Research Article

Intolerance of Uncertainty and Anxiety Sensitivity as Prospective Risk Factors for Cyberchondria in Undergraduate Students

Zubaida Rashid[1], Mommana Ali Rathore[2], Imdad Ali Khushk[3], Syed Fawad Mashhadi[4], Moneeba Ahmed[5], Muhammad Shahzeb[6]

[1,2,4-6]Department of Community Medicine, Army Medical College Rawalpindi; [3]Pakistan Medical Commission, Islamabad

Abstract

Background: Researchers have discovered a vicious loop of increased physical health concerns and online medical information seeking known as "cyberchondria," despite the benefits of widely accessible medical information on the Internet. Despite proposed theoretical models of cyberchondria, research on risk factors for the development of cyberchondria is lacking in our setup. Anxiety sensitivity and intolerance of uncertainty are two potential risk factors.

Objective: This study was conducted to determine the frequency of health related internet researches i.e cyberchondria and to locate and find association between the resultant health anxiety and intolerance of uncertainty among the medical and non-medical students of different institutions of Islamabad and Rawalpindi.

Methods: A cross-sectional study was conducted on a total of 300 students of medical and engineering universities between ages of 18 and 25 from October 2019 to March 2020 by using Cyberchondria Severity Scale, intolerance of uncertainty scale and anxiety sensitivity index scale questionnaires as data collection tool. Data collected was statistically analyzed by SPSS version-22.

Results: Out of 300 participants, 169 (56.3%) students were found positive for cyberchondria and 131 (43.7%) were found negative and majority of the positive participants were medical students. Results revealed significant association between intolerance of uncertainty (0.567, $p < 0.000$) as well as Anxiety sensitivity (0.805, $p < 0.000$) and cyberchondria among the medical and non-medical students of Islamabad and Rawalpindi.

Conclusions: The current study's findings show that both Anxiety sensitivity and intolerance of uncertainty may have a role in the development of cyberchondria especially in medical students.

Corresponding Author | Dr Mommana Ali Rathore, Department of Community Medicine, Army Medical College, Rawalpindi. Email: mommanaali@gmail.com

Key words: Cyberchondria, health Anxiety, Anxiety sensitivity, Intolerance of uncertainty.

Introduction:

Individuals are conducting more health-related searches on the Internet as a result of technological advancements and increased information accessibility. People mostly prefer medical internet searches over face-to-face consultations, ostensibly because it is a more convenient method to learn about their condition. They can ask whatever inquiry they want without feeling embarrassed, and it is cost effective as well[1]. However, advances in information technology (IT) have their own drawbacks. Cyberchondria, or excessive or frequent medical internet browsing, is one of the harmful elements that causes anxiety and suffering. Hypochondria is psychological disorder, in which people worry excessively about their health even without any noticeable sickness or natural pathology. Cyberchondria (CYB) is a modified version of hypochondria which reflects increase in health anxiety due to repeated use of internet for seeking medical information[2].

It is estimated that in US more than hundred million internet users search for health information on medical websites. According to a poll conducted in US in 1998

only 50 million people were using net for searching medical information, by 2005 this number rises to 117 million and jumped to 136 million by 2005 and 160 million by 2007[3]. This trend is now not only limited to developed countries but also emerging in developing countries. Internet searches may simply add to the uncertainty because medical material can be complicated and difficult to comprehend. For the general public having a high level of uncertainty intolerance, defined as those more prone to exaggerate the probability of a bad outcome even in the case of occurrences having a minimal chance of occurring, this quest for medical information might be especially dangerous[4].

There are certain risk factors associated with CYB among them anxiety sensitivity (AS) and intolerance of uncertainty (IU) are identified in previous research[4,5,6]. For example, a patient who is suffering from "muscle twitching" may type the term into a search engine, which may return a list of diseases that are linked to that symptom. If the patient has a high threshold for uncertainty i.e IU, they will choose the most dangerous conditions from the list, such as Parkinson's disease or amyotrophic lateral sclerosis, causing increased anxiety and possibly continuing a cycle of compulsive internet searches and heightened emotional distress known as CYB[5]. The issue is thus not the symptom people have, but their propensity to get too preoccupied with typical bodily signs. Uncertainty intolerance and cyberchondria have been identified and proven to be linked to concern over one's health i.e AS. Fergus and Bardeen proposed that IU is a key predictor of increased health concern and AS, and Fergus demonstrated a link between these and cyberchondria[6].

The trend of online health searches is increasing in Pakistan as well and searching the internet before seeking medical advice is becoming increasingly popular[7]. This can subsequently lead to increased self-medication as well. Most anxiety instruments do not regard online behaviour as a significant influence; hence research data is rare about this phenomenon. As a result of a dearth of research and poor mental health, particularly among Pakistani students, very few studies have been conducted to address the rising problem of cyberchondria and its association with IU and AS. So this study was conducted to determine the frequency of health related internet researches i.e cyberchondria and to locate and find association between the resultant health anxiety and intolerance of uncertainty among the medical and non-medical students of different institutions of Islamabad and Rawalpindi who had never been diagnosed with a medical illness .

Methods:

A descriptive cross-sectional study in various educational institutions of Rawalpindi and Islamabad was conducted among medical and non-medical undergraduate students between 18-25 years of age and belonging to both genders, over a period of six months from Oct 2019 to Mar 2020. Educational institutes were selected using nonprobability convenience sampling technique. Sample size calculated was 300 using software Open Epi with confidence interval of 95%, margin of error of 5% and a predicted prevalence of 50%. Informed consent was taken from all students before completing the questionnaire.

Data were collected by administration of self-report validated Cyberchondria Severity Scale (CSS) questionnaire, prepared by McElroy and Shelvin[8]. The scale has 33 items with Cronbach's alpha of 0.94 and is scored on a five-point scale ranging from 1 ("Never") to 5 (Always) for example ("If I notice an unexplained bodily sensation, I will search for it on the internet") that are answered on a five-point scale. IU was measured by using intolerance of uncertainty scale 9 which is a 12 item self-report questionnaire, while anxiety sensitivity index scale was used to measure AS[10] which is 18 items scale also scored on five point Likert scale. The responses were added for each questionnaire to get a total score of 300 and cut off value of 150 (50%) ,with higher scores suggesting more cyberchondria. Cyberchondria, IU, and AS are not dichotomous where a patient is either diagnosed with one or the other. They are constructs, and everyone can exhibit various degrees of the disease. Chi square test of independence and Pearson's correlation were applied to find out association between variables and cyberchondria. Data were analyzed using SPSS version 22. Ethical permission (ERC/ID/120) was obtained from Ethical review board of the institute for conducting the study.

Results:

Mean age of the participants was 20 +7 years. Male participants were 141(47%) while 159 (53%) were females.

Medical students were 172 (57.3%) while non-medical students were 128(42.7%).

It was observed that 169 (56.3%) students in professional colleges of Islamabad and Rawalpindi are exposed to cyberchondria. More than half of the students (171) (57%) exhibited a moderate tendency to misinterpret anxiety-related symptoms as harmful or warning signs of approaching danger, while 21 (7%) students had severe tendency. Majority of the students 231 (77%) had moderate, 51(17%) had severe and only 18 (6%), had mild degree of intolerance of uncertainty. Details of the results are presented in Table 1.

Table1: *Frequency of Intolerance of uncertainty, Anxiety sensitivity index and cyberchondria severity among the students*

Items	Number of students N=300	Percentage
Intolerance of uncertainty (Mean score =33.2±7)		
Mild (1-20)	18	6.0
Medical	16	5.3
Non-Medical	02	0.7
Moderate (21-40)	231	77.0
Medical	124	41.3
Non-Medical	107	35.7
Severe (41-60)	51	17.0
Medical	32	10.6
Non-Medical	19	6.4
Anxiety sensitivity index (Mean score =29.2 ±13.6)		
Mild (1-24)	108	36.0
Medical	82	27.3
Non-Medical	26	8.7
Moderate (25-48)	171	57.0
Medical	81	27.0
Non-Medical	90	30.0
Severe (49-75)	21	7.0
Medical	09	3.0
Non-Medical	12	4.0
Cyberchondria severity scale (Mean score = 79.9± 21.3)		
Mild (1-55)	48	16.0
Medical	37	12.3
Non-Medical	11	3.7
Moderate (56-110)	235	78.3
Medical	123	41.0
Non-Medical	112	37.3
Severe (111-165)	17	5.7
Medical	12	4.0
Non-Medical	05	1.7

No significant association was found (p=0.083) between gender of participants and cyberchondria while

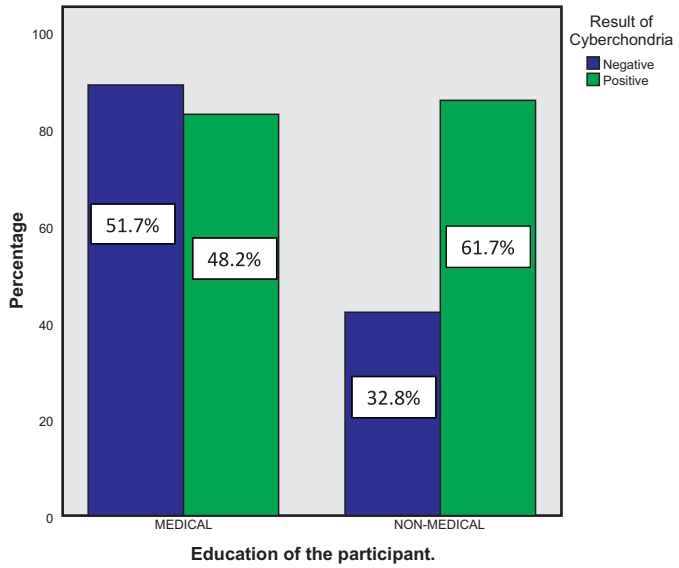

Figure I: *Education category and cyberchondria Frequency*

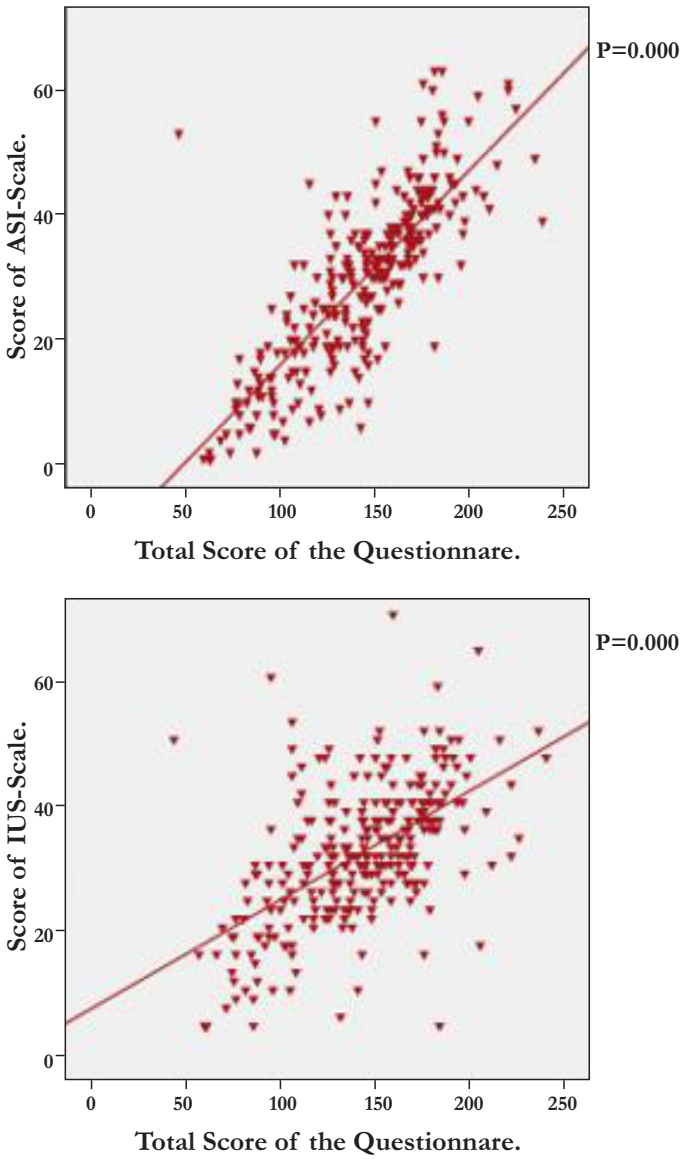

Figure II: *Correlation of ASI and IUI with cyberchondria*

education (Medical, Non-medical) was significantly (p =0.001) associated with it (Fig 1). Pearson's correlation applied on total questionnaire score and scores of IU and AS scales. Results revealed significant association between IU (0.567, $p < 0.000$) and cyberchondria as well as between AS (0.805, $p < 0.000$) and cyberchondria as shown in (Fig 2).

Discussion:

Online information seeking is one of the major factor that causes different anxiety issues if the concern person does not have the accurate knowledge. This study discovered that majority of students (78.3%) were having moderate level of cyberchondria, which was consistent with results from Hardeman et al. (2015), who discovered that more than 50% of medical students may be susceptible to high levels of worry[11]. Searching the internet for health information has a number of drawbacks, including wasting money on unneeded prescriptions based on what is found on the internet, trouble understanding medical jargon, and erroneous or misleading information, to name a few, all of which may lead to anxiety disorders. At present very little is known about this condition especially in students. So this study identifies the association of cyberchondria in anxiety sensitivity and intolerance of uncertainty among the students of medical and non-medical fields.

Cyberchondria is the behavioral issue and is a prerequisite for the issue of Anxiety Sensitivity (AS)[6]. Anxiety sensitivity (AS) and intolerance of uncertainty (IU) were found out to be significantly related to the general CYB factor[12]. The results from the current study coupled with the findings from Fergus suggest that individuals with elevated IU are at increased risk for distress associated with CYB[12]. Even though, increased AS and high IU may lead to online medical information exploring for different concerns (i.e., incorrect interprentations of the consequences of physiological experiences in elevated AS and efforts to clear up the mystery regarding the sources of body experiences in those with high IU levels). Since people with raised AS interpret tension related real sensations as hazardous, it is conceivable that these people show expanded online clinical data looking for trying to assuage worries about the inceptions of uneasiness related real sensations. The current findings point to the potential role of medical information exposure in the aetiology and maintenance of AS, as well as the risk of developing anxiety disorders later on in life[13].This may also lead to self-diagnosis as well as self-medication issues which is very common in medical students[14]. This may also result in mistrust on doctors and can interfere with doctor-patient relationship as well[15]. Given the significant link between CYB and health anxiety, it's reasonable to conclude that frequent health-related online searches exacerbate fixation and increase the quantity of online searches for medical information. Helbiglung and Peterman thought that feeling safe is the most reliable sort of safety behaviour, and that when it is missing, anxiety rises, leading to more online medical inquiries. This creates a vicious spiral, trapping individuals in a cyberchondriac state[16].

If we compare our study with previous studies we realized that individuals with elevated IU are at increased risk for distress associated with cyberchondria. Fergus confirmed that intolerance of uncertainty plays a mediation effect in the severity of online searches and anxiety[12]. People who are more capable of bearing intolerance make more internet searches to reduce their uncertainty and suffer less anxiety because there is confusion regarding the source of bodily emotions. Their anxiousness, on the other hand, does not subside because these online searches never yield reassuring answers and instead offer a variety of interpretations for a single symptom. It encourages the quest to continue, perpetuating the vicious spiral of searching and anxiety. When doing an online medical search, people who have a lower tolerance for uncertainty experience higher anxiety[17].

The study results showed a significant association of CYB and education groups. The frequency of CYB was more in medical students as compared to non-medical students. A systemic review as well as another study conducted in Indonesia also revealed the same results, finding more frequency of hypochondriac symptoms among health science students[18,19]. These findings indicated that medical students may be prone to high levels of anxiety, probably because of their study course being tough as it is , which may present itself in their search for health information in the form of cyberchondria.

Our research found that, while the overall CSS score did not differ significantly between genders, female students were more likely to look for information online

after experiencing an unexplained symptom in their bodies, and to seek medical advice from doctors or other medical specialists after discovering unsettling internet material. The results are in line with other studies in which no significant gender difference was found for CYB[20,21]. However another study found difference of online health searches between males and females[22].

Although cross-sectional data allows us to look at the unique links between prospective risk factors and cyberchondria, it does not allow us to establish temporal precedent in order to establish AS and/or IU as actual risk factors. Future study should identify whether increased AS and/or IU are just contemporaneous indicators of heightened cyberchondria, or if elevated AS and/or IU precede elevated cyberchondria.

Conclusions:

Our study concluded that 56.3% of student network in professional colleges of Islamabad and Rawalpindi are exposed to cyberchondria. Cyberchondria will become an alarming trend which reflects the dependence of students on internet-based information whether true or false instead of health care sector to sought out their health issues which in turn will disturb their fitness and quality of life if not controlled timely. Therefore, these health effects cannot be ignored. Timely prevention and manipulate measures will be performed through creating attention amongst students because all of the health effects can be averted by means of simple modification in our behavior. We advocate raising awareness about cyberchondria and measures to reduce it, as well as encouraging people to seek medical assistance using alternate methods.

Ethical Approval: Given

Conflict of Interest: The authors declare no conflict of interest.

Funding Source: None

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