

Prevalence Of Cyberchondria And Its Relation To Health Anxiety Among Physical Therapy Students In Sukkur Sindh.
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Abstract

This research seeks to find the level of cyberchondria and how it connects with health anxiety in physical therapy students of Sukkur, Sindh. Excessive online health searching, known as cyberchondria, is often related to greater health anxiety in students who learn or work in the medical field. Cross-sectional quantitative data were obtained from 265 physical therapy students using official scales: the Cyberchondria Severity Scale (CSS) and the Short Health Anxiety Inventory (SHAI). The study found a statistically real, though moderate, relationship ($r = 0.112$, $p = 0.028$) between cyberchondria and health anxiety. Further analysis through chi-square confirmed that there was a significant relationship between the severity of both variables ($p < 0.001$). These results indicate that extensive use of the internet for health topics may increase students' stress and worries. It emphasizes that relevance digital literacy, mental health services and special measures are needed to curb the mental health problems caused by cyberchondria among students.

Keywords: Cyberchondria, Health Anxiety, Stress

Introduction

Internet consultations have become popular especially with the students and the young people who are computer literate. Cyberchondria is a phenomenon that relates to excessive and repetitive searching for health-related information over the internet and is gradually emerging as a major problem because students have easier access to the internet. This state relates to the increase of health anxiety, and people tend to overestimate the condition of their health and, therefore, increase the worsening of the psychological and emotional state of health. specific disease preoccupation is a cognitive-behavioral disorder involving the preoccupation with having a particular medical disease even in the absence of any physical signs. Students in physical therapy may be particularly susceptible to becoming victims of cyberchondria due to the amount of health-related knowledge they obtain while in school. Cyberchondria refers to the obsession of looking for symptoms of a disease on the internet with the result being that one becomes more anxious about their health. The condition is like hypochondria which has been referred to as Illness Anxiety Disorder in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) but has an aspect of modernity in the form of use of internet. There are studies that state that 50% of those who engage in excessive health related searching display health anxiety, and contrary to any expectation this search does not help bring down the levels of anxiety but increases it (McElroy & Shevlin, 2014; Starcevic & Berle, 2013). Studies point out that roughly 75% of internet users seek health information and a significant number of the people develop increased anxiety and distress (Bajcar et al., 2019). It is therefore not surprising that the

incidence of cyberchondria is not small and that its effects on students, especially the health profession learners including physical therapy students, remain a significant unexplored area. Cyberchondria affects physical therapy students and are in a different and distinct position than other people. Due to the nature of their working environment, they have a lot of knowledge of illnesses and may be more likely to get Health anxiety. Possible way is that awareness of their symptoms and learning about the symptoms of miscellaneous diseases enhances their sense of health concern, thereby contributing to growth of health anxiety. It has been established that when anxious health people find themselves in such a situation, they are inclined to perceive normal physiological sensations in terms that are severe (Salkovskis et al., 2002). When combined with the repeated tendency of searching for medical symptoms, this leads to a new pattern of anxiety and compulsive tendency to search for symptoms found in cyberchondria. Research on cyberchondria is recent, albeit it has been found associated with several forms of anxiety encompassing Generalized Anxiety Disorder (GAD), Health Anxiety Disorder and Obsessive-Compulsive Disorder (OCD) in the past (McElroy). Research indicates that cyberchondria is moderately related to obsessive-compulsive disorder (OCD); thus, people with obsession-prone behaviors will spend a lot of time searching for health information on the internet (Fergus, 2014). For instance, cyberchondria was established to have correlation with obsessive-compulsive features such as contamination, harm, and optional thoughts as stated by (Norr et al., 2015). Furthermore, people with high level of health anxiety engage in compulsive responses including checking, reassurance-seeking, and avoidance that help in the continuation and enhancement of anxiety (Starcevic & Berle, 2013). Though the use of the internet for health information may not always be a good thing since people can sometimes use any information that can be as useful and reliable health information as long as it gives them a better understanding of the symptoms or the diseases that they are suffering from. There are some reports that the Internet can put patients in the position of power by giving them the information which is needed to make correct decisions about their health and treatment (Huberty et al., 2013). However, the negative effects of internet use, especially when one diagnoses themselves online, are disregarded. Paradoxically, instead of decreasing the level of anxiety, it is actually on the rise, this time, when people search for the information about health in the internet and this is mostly true for people with a predisposition to anxiety (Baumgartner & Hartmann, 2011). Similarly another researcher also has stated that persons having higher levels of health anxiety and obsessive-compulsive symptoms are likely to have higher levels of distress when they seek medical information online (Fergus, 2014). Hypochondria furred by CMC is an even more paradoxical effect the, in which seeking information results in greater rather than lesser anxiety. Cyberchondria is also related to Hypochondria, which is now called illness anxiety disorder. This is because, unlike ordinary health anxiety, cyberchondria has one more component of internet search. Another researcher also identifies hypochondria as a severe medical condition of the mind, and popular opinion is that cyberchondria is also like that (Starcevic & Berle, 2013). Research has also established that cyberchondria and health anxiety are highly related with the former affecting those who are most vulnerable to health anxiety and are most likely to perform excessive health searches on the internet (Baumgartner & Hartmann, 2011). This has large implications for physical therapy students because of this they are probably more conscious of health conditions through their learning and therefore predisposed to the development of health anxiety and cyberchondria. In addition, having health information available on the internet indicates that people can search for medical information at will and can be addicted to it. Working with the above-stated theories, findings show that those with cyberchondria do not stop searching even when experiencing discomfort. However, they go on searching with the aim of try to reduce their anxiety which in fact is counterproductive (Doherty-Torstrick et al., 2016). Such a cycle of compulsive searching and raised anxiety is inherent in cyberchondria and in

obsessive-compulsive disorder (Fergus & Russell, 2016). Cyberchondria and health anxiety are known to share a significant correlation according to the existing data. Lastly, Health anxiety is characterized by being overly conscious of one's health or having irrational beliefs of having a severe disease or getting one (Salkovskis et al., 2002). Excess of health-related internet searches may also become a means of coping among people with high level of health anxiety, as they are likely to develop an even higher level of anxiety (Baumgartner & Hartmann, 2011). This is especially useful for physical therapy students as they often engage with medical concepts and can be at risk to overdeveloped health anxiety. Research has also revealed that compared to others, students in health care areas such as physical therapy have higher rates of developing health anxiety due to contact with diseases and signs (Bajcar et al., 2019). Besides health anxiety, the presence of cyberchondria has also been associated with other forms of anxiety and mental health problems. For instance, people with GAD spend more of their time in performing health-related cyber-surfing; therefore, experience elevated levels of anxiety (Doherty-Torstrick et al., 2016). Likewise, people with OCD exhibit compulsive features like excessive check, and the need for reassurance, which are some of the features of cyberchondria (Fergus & Russell, 2016). Such studies indicate that cyberchondria should be regarded as a spectrum of anxiety disorders rather than a sign of mere health anxiety. Since cyberchondria has become more rampant, especially among students, there is need to assess its effect on physical therapy students. Now during their student years physical therapy students should be aware of the risks of engaging in health-related internet searching and an increase in their health anxiety. Furthermore, it would be useful for teachers of physical therapy, as well as other healthcare professionals, to know the extent of the problem of cyberchondria among students and to know ways/means on how to prevent or lessen its deleterious impact on such learners' overall health and appropriate use of the internet.

1.2 Significance of the study:

The importance of this research is based on understanding the rate of cyberchondria amongst physical therapy students and its association with health anxiety. Being students of physical therapy, the application of knowledge about health implies regular exposure to medical information on health matters which could make the students become prone to developing health anxiously and therefore frequently use the internet in seeking health-related information, although excessively. It is important to increase awareness of cyberchondria in this group because it is likely to affect the mental wellbeing of the people as well as their academic achievements. Hence, through exploring the correlation between cyberchondria and health anxiety, this study is expected to increase understanding of the psychological barriers that students of physical therapy encounter. This is important because health anxiety has negative implications on an individual's mental health as it might cause stress, anxiety and even develop depression. In addition, knowledge of the results of the present study may help in designing intervention programs designed to decrease cyberchondria and improve the healthy Internet use among students in the health care professions. Moreover, this study could advance the existing knowledge of cyberchondria and health anxiety with the results reflecting the extent to which physical therapy students experience these concerns, given that this population has not been investigated in-depth in the literature.

Objectives of the Study

The aim of this study is:

1. To determine the prevalence of cyberchondria among physical therapy students.
2. To explore the impact of cyberchondria on health anxiety in physical therapy students.

3. To explore the relationship between cyberchondria and health anxiety in physical therapy students.

Research Hypothesis

Hypothesis Null hypothesis (H0): There is no significant association between cyberchondria and health anxiety among the physical therapy students.

Alternative hypothesis (H1): There is significant association between cyberchondria and health anxiety among the physical therapy Students.

Literature Review

2.1 Introduction to Cyberchondria

Cyberchondria is a more recent construct in psychology which characterizes excessive or compulsive search for health-related information on the internet that leads to worsening health anxiety rather than diminishing it. It is an amalgamation of the words, cyber and hypochondria, which was popularized in media as well as psychological articles in the early 2000s. Although information-seeking behavior is acceptable and functional today, cyberchondria refers to deterioration of one's health because of these searches rather than improvement (Starcevic et al., 2020)

Cyberchondria is described as having its roots in the family of anxiety disorders where it is related to OCD and health anxiety. That is why, psychological factors that have been linked to its development include intolerance of uncertainty, metacognitive beliefs, and confirmation bias; whereby an individual selectively attends to selectively seek and process alarming information (Rostovzeva et al.). Besides, the psychological variables such as negative affectivity and stress coping failures are also attributed to these behaviors (Thomas, 2023).

Another important advancement in approaching cyberchondria was the construction of CSS to assess the objective and subjective characteristics of a certain type of behaviors, level of compulsion, excessiveness, distress, and the degree of seeking reassurance on the Internet-connected health-related searches (Mathes et al., 2018). Since then, the scale has been validated in its different versions and translations including for different cultures and various population groups.(Deyneka et al., 2023).

This can be attributed to the fact that with the onset of COVID-19 pandemic, people spend lots of their time on cyber activities including seeking health information online. This was the period when the signs of cyberchondria can be seen in enhanced presentation among health care students and workers, and it was confirming increased psychological prevalence in such risky profiles (Rasouli et al., 2022). For example, those of the students who received an increased amount of information on health, were more likely to perceive minor symptoms as indications of a severe illness characteristic of cyberchondria (Szawloga et al., 2024).

Despite this emergence in the last decade, cyberchondria can be characterized as a relatively new construct with scarce data from longitudinal investigations and experimental trials. However, it has been pointed out that 'the concept needs better differentiation from other disorders, and that the participant samples mainly consist of university students' (Zheng et al., 2021).

Hence it can be established that cyberchondria is a multifaceted and dynamic disorder that mixes online behavior with that of anxiety disorders. Understanding its roots and dynamics will therefore be vital towards establishing potential solutions and preventing the expansion of this phenomenon affecting general mental health and medical facilities.

2.2 Health Anxiety and Its Psychological Correlates

Health anxiety is defined as a persistent and excessive worry about having or developing a serious illness, even in the absence of medical evidence. It lies along a continuum, from mild concern to Illness Anxiety Disorder (formerly hypochondriasis) as classified in the DSM-5.

Health anxiety becomes problematic when it causes significant distress or interferes with daily functioning (Starcevic et al., 2020).

Common psychological correlations of health anxiety include intolerance of uncertainty, negative metacognitive beliefs, and catastrophic interpretations of bodily symptoms. These cognitive distortions cause individuals to misinterpret harmless physical sensations (e.g., a headache) as signs of serious illness (e.g., brain tumor) (Fergus & Russell, 2016). As a result, affected individuals often seek reassurance from medical professionals, friends, or the internet. More recent studies have established a bi-directional correlation between health anxiety and cyberchondria, as such searching online only intensifies negative thoughts and increases anxiety instead of providing comfort (Varma R, 2023). Health anxiety also presents with obsessions like checking and seeking reassurance hence a feature of obsessive-compulsive disorder (Yang et al., 2022).

SHAI stands for Short Health Anxiety Inventory which is widely employed in the current research and is a valid assessment of health anxiety. It splits between the cognitive and affective aspects of health worry, such as illness perceptions, longevity and length of the worry and body focus (Salkovskis et al., 2002).

Notably, students in the healthcare area such as in medical or physiotherapy courses have higher health anxiety than others. Due to the increased exposure they get to medical content, they may end up misinterpreting some of the symptoms hence causing anxiety (Bhaumik & Nayok, 2021). These students might search the internet for their health more often and consequently, there is a feedback loop between cybercentric and health anxiety (Vujić et al., 2022).

The presence of health anxiety also has wider consequences by the very nature of health-related concerns. This exacerbates the use of health care services, frequent attendance, and the use of diagnostic procedures which exert pressure on the health care system (Mathes et al., 2018). In addition, higher levels of health anxiety may lead to rigorous avoidance, avoidance behaviors such as avoiding seeking medical help because of fear whenever they are sick, for example during pandemic as in the case with COVID-19.

Therefore, it can be concluded that health anxiety is a mechanism that underlies and drives cyberchondria, as well as a factor that can be addressed to explain elevated level of excessive health-related activities on the Internet. It is important to comprehend the ways that pass time to implement appropriate screening tactics, as well as cure techniques.

2.3 Association Between Cyberchondria and Health Anxiety

It can, therefore, be concluded that cyberchondria is strongly related to health anxiety from research studies. Another type of Internet-related OCD is cyberchondria, where the person spends much time searching for information on diseases and symptoms and where such a search only raises an anxiety level even higher. According to the present work, health anxiety can be referred to as being a person's concern with having a serious illness or being at risk of developing such an illness, without being proven medically.

A cross-sectional study was conducted in Turkey with 386 participants to the correlation between health anxiety is positively related to cyberchondria ($r= 0.514$) In this study, it was made clear that high Health anxiety makes people turn to the internet for solutions only to make their condition worse (Soyler et al., 2023).

A study followed 462 community members and determined that cyberchondria was correlated with health anxiety but was different from it, and it made the participants seek more medical attention and reduced their quality of life (Mathes et al., 2018)

A research study was carried out among university students in India employing a cross-sectional survey employing the CSS-15 and identified that health anxiety and documented past health issues were significantly correlated with cyberchondria scores. This is in line with the belief that

patients who are sensitive towards health practices are more likely to be depressed with search results on medical apps (Gandla et al., 2021).

Similarly, another study using Interpretative Phenomenological analysis revealed that health anxious people embraced the internet as a source of comfort and information. However, these behaviors proved to provide them with short-term comfort and long-term resultant anxiety, such that, the cycle thereby countenanced their health anxiety (McManus et al., 2014).

In conclusion, overall, the current research supports the hypothesis and indicates the existence of bidirectional relation between health anxiety and cyberchondria. Higher levels of health anxiety will lead to more excessive health-related searching on the internet, which is likely to elevate the anxiety level further.

2.4 Cyberchondria Among Health Profession Students

Cyberchondria primarily refers to widespread hypochondria among the students taking medical and health-related courses. Due to being in contact with disease-related information as well as the performance pressure on them they are likely to develop anxiety and therefore turn to other unhealthy activities like increased use of the internet for health-related information.

A cross-sectional study using 400 medical students found the prevalence of cyberchondria as moderate 66% and severe 6%. This was higher amongst the female students and the ones who had preexisting health conditions. According to the study, increased awareness of diseases is a potential negative impact of exposure to medical knowledge (Gandla et al., 2021).

Similarly, in a study involving 874 students of faculties of health sciences, it was revealed that the level of cyberchondria rises with the frequency of checking symptoms on related websites. The students in their medical field displayed significantly high levels in dimensions such as distress, reassurance-seeking, and mistrust of professionals as noted in the study by (Bati et al., 2018).

A cross-sectional survey study conducted in Pakistan among 300 students from medical and engineering disciplines and identified that 56.3% of students and the medical subjects had cyberchondria symptoms. The study established two antecedents that may have been influential, namely intolerance of uncertainty, and anxiety sensitivity (Rashid et al., 2022).

In another perspective, pointed out that there is an agreement between cyberchondria and “medical student syndrome” which refers to a situation where students start developing diseases they read about. The authors emphasized that curriculum level interventions should be used to enhance such coping mechanisms and health literacy (Aulia & Pratiti, 2022).

In closing remarks, one is therefore able to conclude that, indeed, healthcare students are at the higher risk of developing cyberchondria because of these vices of high exposure to disease information, high stress levels, and lack adequate coping mechanisms. Currently, there is a heightened awareness for mental health support and education on the use of digital health in training.

2.5 Impact of Cyberchondria on Mental Well-being and Academic Performance

Cyberchondria affects mental status and impacts the students’ academic performance and overall activities. They include anxiety, loneliness, inability to focus as well as reliance on internet sources, which greatly hampers learning among students.

A study revealed that cyberchondria is associated with confirmation bias, stress, and increased anxiety. They concluded that affected individuals show impaired coping mechanisms and frequent healthcare utilization, which disrupts academic and personal life (Varma R, 2023).

Similarly, a study examined the role of conspiracy mentality in mediating cyberchondria and found that higher cyberchondria levels were linked with decreased psychological well-being and greater use of pseudoscientific practices, affecting emotional stability and critical thinking (Vujić

et al., 2022).

A cross-sectional study in Oman, revealed a positive correlation between cyberchondria and psychological distress ($r_s = 0.373$), and a similar link with intolerance of uncertainty. The study suggested that this distress impacts productivity and learning outcomes (Dameery et al., 2020).

A study conducted on nursing students during the COVID-19 pandemic and reported high levels of cyberchondria-related distress, especially in subscales like compulsive online searching and reassurance-seeking. This distress was associated with avoidance behaviors and poor mental health—both detrimental to academic performance (Rasouli et al., 2022)

In conclusion, the psychological burden of cyberchondria negatively affects emotional well-being and academic outcomes. Targeted strategies, including mental health awareness, information literacy training, and coping skills education, are essential in academic settings.

2.6 Research Gap

Although cyberchondria has received growing attention in psychological and behavioral health research, there remains a significant gap in understanding its prevalence and psychological impact among physical therapy students. A subgroup of healthcare students frequently exposed to medical information. Most existing studies have focused on general populations, medical students, or nursing students, with limited data on how cyberchondria manifests specifically in physical therapy contexts. Furthermore, while several studies have established a link between health anxiety and cyberchondria, there is insufficient exploration of mediating factors such as academic stress, digital literacy, or coping mechanisms within student populations. Another gap lies in the lack of regional data, especially from South Asian or developing countries, where digital health information access may differ significantly in quality and accessibility. Lastly, most studies are cross-sectional, limiting the ability to draw causal inferences. This study aims to address these gaps by evaluating the prevalence and correlation of cyberchondria and health anxiety in physical therapy students, using validated psychometric tools. The findings can provide targeted insights for psychological counseling and health information education interventions specific to allied health students.

2.7 Summary of Literature Review

The literature indicates that cyberchondria, characterized by excessive online health-related searching, is strongly associated with health anxiety, leading to emotional distress, functional impairment, and increased healthcare usage. The condition is exacerbated by factors such as intolerance of uncertainty, negative metacognitive beliefs, and confirmation bias, particularly among students in health-related disciplines. Studies show that medical and nursing students exhibit moderate to high levels of cyberchondria, influenced by their academic exposure to diseases and symptoms. In such groups, cyberchondria often correlates with higher levels of anxiety, reassurance-seeking behaviors, and poor coping mechanisms. Research further reveals that cyberchondria negatively affects mental well-being, causes academic distractions, and can result in overutilization or mistrust of health services. However, few studies have focused specifically on physical therapy students, despite their frequent engagement with clinical scenarios and health education. Furthermore, interventions addressing the digital health behavior and mental health outcomes in this group remain underexplored. Overall, the literature affirms a robust link between cyberchondria and health anxiety, particularly in student populations, while highlighting the need for targeted research among specific academic groups and preventive strategies within educational institutions.

Methodology

1. Study Design

This study employed a cross-sectional quantitative survey design, which is widely used in public health and behavioral research to measure the prevalence of conditions or behaviors and their associations at a specific point in time. This design is appropriate for the current study, which seeks to explore the prevalence of cyberchondria and its association with health anxiety among physical therapy students.

A cross-sectional design allows researchers to collect data from a large population within a limited timeframe and is ideal for hypothesis testing in non-experimental settings. It supports the positivist paradigm by focusing on observable, measurable variables and Analyzing them through statistical techniques (Adhikari, 2021; Sinha et al., 2018). Quantitative cross-sectional surveys are particularly effective for mental health research where validated instruments can quantify abstract constructs like anxiety or compulsive online behavior (Sadiq et al., 2024).

2. Study Setting

The research was conducted in physical therapy institutes located in Sukkur, Sindh, a region in Pakistan known for its growing educational infrastructure in health sciences. The target population consisted of undergraduate physical therapy students, representing a relevant group due to their academic background and frequent engagement with health-related information. Conducting the study within academic institutions enabled structured distribution of the survey tools and ensured that participants shared a common context and baseline exposure to digital health platforms.

3. Duration of the Study

The duration of the study was four months, starting from January 2025 to April 2025. This timeline included initial preparation (questionnaire adaptation and pilot testing), data collection (both online and paper-based formats), and preliminary data cleaning. A defined short-term duration, typical of cross-sectional research, allows researchers to obtain a “snapshot” of behavioral patterns and psychological states without requiring longitudinal tracking

4. Sample Size

The study involved a total of 265 participants. The sample size was determined using Cochran’s formula (1977), which is widely accepted for calculating sample sizes in quantitative research with finite populations. The formula is suitable when the objective is to estimate proportions with a defined level of precision.

Cochran’s Formula:

$$n_0 = \frac{Z^2pq}{e^2}$$

Source: <https://www.statisticshowto.com/probability-and-statistics/find-sample-size>

Where:

- **Z = 1.96** (for a 95% confidence level)
- **p = 0.5** (assumed population proportion for maximum variability)
- **q = 1 – p = 0.5**
- **e = 0.05** (margin of error)

$$n_0 = (1.96)^2 * (0.5 * 0.5) / (0.05)^2$$

$$n_0 = 384.16$$

Step 2: Apply Finite Population Correction (N = 850)

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

n= 265

So, the sample size is 265

Given a total population (N) of 850 students, the calculated sample size (n₀) was adjusted using the finite population correction formula to obtain an accurate and manageable participant number for the study. In addition, this study used Cochran formula because it is used to avoid oversampling or under sampling (Farhati, 2024) (Qing & Valliant, 2025).

5. Sampling Technique

This study used convenience sampling technique to reach the participants who are doing physical therapy in five different universities in Sukkur. In behavioral sciences and medical research, convenience sampling is often used instead of randomization when investigators cannot easily follow the latter (Suen et al., 2014). It is an easy way for researchers to reach out desire sample and collect desired data (Obilor, 2023).

Recently, COVID-19 outbreaks have caused researchers to use convenient sampling in psychological and health-related areas involving college students (Zhou et al., 2022). The lack of precisely equal selection probability is addressed, as this permits us to monitor changes such as cyberchondria in a particular group of students (Kotrlik & Higgins, 2001).

6. Sample Selection

The criteria were specified to guarantee the study focused on the goals and produced consistent records.

- **Inclusion Criteria:**

- Any student enrolled in a physical therapy program in institutions recognized in Sukkur, Sindh.
- Willing to participate in the study by providing informed consent of their own free will.

- **Exclusion Criteria:**

- Students from non-physical therapy disciplines (e.g., MBBS, nursing).
- Individuals with previously diagnosed clinical anxiety disorders or those currently under psychiatric medication.

The authors wanted to understand the role of cyberchondria and health anxiety in the group, so they applied standards to help reduce outside influences and increase accuracy of the study (Ciułkowicz et al., 2022).

7. Data Collection Instruments

For this study, the Cyberchondria Severity Scale (CSS) and the Short Health Anxiety Inventory (SHAI) were used.

a) Cyberchondria Severity Scale (CSS)

The CSS-SF is a shortened version of the original 33-item scale, focusing on four dimensions: compulsion, distress, excessiveness, and reassurance seeking (McElroy et al., 2019). It consists of 12 questions scored on a five-point scale (1 is never and 5 means always). The more answers you choose, the more your cyberchondria may be increasing.

Studies on the internal consistency of the CSS-SF suggest it is very reliable ($\alpha > .90$). Moreover,

its factors have been confirmed with samples from Saudi Arabia and Poland (Alshaibani, 2023; Bajcar et al., 2019).

b) Short Health Anxiety Inventory (SHAI)

The SHAI assesses concerns about your health separate from any health problems you may have. There are 18 items in the test, giving four choices from 0 to 3 that focus on the cognitive, emotional and behavioural side of health anxiety. Items assess concerns such as fear of illness, preoccupation with bodily sensations, and reassurance-seeking behaviour.

Scoring is interpreted as follows:

- <17 = No health anxiety
- 18–24 = Mild health anxiety
- 25–30 = Moderate health anxiety
- 30 = Severe health anxiety

The SHAI has shown excellent reliability (Cronbach's $\alpha = .93$) and has been widely used in health and clinical psychology research (Zwierzikowski et al., 2024).

Both tools are included in **Appendix I** of this document, and the full list of items was approved by the supervising committee.

8. Data Collection Procedure

a) Method

A hybrid data collection method was used, combining both online surveys (Google Forms) and paper-based questionnaires to maximize participation. Participants received an explanation of the study and signed an informed consent form before responding. Data collection was conducted anonymously to reduce social desirability bias and enhance honest reporting.

b) Identification of Study Variables

- **Independent Variable:** Cyberchondria (measured using CSS scores)
- **Dependent Variable:** Health anxiety (measured using SHAI scores)

c) Tools Used

The data collection tools included:

- CSS-SF and SHAI questionnaires
- A demographic information sheet collecting age, gender, and year of study

These tools were selected based on their theoretical robustness, reliability, and past use in student populations to assess cyberchondria and health anxiety (Daniali & Eskandari, 2022; Zwierzikowski et al., 2024).

9. Data Analysis

The surveys' results were imported and studied using IBM SPSS Statistics Version 21, a popular program in health and behavioral research. The accurate calculation of descriptive and inferential statistics by the software made the results more dependable (Lay & Cho, 2019).

Data from the participants' demographics and scores on the CSS and SHAI were summarized using frequencies, percentages, means and standard deviations.

To check the relationship among the study variables, Pearson's correlation coefficient was used. It looks at how strong and which way cyberchondria and health anxiety are connected, as they are both continuous variables. This technique is commonly used in health psychology research as it is sensitive to detecting patterns within psychosocial information (Meirelles, 2014).

A Chi-square test was run to determine if there were links between demographic aspects (such as gender and year of study) and health anxiety. The non-parametric approach helps spot differences between behavior groups and analyses their frequencies (Valarmathi et al., 2024).

The statistical criterion was chosen as $p < 0.05$, together with a 95% confidence interval, to check that the results hold up against standards in research (Schober & Vetter, 2019).

10. Ethical Considerations

All ethical rules for research conducted on humans were followed in this study. The Institutional Research Ethics Committee gave permission for the study before data was collected. An informed consent form explaining the study was given to all participants for them to fill out as they chose.

Anonymous information was gathered, and confidentiality was tightly upheld by ensuring that the information was only available to the research team behind a password. Those taking part could leave whenever they chose, without facing any penalties.

They are based on the principles mentioned in research ethics writings and institutional rules (Chowdhury et al., 2018). Psychological risk was reduced by using surveys that were anonymous and non-invasive and safe for similar groups of people.

Results and Analysis

Frequencies and Descriptive Statistics

The frequency tables are given in Appendix 2. The demographic data from the study sample provide helpful information about the students who took part in the survey. 265 people participated and their gender distribution was nearly the same, with 52.5% saying they were male and 47.5% saying they were female. Reducing bias makes sure that mental traits related to health anxiety and cyberchondria do not differ among men and women. The ages of participants were spread from 18 to 24 years, with an average of 20.91 years and a standard deviation of 2.01. Since this often happens with undergraduates, it means students are at similar development stages and can guide our decisions regarding searching for medical help online. Most of the samples (18.9%) were 22 years old, with those aged 18 and 20 in second place, which once again highlights the youthfulness of the participants.

The final year and fourth year had the highest numbers of students, at 22.6% each. Results can be applied to all years in the program and make it possible to observe changes as students experience different levels of academic stress. For example, Study found that a student's year of study can have an effect on both cyberchondria and anxiety, so considering these differences helps explain the extent of these problems in student populations (Kurcer et al., 2022).

Descriptive Statistics of Core Variables

Cyberchondria Severity Scale (CSS) and Short Health Anxiety Inventory (SHAI) scores for the respondents ranged a lot, showing that their online health searches led to different anxieties. Although the mean and standard deviation were not part of the images, the distributions seemed to be approximately normal. Therefore, I conducted a Pearson correlation which relies on normality. Both CSS and SHAI have support in previous studies for use in academic contexts. These scales are validated and widely used to assess how frequently individuals search for health information online (CSS) and the extent of their anxiety about health (SHAI) (Gandla et al., 2021; Hsu, 2024).

These results set a foundation for correlation and categorical analyses, helping to determine whether students with high health anxiety are also those engaging more often in online health information seeking—an increasingly common behaviour in the post-COVID digital health landscape.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Gender	265	0	1	0.48	0.5
Age	265	18	24	20.91	2.01
Valid N (listwise)	265				

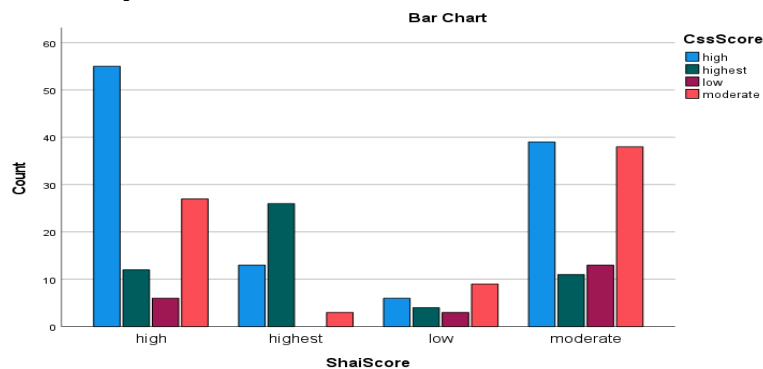
Correlation Analysis

The Pearson correlation between CSS and SHAI total scores was found to be $r = 0.112$, with a p-value of 0.028. Although this indicates a weak positive correlation, the relationship is statistically significant at the 0.05 level. This means that, in this sample, students who scored higher on the cyberchondria scale also tended to score higher on the health anxiety scale, albeit modestly.

This finding aligns with a large body of existing research. A meta-analysis found a strong overall correlation between cyberchondria and health anxiety, with an average correlation coefficient of 0.62 across multiple studies (McMullan et al., 2019). While your study's correlation is weaker, it still reinforces the notion that health-related online behaviours and underlying anxiety are interconnected. Moreover, the weak correlation may reflect variability in the psychological resilience, media literacy, or academic background of the sample, which other studies like study of Rashid also found to moderate the relationship (Rashid et al., 2022).

Correlations			
		CSS Total	SHAI Total
CSS Total	Pearson Correlation	1	.112*
	Sig. (2-tailed)		0.028
	N	384	384
SHAI Total	Pearson Correlation	.112*	1
	Sig. (2-tailed)	0.028	
	N	384	384
*. Correlation is significant at the 0.05 level (2-tailed).			

Chi-Square Test Analysis



To evaluate the relationship between categorized levels of cyberchondria (low, moderate, high, severe) and health anxiety (low, moderate, high, severe), a Chi-square test of independence was

conducted. The test returned a Pearson Chi-Square value of 68.954, with 9 degrees of freedom, and a p-value < 0.001. This result is highly significant, indicating a strong statistical association between cyberchondria and health anxiety levels.

This outcome supports the rejection of the null hypothesis, which stated that there is no association between these variables. Instead, the results confirm the alternative hypothesis: students with higher levels of cyberchondria tend to exhibit higher levels of health anxiety. Furthermore, the warning about expected counts (only 18.8% of cells with expected count < 5) is within the acceptable limit, meaning the results are statistically valid.

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	68.954 ^a	9	0.00
Likelihood Ratio	62.818	9	0.00
N of Valid Cases	265		
a. 3 cells (18.8%) have an expected count less than 5. The minimum expected count is 1.83.			

These findings are strongly consistent with research from Sravani, who found that a significant proportion of medical students displayed both moderate-to-severe cyberchondria and health anxiety, with a p-value < 0.001 (Sravani et al., 2022). Other studies like that of Mrayyan and study of Abu Khait also confirm that university students who engage more frequently in health-related internet use experience elevated anxiety and emotional distress (Abu Khait et al., 2023; Mrayyan et al., 2022).

Hypothesis Testing

Based on both the significant correlation ($p = .028$) and the highly significant Chi-Square result ($p < .001$), the null hypothesis is rejected. The data provides compelling evidence of a statistically significant association between cyberchondria and health anxiety among undergraduate physical therapy students.

This result emphasizes the need for educational and psychological interventions in university settings to help students develop digital health literacy, manage anxiety, and use the internet for health-related information in a constructive manner. This finding reinforces the idea among psychologists that cyberchondria should be considered a separate and reinforced behavior affecting mental health (Sravani et al., 2022).

Discussion

This present research explored the relationship between cyberchondria and health anxiety among undergraduate physical therapy students in Sukkur, Sindh. The rise in student uses of online sources for learning about health and self-diagnosis inspired this research. The new insights add to what we learn about how using the internet excessively for health information may make young adults feel more anxious. Here, the key points are explained systematically starting with general statements, moving on to link them with research work, theories and suggestions for their use both in classrooms and clinics.

General Summary of Key Findings

Researchers found that scores on the cyberchondria scale are related to a higher level of health anxiety. The Pearson correlation result suggests these variables have a positive relationship ($r =$

0.112, $p = 0.028$) and the Chi-square test revealed a strong association as a group ($\chi^2 = 68.954$, $df = 9$, $p < 0.001$). It appears from our research that engaging frequently in online health searches often leads to increased anxiety about health. Because of the significance of this relationship, cyberchondria could represent a psychological issue that includes anxiety, uncertainty and unusual ways of coping.

Linking to Literature

This study shows the same clear link found in recent studies that link cyberchondria and health anxiety among students. According to (McMullan et al., 2019), assessing online health information is loosely ($r=0.62$) related to health anxiety, but strongly ($r=0.8$) related to cyberchondria. A study found that cyberchondria relates importantly to anxiety-related issues such as obsessive-compulsive behaviors and worries about uncertainty (Schenkel et al., 2021).

These findings are also supported by recent regional studies. The authors investigated cyberchondria in Pakistani university students and concluded that both intolerance of uncertainty and anxiety sensitivity strongly predicted cyberchondria (Rashid et al., 2022).

Similarly, a study reported that many people now experience cyberchondria following the pandemic, due to unclear information, increased worries and news from the media (Thomas, 2023). Similarly, another study noted moderate-to-severe levels of cyberchondria among university students and its strong association with psychological distress (Szawloga et al., 2024).

Theoretical Implications

Relating cyberchondria and health anxiety with the Cognitive-Behavioral Theory shows that abnormal ways of thinking and behaving play a key role in the formation and maintenance of anxiety problems. According to the model, looking up health information frequently on the internet lowers a person's anxiety at first, but causes more worry over time because there is so much confusing information. A study proposed that a cycle of negative feelings and unhelpful thinking affects a person's behavior in cyberchondria (Schenkel et al., 2021).

Besides, intolerance of uncertainty is an important factor in the context. Students who are not sure what their health symptoms mean often try to search online for answers which further increases their anxiety (Menon et al., 2020). This theory helps make sense of our findings and informs us how treatment should be designed.

Implications for Practice

The study's results suggest solutions for educators, mental health professionals and policymakers. Researchers found that cyberchondria is strongly linked to health anxiety which reveals the need for help and learning about health information within schools. Health educational curriculums should highlight teaching people how to assess online medical information.

Clinically, Internet-based Cognitive Behavioral Therapy (iCBT) can be a useful way for students to control their anxiety and find healthier ways to look for information. Thomas (Thomas, 2023) pointed out that it is important for clinicians to be aware of cyberchondria and use the right help for youth who may have it. As students start using the internet to diagnose their problems, there should be a way to include digital skills, emotional self-control and easy access to help from experts.

Conclusion

This study aimed to explore the association between cyberchondria and health anxiety among undergraduate physical therapy students in Sukkur, Sindh. The findings revealed a statistically significant relationship between the two variables, with higher levels of cyberchondria being

positively associated with increased health anxiety. This was evidenced by both correlation and Chi-square analyses, validating the hypothesis that excessive engagement in online health-related information searching is linked to emotional distress and heightened anxiety about personal health.

The study contributes to the growing body of literature affirming cyberchondria as a maladaptive behavioral pattern. By interpreting the findings through a cognitive-behavioral framework, it becomes clear that individuals experiencing uncertainty about health symptoms may engage in compulsive online searches as a coping strategy—one that inadvertently fuels rather than resolves anxiety. These behaviors are particularly relevant in university settings, where students are navigating academic pressures, limited access to medical support, and an overreliance on digital platforms for information.

The study underscores the importance of recognizing cyberchondria as a public health concern among young adults and highlights the need for digital health education and targeted psychological interventions in academic institutions.

Recommendations

- **Integrate digital health literacy training** into university curricula to help students critically evaluate online health information.
- **Establish campus-based mental health support services** that address health anxiety and compulsive internet use.
- **Implement awareness programs** about the risks of self-diagnosing through internet searches.
- **Promote Cognitive Behavioural Therapy (CBT)** techniques, particularly internet-based CBT, for managing anxiety related to health and uncertainty.
- **Encourage open discussions in classrooms** on psychological well-being and responsible technology use.
- **Include cyberchondria education** in orientation programs for new students to proactively address anxiety-related behaviours.
- **Conduct further longitudinal and qualitative research** to explore causal relationships and intervention outcomes in diverse student populations.

Note: Data can be provided on request for learning purposes.

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