leisure activities. Participants reportedly experienced difficulty in controlling their ruminations regarding symptoms or perceived medical conditions that they have researched online. Literature has also documented that individuals feel more anxious, distressed and have sleep troubles after searching about their symptoms on the internet.[11] Moreover, the participants shared through their responses on CSS that they searched multiple websites for the same concern / symptoms on multiple occasions. A study has also reported that people performing online health-related searches end up comparing several sources of health information as they try to get answers to their queries. If there is any discrepancy between these sources, finding whom to trust becomes a guessing game,[18] which finally leads them to consult their medical practitioner to discuss their concerns and get assurance from them. Literature suggests that physicians reckon that the internet allows them to explain complicated phenomenon in layman terms, thereby the internet has the potential to enhance patient outcome. In contrast, physicians are also worried because patients come up with inaccurate information, which may lead to unnecessary fears about their health and mislead an accurate diagnosis.[19]

Concerning gender differences, men reported a higher mean CSS score and all its subscales compared to women except 'mistrust of medical professionals' where women scored higher compared to the men (p>0.05). Both the groups experienced similar level of cyberchondria. This is inconsistent with studies.[1,20] One possible reason for this inconsistent result could be the patriarchial society where men have a more acceptable leadership role and responsibility of the whole family.

With respect to any diagnosed medical condition in the family, no statistically significant difference was observed in both groups, although participants having a diagnosed medical condition in the family had a slightly higher mean score on cyberchondria compared to the participants having no such condition in the family. This shows that diagnosed medical condition in family was not linked with the experience of cyberchondria among individuals.

Results pertaining to the degree of worry about one's health and cyberchondia showed that individuals who were extremely worried about their health had a significantly higher mean score on CSS and its subscale excessiveness and reassurance compared to the other levels of worry. Excessiveness, which explains individuals having any perceived condition, search for the same symptoms on multiple forums or websites repeatedly, which elevates their anxiety about their perceived condition,[4,11] and reassurance that leads individuals to their general physicians when they research about their symptoms online. No significant differences were found on the subscales of compulsion and mistrust to medical professionals.

Concerning the reasons to use the internet for seeking health-related information, the majority of the participants responded that it is easy to access and they get the desired information at their convenient time. This is consistent with a previous research finding among patients with metabolic syndrome.[21] Among other reasons they shared,

individuals do not feel comfortable in discussing their doubts with the medical professional, and the doctors, according to them, don't give ample time to discuss their concerns. Previous research has also reported that limited doctor consultation time and barriers to accessing professional health services were the main reasons for using the internet for health information.[22] A few participants reported using the internet because it is less costly than the other means of information.

In addition, with reference to the frequency of search for health-related information, half of the sample reported that their search depended on the experience of symptoms. Some of the participants revealed post-consulation use of the internet to get a better understanding of their queries. One study showed that indivduals use internet for health-related information because they better understand the information provided online compared to their professionals regarding health-related concerns or illness.[23] A few research participants expressed that they search online health-related information on a daily basis. A study documented that longer-duration of online search was associated with increased functional impairment, less education, and increased anxiety during and after checking.[6]

The present study has certain limitations. It is a single-city study, limiting the scope of generalisation of its findings. The study employed a cross-sectional design, limiting its potential to draw causal inferences about the influence of internet usage in experiencing cyberchondria symptoms. A longitudinal design would better assist in establishing that link. Since cyberchondria is relatively a new area of research, sample size estimation could not be carried out based on the prevalence of the phenomenon.

Conclusion

Around half of the sample was found to be experiencing moderate level of cyberchondria, whereas one-quarter had a high level of it. Doctors / health professionals may benefit from the results by focussing on their patients who use internet as a major source of medical information.

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References

1. Fox S, Jones S. The social life of health information, Pew internet & American Life Project 2009.[Online] [Cited 2009 June 11]. Available from: URL: http://www.pewinternet.org/Reports/2009/8-The-Social-Life-of-Health-Information.aspx.
2. Barry MM, Domegan C, Higgins O, Sixsmith J. A literature review on health information seeking behaviour on the web: a health consumer and health professional perspective. Stockholm: ECDC, 2011.
3. Starcevic V, Berle D. Cyberchondria: An old phenomenon in a new guise. In: Aboujaoude E, Starcevic V, eds. Mental health in the digital age: Grave Dangers, Great Promise. New York: Oxford University Press, 2015.
4. Starcevic V, Berle D. Cyberchondria: Towards a better understanding of excessive health-related internet use. Expert Rev Neurother. 2013;13:205-13.
5. Starcevic V, Aboujaoude E. Cyberchondria, cyberbullying, cybersuicide, cybersex: "New"psychopathologies for the 21st century? World Psychiatry. 2015;14:97-100.
6. Doherty-Torstrick ER, Walton KE, Fallon BA. Cyberchondria: Parsing health anxiety from online behavior. Psychosomatics. 2016; 57:390-400.
7. Fergus TA, Russell LH. Does cyberchondria overlap with health anxiety and obsessive compulsive symptoms? An examination of latent structure and scale interrelations. J Anxiety Disord. 2016; 38: 88-94.
8. Ivanova E. Internet addiction and cyberchondria - their relationship with well-being. J of Educ Culture Society. 2013; 1: 57-70.
9. Starcevic V, Billieux J. Does the construct of internet addiction reflect a single entity or a spectrum of disorders?. Clinical Neuropsychiatry. 2017; 14: 5-10.
10. Fergus TA. Cyberchondria and intolerance of uncertainty: Examining when individuals experience health anxiety in response to internet searches for medical information. Cyberpsychol Behav Soc Netw. 2013; 16: 735-9.
11. Wang J, Wu X, Lai W, Long E, Zhang X, Li W, et al. Prevalence of depression and depressive symptoms among outpatients: a systematic review and meta-analysis. BMJ Open. 2017;7:e017173.
12. McElroy E, Shevlin M. The development and initial validation of the cyberchondria severity scale (CSS). J Anxiety Disord. 2014; 28:259-65.
13. Tan SSL. Goonawardene N. Internet health information seeking and the physician relationship: A Systematic review. J Med Internet Res. 2017; 19:e9.
14. Nazi K. The journey to online health websites: VA healthcare network upstate New York (VISN 2). J Med Systems. 2003; 27:35-45.
15. Singh K, Brown RJ. Health-related Internet habits and health anxiety in university students. Anxiety Stress Coping. 2014; 27:542-54.
16. Ahmad H, Sherwani SK, Nisar W, Ahmad T, Shah S, Ahmad W, et al. Self medication with antibiotics: General perspective among people in Peshawar and Mardan (two most populated cities of Khyber Pukhtoonkhwa Pakistan). Int J Pharm Sci Res. 2013; 4:1809 14.
17. Sheraz JK, Aman U, Shimal K, Nazeer S. Self medication with antibiotics in urban areas of Peshawar. Gomal J Med Sci. 2011; 9: 19 22.
18. Starcevic V. Cyberchondria: Challenges of problematic online searches for health-related information. Psychother Psychosom. 2017; 86:129-33.
19. Kim J, Kim S. Physicians' perception of the effects of internet health information on the doctor-patient relationship. Inform Health Soc Care. 2009;34:136-48.

20. Atkinson N, Saperstein S, Pleis J. Using the internet for health-related activities: findings from a national probability sample. J Med Internet Res. 2009;11:e5.
21. Shaji S, Sripriya S. A study on the prevalence of cyberchondriasis among patients with metabolic syndrome and its impact on their psychological health. J Diabetes Metab Disord Control. 2017; 4:90-3.
22. Shen C, Wang MP, Chu JT, Wan A, Viswanath K, Chan SSC, et al. Health app possession among smartphone or tablet owners in Hong Kong: Population-based survey. JMIR Mhealth Uhealth. 2017; 5:e77.
23. White RW, Horvitz E. Cyberchondria: studies of the escalation of medical concerns in web search. ACM Trans Inform Sys. 2009;27:23.