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The Psychology of Online Health Anxiety: Exploring Cyberchondria and Emotion Regulation Difficulties among Pakistani Students

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ABSTRACT

The widespread availability of online health information has made it easier for university students to investigate symptoms, but repeated searching may also intensify illness-related worry. The present study examined associations among cyberchondria, health anxiety, and difficulties in emotion regulation in a sample of public and private colleges and university students of district Vehari. A quantitative, cross-sectional correlational design was used. Participants were 217 students recruited through convenience sampling. Data were collected using a demographic questionnaire and three standardized self-report instruments: the Cyberchondria Severity Scale (CSS-15) Barke et al. (2016), to assess the severity of cyberchondria; Health anxiety was assessed using the 18-item Short Health Anxiety Inventory (SHAI; Salkovskis et al., 2002; Alberts et al., 2013) to measure health anxiety; and the Difficulties in Emotion Regulation Scale (DERS-18) (Victor & Klonsky, 2016), to assess difficulties in emotion regulation. Cyberchondria was positively correlated with health anxiety, $r = .379$, $p < .01$, and difficulties in emotion regulation, $r = .465$, $p < .01$. Difficulties in emotion regulation were also positively correlated with health anxiety, $r = .431$, $p < .01$. In the reported regression model, cyberchondria significantly predicted health anxiety, $B = 0.303$, $SE = 0.050$, $\beta = .379$, $t = 6.006$, $p < .001$; the model explained 14.4% of the variance in health anxiety, $R^2 = .144$, $F(1, 215) = 36.072$, $p < .001$. These findings indicate that students reporting greater cyberchondria also tend to report greater health anxiety and emotion-regulation difficulties.

1. Introduction

The internet has become a routine source of information about symptoms, illnesses, and treatment options. Online health information can support informed decisions, but it can also expose users to alarming or contradictory explanations of ordinary bodily sensations. Repeated online searching that escalates health related concern is commonly described as cyberchondria. White and Horvitz (2009) documented how web-search activity can contribute to the escalation of medical concerns, while

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Starcevic and Berle (2013) argued that cyberchondria is best understood as problematic health-information seeking associated with distress rather than simply frequent internet use.

Cyberchondria may involve repeated searches, difficulty stopping, distress after searching, and reassurance seeking. A person may search online to reduce uncertainty, encounter information about severe illnesses, interpret that information as personally relevant, and then search again in an attempt to obtain certainty. This pattern can be self-reinforcing: the short-term intention to feel reassured may be followed by greater uncertainty and worry. The present study uses the term cyberchondria for this pattern of health-related online searching and associated distress; it does not imply that frequent or purposeful health-information seeking is inherently maladaptive.

Health anxiety refers to persistent concern about the possibility of having or developing a serious illness. People experiencing health anxiety may pay close attention to bodily sensations, interpret ambiguous symptoms as evidence of disease, and seek reassurance from other people or information sources. Online searching can become one form of reassurance seeking. However, reassurance may be temporary, particularly when search results are inconsistent or emphasize rare and severe conditions. Prior work has identified conceptual and empirical links between cyberchondria and health anxiety (Doherty-Torstrick et al., 2016; Starcevic & Berle, 2013).

Difficulties in emotion regulation may also be relevant to this relationship. Emotion regulation refers to processes involved in recognizing, understanding, and responding to emotional experiences. Gratz and Roemer (2004) conceptualized difficulties in emotion regulation across several domains, including emotional awareness and clarity, acceptance of emotional responses, impulse control, goal-directed behavior during distress, and access to regulation strategies. When people have difficulty tolerating or managing distress, they may be more likely to use immediate strategies—such as repeated searching—to try to reduce uncomfortable feelings. Yet, in the context of health concerns, searching may increase exposure to threatening information and maintain anxiety.

A broader body of research connects maladaptive emotion-regulation strategies with psychological symptoms. Aldao et al. (2010), in a meta-analysis, found that strategies such as rumination, avoidance, and suppression were associated with psychopathology. This does not establish that emotion-regulation difficulties cause cyberchondria, but it supports investigating whether students who report more difficulty managing emotions also report greater cyberchondria and health anxiety.

University students are a relevant population because they commonly use digital resources and may experience academic, social, financial, and future-oriented stress. The present study addresses this gap by examining cyberchondria, health anxiety, and difficulties in emotion regulation among university students in Pakistan, where empirical evidence investigating the relationships among these three constructs remains limited. Studying their associations may help clarify whether online health-searching concerns co-occur with emotion-regulation difficulties in this context.

The present study examined the relationships among cyberchondria, health anxiety, and difficulties in emotion regulation among university students in Pakistan. Specifically, it aimed to investigate whether students reporting greater cyberchondria also reported higher levels of health anxiety and whether difficulties in emotion regulation were associated with both constructs.

The specific objectives were:

- To examine the relationship between cyberchondria and health anxiety among university students.
- To investigate the relationship between difficulties in emotion regulation and cyberchondria.
- To examine the relationship between difficulties in emotion regulation and health anxiety.
- To determine whether cyberchondria statistically predicts health anxiety.

1.1. Hypotheses

Based on the study objectives, the following hypotheses were formulated:

- **H1:** Cyberchondria would be positively associated with health anxiety among university students.
- **H2:** Difficulties in emotion regulation would be positively associated with cyberchondria among university students.
- **H3:** Difficulties in emotion regulation would be positively associated with health anxiety among university students.
- **H4:** Cyberchondria significantly predicts health anxiety among university students.

2. Method

2.1. Research Design

A quantitative, cross-sectional correlational design was used to examine associations among cyberchondria, health anxiety, and difficulties in emotion regulation.

2.2. Participants

The sample comprised 217 university students recruited through convenience sampling from public and private colleges and universities in district Vehari. Participants were between 18 and 30 years of age. The sample included 93 men (42.9%) and 124 women (57.1%). In terms of residence, 128 participants (59.0%) were from urban areas and 89 (41.0%) from rural areas. Socioeconomic status was reported as lower for 42 participants (19.4%), middle for 159 (73.3%), and upper for 16 (7.4%). Regarding family system, 138 participants (63.6%) reported living in joint families and 79 (36.4%) in nuclear families. Educational level was reported as intermediate for 12 participants (5.5%), bachelor's for 24 (11.1%), BS for 134 (61.8%), master's for 32 (14.7%), and MPhil for 15 (6.9%).

2.3. Measures

2.3.1. Cyberchondria Severity Scale (CSS-15)

Cyberchondria Severity Scale (CSS-15). Cyberchondria was assessed using the 15-item Cyberchondria Severity Scale (CSS-15), a short-form measure developed by Barke et al. (2016) from the original Cyberchondria Severity Scale introduced by McElroy and Shevlin (2014). The scale assesses the severity of cyberchondria across five dimensions: excessiveness, compulsion, distress, reassurance seeking, and mistrust of medical professionals. The CSS-15 demonstrated acceptable internal consistency (Cronbach's $\alpha = .82$) and a five-factor structure in its validation study (Barke et al., 2016). The reported sample mean was 42.77 (SD = 10.79).

2.3.2. Short Health Anxiety Inventory (SHAI)

Health anxiety was assessed using the 18-item Short Health Anxiety Inventory (SHAI; Salkovskis et al., 2002; Alberts et al., 2013). The inventory assesses health-related anxiety through concerns about the likelihood of developing an illness and the anticipated negative consequences of illness. Each item is scored on a four-point scale ranging from 0 to 3, yielding a total score of 0–54, with higher scores indicating greater health anxiety. The 18-item version comprises 14 items assessing perceived illness likelihood and four items assessing the anticipated consequences of illness (Alberts et al., 2013).

2.3.3. Difficulties in Emotion Regulation Scale (DERS-18)

Emotional dysregulation was assessed using the 18-item Difficulties in Emotion Regulation Scale (DERS-18), validated by Victor and Klonsky (2016). The instrument assesses difficulties in emotion regulation across six dimensions: non-acceptance of emotional responses, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. Items are rated on a five-point Likert-type scale, with responses ranging from 1 (almost never) to 5 (almost always). Higher scores indicate greater difficulties in emotion regulation. The DERS-18 provides a brief measure of emotion regulation difficulties while retaining representation of the six dimensions of the original DERS. In the present study, the instrument was used to assess participants' perceived difficulties in regulating their emotional experiences.

2.4. Procedure and Ethical Considerations

Prior to data collection, permission was obtained from the relevant authorities of the participating institutions. Data were collected from students enrolled in public and private colleges and universities in district Vehari, Pakistan by using Convenience sampling strategy. Participants were informed about the purpose of the study, the nature of their participation, and their rights as research participants. Informed consent was obtained before questionnaire administration. Data were collected through both in-person questionnaire distribution and online forms, depending on institutional access and participants' convenience. Participation was voluntary, and participants were informed that they could withdraw from the study without penalty. Confidentiality and the privacy of participants' responses were maintained throughout the research process, and the collected data were used solely for research purposes.

3. Results

3.1. Participant Characteristics

The sample consisted of 217 students. Women represented 57.1% of the sample and men 42.9%. Most participants were from urban areas (59.0%), reported middle socioeconomic status (73.3%), and lived in joint-family households (63.6%). Most were enrolled in BS programs (61.8%). Table 1 summarizes the demographic characteristics.

Table 1: Demographic characteristics

Characteristic	n	%
Gender: Men	93	42.9
Gender: Women	124	57.1
Residence: Urban	128	59.0
Residence: Rural	89	41.0
Socioeconomic status: Lower	42	19.4
Socioeconomic status: Middle	159	73.3
Socioeconomic status: Upper	16	7.4
Family system: Joint	138	63.6
Family system: Nuclear	79	36.4
Education: Intermediate	12	5.5
Education: Bachelor's	24	11.1
Education: BS	134	61.8
Education: Master's	32	14.7
Education: MPhil	15	6.9

3.2. Correlations among Study Variables

All three variables were positively correlated. Cyberchondria was positively associated with health anxiety, $r = .379$, $p < .01$, and with difficulties in emotion regulation, $r = .465$, $p < .01$. Difficulties in emotion regulation were also positively associated with health anxiety, $r = .431$, $p < .01$. Thus, students reporting more cyberchondria also tended to report greater health anxiety and greater difficulty regulating emotions. The reported correlations support the directional associations proposed in the first three hypotheses.

Table 2: Correlations among Study Variables

Variable	1	2	3
1. Cyberchondria	—	.379**	.465**
2. Health anxiety (SHAI)		—	.431**
3. Emotion-regulation difficulties (DERS)			—

Note. $N = 217$. ** $p < .01$.

3.3. Regression Predicting Health Anxiety

A simple linear regression examined whether cyberchondria statistically predicted health anxiety. The model was significant, $F(1, 215) = 36.072$, $p < .001$, and explained 14.4% of the variance in health anxiety ($R^2 = .144$, adjusted $R^2 = .140$). Cyberchondria was a positive predictor, $B = 0.303$, $SE = 0.050$, $\beta = .379$, $t = 6.006$, $p < .001$. This means that higher cyberchondria scores were associated with higher predicted health-anxiety scores in this sample. Because the study was cross-sectional, the term “predicted” refers to the regression model and should not be interpreted as temporal or causal prediction.

Table 3: Regression Predicting Health Anxiety

Predictor	B	SE	β	t	p
Constant	25.983	2.225	—	11.680	< .001
Cyberchondria	0.303	0.050	.379	6.006	< .001

Note. $N = 217$. Model: $R = .379$, $R^2 = .144$, adjusted $R^2 = .140$, $F(1, 215) = 36.072$, $p < .001$.

4. Discussion

This study examined associations among cyberchondria, health anxiety, and difficulties in emotion regulation among university students. Three central findings were reported. First, cyberchondria was positively associated with health anxiety. Second,

cyberchondria was positively associated with emotion-regulation difficulties. Third, emotion-regulation difficulties were positively associated with health anxiety. In addition, cyberchondria significantly predicted health anxiety in a simple regression model, accounting for 14.4% of its observed variance.

4.1. Cyberchondria and Health Anxiety

The positive association between cyberchondria and health anxiety ($r = .379$) is consistent with the view that repeated online health searching and illness-related worry can co-occur. Online searching may expose users to a wide range of explanations for bodily sensations, including rare or severe conditions. For a person already worried about health, this information may be interpreted as evidence of personal risk and may prompt further searching. The result is consistent with prior conceptual and empirical work linking cyberchondria to health anxiety (Doherty-Torstrick et al., 2016; Starcevic & Berle, 2013; White & Horvitz, 2009). However, the correlation does not establish the direction of influence. Health anxiety may encourage searching, searching may intensify anxiety, or both may be influenced by other factors such as intolerance of uncertainty or anxiety sensitivity.

The regression model showed that cyberchondria explained 14.4% of the variance in health anxiety. This is meaningful but limited explanatory power: most variation in health anxiety remained unaccounted for by cyberchondria in this model. Therefore, cyberchondria should not be described as the sole or dominant cause of health anxiety. Future models should test additional variables and examine whether cyberchondria adds explanatory value after accounting for baseline health anxiety, general anxiety, intolerance of uncertainty, and relevant demographic or health factors.

4.2. Emotion-Regulation Difficulties and Cyberchondria

The correlation between difficulties in emotion regulation and cyberchondria ($r = .465$) suggests that students who report greater difficulty managing emotional experiences also tend to report more problematic online health searching. One possible explanation is that online searching becomes an attempt to manage fear or uncertainty. If the person cannot tolerate distress, the urge to search may feel difficult to resist. Yet searching can introduce new symptoms and diagnoses to worry about, leaving the person more distressed and more likely to search again. This interpretation is compatible with the multidimensional account of emotion-regulation difficulties proposed by Gratz and Roemer (2004), and with broader evidence linking maladaptive emotion-regulation strategies to psychological symptoms (Aldao et al., 2010). The present data do not test this mechanism directly, so it should be treated as a plausible explanation rather than a demonstrated process.

4.3. Emotion Regulation Difficulties and Health Anxiety

Difficulties in emotion regulation were also positively correlated with health anxiety ($r = .431$). Students who have trouble identifying, accepting, or managing emotional responses may find health-related uncertainty especially distressing. Ambiguous bodily sensations can provoke fear, and a limited ability to regulate that fear may contribute to persistent worry or repeated reassurance seeking. Nevertheless, the correlational design cannot determine whether emotion-regulation difficulties precede health anxiety, arise as a consequence of persistent anxiety, or share common causes. The finding supports further investigation rather than a causal conclusion.

5. Implications for Universities

The results point to several cautious practical implications. Universities could provide digital health-literacy guidance that encourages students to distinguish reputable medical sources from unverified content and to seek qualified healthcare advice when appropriate. Student counseling services may also address repetitive reassurance seeking, catastrophic interpretations of bodily sensations, and difficulties tolerating uncertainty. Skills-based interventions could teach emotional awareness, distress tolerance, and flexible coping. These recommendations are plausible applications of the findings, not interventions tested by this study. The data do not show that any particular workshop or treatment will reduce cyberchondria.

6. Strengths and Limitations

Strength of the study is that it considers cyberchondria, health anxiety, and emotion-regulation difficulties together in a Pakistani student sample of 217 participants. The use of established instrument names and quantitative analyses provides a starting point for further empirical work. Several limitations, however, constrain interpretation. First, convenience sampling and recruitment from university settings limit representativeness; the results should not be generalized to all Pakistani young adults. Second, the cross-sectional design does not support causal conclusions or establish temporal order. Third, all constructs were assessed by self-report, which can be affected by response styles, recall, and social desirability.

7. Future Research

Future studies should recruit more diverse samples across institutions and regions. Longitudinal designs could test whether emotion-regulation difficulties predict subsequent cyberchondria or whether cyberchondria precedes changes in health anxiety. Researchers should also test plausible mediators and moderators, including intolerance of uncertainty, anxiety sensitivity, general anxiety, digital health literacy, and reassurance seeking. Intervention studies could evaluate whether emotional-regulation training or digital health-literacy programs produce measurable changes in online searching patterns and health-related worry.

8. Conclusion

Among the 217 university students represented in this study, cyberchondria was positively associated with health anxiety and difficulties in emotion regulation, while emotion-regulation difficulties were also positively associated with health anxiety. Cyberchondria significantly predicted health anxiety in the reported simple regression model, explaining 14.4% of its variance. These findings suggest that problematic online health searching and emotion-regulation difficulties co-occur with health-related worry in this sample.

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