

Prevalence of Cyberchondriasis and Its Association with Internet Usage Patterns Among Medical Students in Visakhapatnam: A Cross-Sectional Study

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Abstract

Background: Cyberchondria is an increasingly dangerous public health problem in the digital era. The internet provides rapid and easy access to information about health, but unregulated search can be an increase of health anxiety, which can cause distress, anxiety and misinterpretation of symptoms. Although medical students are “expert” learners, they are very prone to be subjected to high academic load and exposure to digital media at all times. The aim of the present study was to estimate the prevalence of cyberchondriasis among the medical students from Visakhapatnam, measure the intensity of the various domains of cyberchondriasis and explore its relationship with the socio-demographic variables and the use of the internet. **Material and Methods:** The study was observational, analytical, cross-sectional and was conducted in a medical college in the town of Visakhapatnam with a sample size of 360 medical students from 2nd, 3rd and 4th year of study, using the Probability Proportional to Sample Size (PPSS) and Simple Random Sampling (SRS) techniques. The data were collected electronically from Google Forms with a pre-tested questionnaire regarding the socio-economic status (Modified BG Prasad Scale), Internet usage pattern and demographic data. Cyberchondria severity was evaluated using the 15-item Cyberchondria Severity Scale (CSS-15), which assesses five distinct domains: excessiveness, compulsion, distress, reassurance, and mistrust. Statistical associations were analyzed using Chi-square tests. **Results:** The overall prevalence of cyberchondriasis among the medical students was 71.67 %, with 58.61% experiencing mild symptoms and 13.06% experiencing moderate symptoms. Among socio-demographic variables, socioeconomic status showed a highly statistically significant association ($p < 0.001$), with the highest prevalence observed in lower (100%) and lower-middle-class (90.91%) segments. No significant associations were found with gender, age, academic year, or residential status ($p > 0.05$). Regarding internet usage patterns, a higher frequency of searches (>10 times per week), longer daily search durations (>2 hours), and searching during off-hours (late nights and weekends) were all strongly associated with increased cyberchondria severity ($p < 0.001$). Medical websites (47.33%) and social media platforms (24.75%) were the most utilized sources, primarily for investigating symptoms and diagnoses (32%). Academic performance did not significantly influence the likelihood of cyberchondriasis ($p = 0.86$). **Conclusion:** Cyberchondria is highly prevalent among medical students in this regional population, profoundly driven by search frequency, duration, and timing rather than academic performance. Students from lower socioeconomic backgrounds are particularly vulnerable. There is a critical need for targeted mental health interventions, digital literacy programs, and counseling services to encourage structured internet use, mitigate health-related anxieties, and support student well-being.

Keywords: Cyberchondria, Health Anxiety, Socio-economic status, Internet Usage Patterns, Medical students, Cyberchondria Severity Scale (CSS-15).

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INTRODUCTION

Cyberchondria, the excessive online search for health information, has become a growing concern in the digital age, especially among students. The rise of smartphone usage and internet access has led many individuals, including medical and non-medical students, to frequently seek health information online. While seeking health information is not inherently harmful, the overuse of this behaviour often leads to heightened anxiety, misinterpretation of symptoms, and unnecessary health concerns. The psychological effects of cyberchondria include increased stress, anxiety, and depression, which can also affect academic performance. Studies have shown that constant exposure to alarming

health-related information may contribute to health anxiety, resulting in negative consequences for individuals' mental health.^[1,2]

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The prevalence of cyberchondria is rising among students globally, with young adults being particularly vulnerable. Despite medical students' training in health-related topics, they are not immune to the psychological effects of excessive health information-seeking behaviour. Non-medical students, who may lack the critical skills to assess health information, could be even more susceptible to the negative impacts. Existing studies suggest a clear association between over-dwelling and the experience of anxiety and distress when people seek health information online, further suggesting the need for additional research on this aspect of health seeking online. To prevent the negative effects of cyberchondria on students' mental wellbeing, it is essential to know the psychological impact that cyberchondria may have on students and their academic success.^[3,4]

The Internet has become a key source of health information and is ever a part of people's lives globally. Convenience and low cost of accessing health information online has been associated with an increase in health literacy; in this way, individuals are in a better position to make informed choices. The ability to gain health information online, however, also carries risk – for example, concerns about health and health anxiety can be facilitated, and raised to potentially harmful levels.^[5-10]

An important issue is that of "Cyberchondria," which refers to the tendency to feel more anxious and worried due to frequent health searches online. Research indicates that such online enquiries can exacerbate existing health problems and perpetuate cycles of escalating anxiety.^[11,12] Medical students who have dealt with great detail with health information may be more likely to experience this, especially around potential health issues.^[14,15]

The Cyberchondria Severity Scale (CSS) is commonly used tool which measures a number of dimensions including the frequency of health search online, emotional consequences of health search online and how it impacts the daily life.^[16,17,18]

Medical students might be more susceptible to experiencing anxiety related to Cyberchondria because of the type of health topics they are exposed to when exposed to the Internet and as a consequence of their academic pressure, which might further affect the severity of Cyberchondria.^[13,15] Therefore, knowing about prevalence and contributing factors to Cyberchondria in medical students population is important to develop strategies for reducing the impact of such condition.

This study aims to gain insights into cyberchondria and its psychological effects on students in the city of Visakhapatnam, where there has been a dearth of research in this area. Although cyberchondria has been identified as an issue all across the globe, the data available does not cover smaller cities or regional populations. This study aimed to fill the gap by examining the effects of excessive health information-seeking behaviour among students in Visakhapatnam and providing insights that could necessitate regional mental health interventions. Additionally, this research will explore how internet usage contributes to health anxiety and identify the psychological risks associated with cyberchondria. The study was conducted among medical

students in a medical college in Visakhapatnam, which provides access to a diverse sample of students.

Objectives

- To estimate the prevalence of cyberchondriasis among medical students.
- To evaluate the socio-demographic factors affecting cyberchondriasis.
- To assess the intensity of specific domains of cyberchondriasis among medical students using the Cyberchondria Severity Scale–Short Form (CSS -15).
- To assess the internet usage patterns relating to the development and severity of cyberchondriasis among medical students.

MATERIALS AND METHODS

The present study was an observational, analytical, cross-sectional study conducted in a medical college in the Visakhapatnam district. Medical students from the 2nd, 3rd, and 4th years were included to ensure a representative sample. The sample size was calculated as 360 participants based on a prevalence of 37.5% reported by Norr AM et al.^[8], with a 95% confidence level and a 5% margin of error. Using the formula $n \geq \frac{Z^2 p(1-p)}{e^2}$ the estimated sample size was 360.24. After adding 10% for non-response, the adjusted sample size was 396, from which the required sample of 360 students was obtained. Participants were selected from the 2nd, 3rd, and 4th years using Probability Proportional To Sample Size (PPSS) and Simple Random Sampling (SRS) technique. Of the total 471 students across these three years, 117 were selected from the 2nd year, 127 from the 3rd year, and 116 from the 4th year. Students who gave informed consent were included, while those who were sick or absent were excluded. Data were collected using a pretested, predesigned questionnaire distributed electronically through Google Forms. The questionnaire captured demographic details including age, gender, academic year, residential status, and socio-economic status (SES). SES was assessed using the Modified BG Prasad Scale of SES.²⁸ Cyberchondria severity was measured using the Cyberchondria Severity Scale, initially developed by McElroy and Shevlin⁵ in 2014. The original scale consisted of 33 items (CSS-33) and was later shortened to 15 items (CSS-15) for ease of use in surveys. The CSS-15 had been validated and shown to have psychometric properties similar to the longer version.^{3,6} The 15 items were arranged into five domains, with three questions in each domain: excessiveness (questions 1, 2, and 13), compulsion (questions 3, 4, and 7), distress (questions 6, 9, and 14), reassurance (questions 8, 10, and 11), and mistrust (questions 5, 12, and 15). Each item had five response options, namely never, rarely, sometimes, often, and always, scored from 0 to 4, except for the mistrust domain, which was reverse scored from 4 to 0. Each domain score ranged from 0 to 12. For the first four domains, scores of 0–3 indicated not affected, 4–6 mildly affected, 7–9 moderately affected, and 10–12 severely affected. For the mistrust domain, this interpretation was reversed. The total CSS-15 score ranged from 0 to 60 and was used to classify cyberchondria as no (score 0-15), mild (score 16-30), moderate (score 31-45), or severe (score 46-60). The questionnaire also included items on internet usage patterns, including frequency of health-related searches, duration of

searches, types of health information searched, timing of searches, source of health information, and academic performance, measured as the self-reported percentage of marks obtained in the previous university examination. Data were analyzed using descriptive statistics to summarize demographic characteristics, prevalence of cyberchondriasis, and internet usage patterns. The chi-square test was used to assess the association between internet usage and cyberchondria severity, as well as between cyberchondria severity and self-reported academic performance. The questionnaire was pilot-tested on 10% of the sample size and refined accordingly. Regular checks were performed to

identify and correct inconsistencies or missing data. Confidentiality of participant information was maintained throughout the study. Data were collected anonymously, and unique identification codes were used to link responses; only aggregated data were reported. Prior to the study, permission was obtained from the Institutional Ethics Committee vide certificate no. RC.No.GVPIHCMT / IEC / 20240917/20. Written informed consent was obtained from all participants. Participation was voluntary, and participants were free to withdraw at any time without repercussions. The study involved minimal risk, and support and referrals were provided for participants experiencing distress.

RESULTS

Table 1: Socio-demographic characteristics of study participants (n=360)

Variable	Category	Frequency	Percentage
Gender	Female	236	65.56
	Male	124	34.44
Age group in years	17-18	35	9.72
	19-20	169	46.94
	21-22	135	37.50
	23-24	21	5.83
Academic year	2nd year	117	32.50
	3rd year	127	35.28
	4th year	116	32.22
Residential status	Rural	79	21.94
	Urban	281	78.06
Socio -economic status as per modified B.G.Prasad's classification of SES.	Class V: Lower class (< Rs.1364)	7	1.94
	Class IV: Lower middle class (Rs.1364 to Rs.2728)	22	6.11
	Class III :Middle class (Rs.2729 to Rs.4548)	143	39.72
	Class II :Upper middle class (Rs.4549 to Rs.9097)	94	26.11
	Class I :Upper class (Rs.9098 and above)	94	26.11

This study included 360 medical students, providing a broad overview of their socio-demographic characteristics. There was higher proportion of female students (65.56%) compared to males (34.44%).Majority (46.94%) of participants were aged 19-20 years. The mean age of the study subjects was 20.30 ± 2.13 years. The distribution of the

participants across the academic years was 117(32.50%) in the 2nd year,127(35.28%) in the 3rd year, and 116 (32.2%)in the 4th year. A large majority (78.06%) of them came from urban areas. As per modified BG Prasad's Classification of SES most (39.72%) of the students belonged to the middle class.

Table 2: Prevalence of cyberchondriasis among medical students (n=360)

Cyberchondriasis	Frequency	Percentage
No	102	28.33
Mild	211	58.61
Moderate	47	13.06
Total	360	100.00

The prevalence of cyberchondriasis among 360 medical students across different academic years, using the Cyberchondria Severity Scale (CSS-15) was 71.67%,with

mild cyberchondriasis being 58.61% and moderate cyberchondriasis being 13.06%. 28.33% of students reported no symptoms of cyberchondriasis.

Table 3: Association of socio-demographic variables with prevalence of cyberchondria

Demographic Variable	Category	No		Yes		Total	P - value
		Frequency	%	Frequency	%		
Gender	Female	71	30	165	69.92	236	0.30
	Male	31	25	93	75	124	
Age	17-18	10	28.57	25	71.43	35	0.97
	19-20	48	28.37	121	71.63	169	
	21-22	39	28.89	96	71.11	135	
	23-24	5	23.81	16	76.19	21	
Academic year	2nd year	29	24.79	88	75.21	117	0.48
	3rd year	36	28.35	91	71.65	127	
	4th year	37	31.9	79	68.1	116	
Residential status	Rural	20	25.32	59	74.68	79	0.51
	Urban	82	29.18	199	70.82	281	

Socio-economic status	Lower class	0	0	7	100	7	<0.001
	Lower middle class	2	9.09	20	90.91	22	
	Middle class	34	23.78	109	76.22	143	
	Upper middle class	27	28.72	67	71.28	94	
	Upper class	39	41.49	55	58.51	94	
	Total	102	28.33	258	71.67	360	

Among the demographic factors analyzed, socio-economic status was the only variable that demonstrated a highly statistically significant association with the condition ($p < 0.001$). The prevalence of cyberchondria was highest in the lower socio-economic segments, affecting 100% ($n = 7$) of lower-class students and 90.91% ($n = 20$) of lower-middle-

class students. Conversely, the lowest prevalence was observed in the upper class at 58.51% ($n = 55$). This strong inverse relationship indicates that students from lower socio-economic backgrounds are significantly more susceptible to experiencing cyberchondriasis.

Table 4: Distribution of study participants according to the first 4 constructs and sub – group scores

Constructs	Score 0 -3 (Not affected) Frequency (%)	Score 4-6 (Mildly affected) Frequency (%)	Score 7-9 (Moderately affected) Frequency (%)	Score 10-12 (Severely affected) Frequency (%)
Excessiveness	58 (16.11)	153 (42.50)	125 (34.72)	24 (6.67)
Compulsion	199 (55.28)	122 (33.89)	38 (10.56)	1 (0.28)
Distress	155 (43.06)	142 (39.44)	49 (13.61)	14 (3.89)
Reassurance	124 (34.44)	162 (45.00)	60 (16.67)	14 (3.89)

The severity and distribution of cyberchondriasis among medical students were assessed using the five subscales of the Cyberchondria Severity Scale–Short Form (CSS-15), which includes Excessiveness, Mistrust, Compulsion, Distress, and Reassurance. The results provide a detailed look at how these specific domains of cyberchondriasis manifest within the study population. A significant proportion (77.22%,) of students, exhibited mild to moderate levels of excessive health-related internet searches, while 58 (16.11%) showed no signs of excessive behaviour. A smaller but notable group, 24(6.67%), fell into the severe category, indicating a compulsive need to search for health information online. The high percentage of students displaying mild to moderate excessiveness suggests that a large portion of the student population engages in frequent health-related searches, likely driven by anxiety or concern over personal health. In terms of compulsion, 199 (55.28%) of the participants did not exhibit compulsive tendencies, while 44.72% displayed mild to moderate compulsive behaviour. Only a small percentage, 0.28%, experienced severe compulsion, struggling to limit their health-related searches.

These findings suggest that while more than half of the students manage their online searches well, nearly half have difficulty controlling their compulsion to repeatedly search for health-related information, even when unnecessary. The distress subscale showed that 43.06% of students experienced no significant emotional impact from their health-related searches. However, 56.94% reported mild to severe distress, with 3.89% experiencing significant anxiety after engaging in online health searches. This indicates that over half of the students feel some level of emotional discomfort or anxiety as a result of their online searches, highlighting the psychological toll that cyberchondriasis can have on medical students. Reassurance-seeking was common, with 65.56% of students (mild to severe) seeking additional reassurance online after health-related searches, while 34.44% reported no need for reassurance. The high rate of reassurance-seeking behaviour suggests that most students felt the need to confirm or clarify information they find online, which can perpetuate a cycle of continuous searching and anxiety.

Table 5: Distribution of study participants according to the 5th construct and sub-group scores

Construct	Score 0 -3 (Severely affected) Frequency (%)	Score 4-6 (Moderately affected) Frequency (%)	Score 7-9 (Mildly affected) Frequency (%)	Score 10-12 (Not affected) Frequency (%)
Mistrust	4 (1.11)	40 (11.11)	107 (29.72)	209 (58.06)

In the mistrust domain, 58.06% ($n=209$) of students reported no significant mistrust towards healthcare professionals, indicating a general reliance on professional medical advice. However, 41.94% of students exhibited mild to severe levels of mistrust, with 1.11% showing a strong preference for

online sources over professional consultations. Although most students still trust healthcare providers, this minority shows some level of scepticism, particularly when severe mistrust leads them to seek additional or alternative reassurance from the internet.

Table 6: Association of internet usage patterns and cyberchondria

Internet usage Pattern	Internet Usage Pattern association with cyberchondria							P - value	
	Category	No		Mild		Moderate			Total
		count	%	count	%	count	%		
Frequency of internet usage	0 times	45	52.33	39	45.35	2	2.33	p<0.001	
	1-2 times per week	55	24.89	134	60.63	32	14.48		

Duration of internet usage	3-5 times per week	1	2.56	29	74.36	9	23.08	39	p<0.001
	6-10 times per week	0	0.00	8	88.89	1	11.11	9	
	> 10 times per week	1	20.00	1	20.00	3	60.00	5	
	Less than 15 minutes	95	37.55	138	54.55	20	7.91	253	
	15-30 minutes	6	8.82	50	73.53	12	17.65	68	
	31-60 minutes	0	0.00	12	50.00	12	50.00	24	
	1-2 hours	1	9.09	8	72.73	2	18.18	11	
Time of internet usage	More than 2 hours	0	0.00	3	75.00	1	25.00	4	p<0.001
	During weekends	6	24.00	14	56.00	5	20.00	25	
	During work/study hours	4	16.00	16	64.00	5	20.00	25	
	In the evening	12	18.75	41	64.06	11	17.19	64	
	Late at night	12	20.69	35	60.34	11	18.97	58	
	Whenever needed	68	36.17	105	55.85	15	7.98	188	
	Grand Total	102	28.33	211	58.61	47	13.06	360	

As the frequency of health-related searches increased, so did the severity of cyberchondria symptoms. For those who searched more than 10 times per week, 60.00% exhibited moderate symptoms, while only 20.00% reported no symptoms. In contrast, students who did not engage in any searches (0 times per week) showed lower levels of cyberchondriasis, with 52.33% reporting no symptoms. A statistically significant association ($p < 0.001$) was found between higher frequency of internet usage and increased severity of cyberchondriasis. Students who searched for more than two hours per day reported 25.00% moderate symptoms and 75.00% mild symptoms, while those who spent less than 15 minutes searching had 37.55% with no

symptoms. The relationship between longer search durations and increased severity of cyberchondriasis was statistically significant ($p < 0.001$). This indicated that extended time spent searching for health information online tends to heighten the intensity of cyberchondriasis symptoms. Late-night and weekend health-related searches were associated with increased severity of cyberchondriasis. Among students searching late at night, 60.34% exhibited mild symptoms and 18.97% moderate symptoms. Similarly, weekend searches resulted in 20.00% moderate symptoms. The association between the timing of searches particularly late at night and during weekends and cyberchondriasis severity was statistically significant ($p < 0.001$).

Table 7: Sources of health-related searches

Sources	Frequency	Percentage
General search engines	83	16.5
Health forums and discussion boards	57	11.3
Medical websites	237	47.3
Social media platforms	124	24.7
Total	501	100

Medical websites were the most utilized source for health-related searches, comprising 47.33% of the total sources of health related searches. Social media platforms followed, accounting for 24.75%, while general search engines and health forums contributed 16.58% and 11.38%, respectively.

This indicated a preference for credible and specialized platforms like medical websites. However, the notable use of social media platforms and general search engines highlights the need for reliable health information dissemination across diverse online mediums.

Table 8: Types of health-related information searched

Health related information	Frequency	Percentage
General health tips and advice	162	27
Medical news and research	90	15
Symptoms and diagnoses	192	32
Treatments and medications	156	26
Total	600	100

The searches related to symptoms and diagnoses were the most frequent, accounting for 32% of the total types of health related information searched, followed by treatments and

medications at 26%. General health tips and advice made up 27%, while medical news and research contributed 15%.

Table 9: Association of academic performance with cyberchondriasis

Academic performance (%)	Cyberchondriasis							P value
	No		Mild		Moderate		Total	
	Frequency	%	Frequency	%	Frequency	%		
Less than 50%	5	29.4	11	64.7	1	5.9	17	0.86
50%-64%	48	28.6	98	58.3	22	13.0	168	
65%-75%	45	29.0	89	57.4	21	13.6	155	
More than 75%	4	20.0	13	65.0	3	15.0	20	
Total	102	28.3	211	58.6	47	13.1	360	

Despite slight differences across academic performance groups, with 71.7% of participants reporting cyberchondriasis, the data showed that academic performance does not significantly affect the likelihood of experiencing cyberchondriasis. Students performing at different academic levels were equally prone to health-related anxiety and compulsive online searching, suggesting that cyberchondriasis is independent of academic achievement. There was no significant association between academic performance and cyberchondriasis ($p=0.86$).

DISCUSSION

Majority of participants were aged 17–20 years, reflecting a student population predominantly in the early stages of their academic journey. The mean age of the study subjects was 20.30 ± 2.13 years. This trend mirrors the findings of Gandla SD et al,^[19] and Kanganolli SR et al.^[26] These studies reinforce the vulnerability of younger individuals to cyberchondria, as they often lack the experience necessary to contextualize online health information. However it contrasts with the study by Santi NS et al,^[25] and by El-Zoghby SM et al.^[27] These findings highlighted the importance of considering age as a dynamic factor influenced by academic exposure, digital habits, and psychological maturity.

The proportion of female students in the study group was 65.56 % and that of males was 34.44 % showing female preponderance. These findings were in line with the observations in the studies by Gandla SD et al,^[19] El-Zoghby SM et al,^[27] and Agrawal V et al,^[1] and differed with the studies by Kanganolli SR et al,^[26] and Santi NS et al.^[25]

Most of the students hailed from urban area (78.06%) compared to rural area (21.94%) which was similar to that of El-Zoghby et al.^[27]

As per modified BG Prasad's SES classification most of the medical students belonged to Class III (Middle class) 39.72%, followed by Class I (Upper class) 26.11%, Class II (Upper middle class) 26.11%, Class IV (Lower middle class) 6.11% and Class V (Lower class) 1.94% which contradicted the study by Kanganolli SR et al.^[26]

It was observed in the current study the prevalence of cyberchondriasis was 71.67% with mild cyberchondriasis being 58.61% and moderate cyberchondriasis being 13.06%. This may be of the use of mobile phones, tablets, laptops and easy accessibility of internet. On the other hand, 28.33% of students reported no symptoms of cyberchondriasis which differed with the study by Agrawal V et al,^[1] and by Gandla SD et al,^[19] which reported 100% cyberchondria. Most participants in the present study exhibited symptoms ranging from mild to moderate, with the former being more in proportion, indicating that while extreme symptoms were less common Mild levels of cyberchondria were highly prevalent and contribute significantly to health-related anxiety. The consistently high prevalence observed across studies reflects the pervasive nature of cyberchondria among medical students, driven by heightened academic pressures, reliance on digital resources, and exposure to health-related content. Studies by Kanganolli SR et al,^[26] revealed that prevalence of cyberchondria was 37.5% These observations

indicate that there was a significant variation in the prevalence of cyberchondria and the variations may be dependent on the context, nature of population and different geographies.

258 medical students who were suffering from cyberchondriasis, 93(36.04%) were males and 165 (63.9%) were females. The association between gender and cyberchondria was not found to be statistically significant ($p > 0.05$). and this differed with the study by Kanganolli SR et al.^[26]

Age emerged as a notable factor with younger participants reporting higher proportions of cyberchondriasis, though the association was not statistically significant ($p > 0.05$). Gandla SD et al,^[19] reported a significant negative correlation between age and cyberchondria severity ($r = -0.151$, $p = 0.003$). El-Zoghby SM et al,^[27] showed that age was not a predictor of cyberchondria ($p=0.587$) which was similar to that of the observation of the current study.

Proportion of students with cyberchondria was seen to decrease with the advancement in academic years though the association between academic years and cyberchondria was found to be statistically not significant ($p > 0.05$) which was concurrent with the studies by Gandla SD et al,^[19] and El-Zoghby SM et al.^[27] This reflected the benefits of medical training and experience in reducing reliance on online health information. They also suggest that the combined factors of age and academic maturity may reduce susceptibility to cyberchondria over time. showed that academic year was not a predictor of cyberchondria.

There was no statistical association between place of residence and cyberchondria ($p > 0.05$) which was similar to that of the study by El-Zoghby SM et al.^[27] Residence did not have a role in medical students suffering from cyberchondria.

The association of SES with cyberchondria was found to be significant ($p < 0.001$) suggesting that students from lower SES experienced cyberchondriasis. This may be linked to factors such as limited access to reliable medical information, which can lead to greater reliance on the internet for health-related searches, contributing to heightened anxiety and cyberchondriasis. However, it differed with the study by Kanganolli SR et al.^[26]

The present study gave an insight into the first five constructs or domains and subgroup scores in the CSS-15 questionnaire. The first domain i.e. excessiveness pertaining to evaluation of factors related to repeat internet searches showed that it affected 42.5% of the participants mildly, 34.72% of them moderately and 6.67 % of them severely. Santi NS et al,^[25] in their study revealed excessiveness affected 41.2% of the study subjects moderately and 54.23% of them severely unlike the observation of the present study. The prominence of excessiveness may stem from student's academic exposure to health information, coupled with the ease of access to online resources. However, repetitive searches often exacerbate anxiety rather than alleviate it, creating a feedback loop that reinforces health-related distress.

The second domain ie compulsion evaluates the parameters related to binge internet searches and it affected 33.89% of the medical students mildly, 10.56% of them moderately and 0.28 % of them severely whereas in the study by Santi NS et al,^[25] noted compulsion affected 59.3% of the students moderately and 27.05% severely. highlighting the behavioral overlap between cyberchondria and other compulsive digital habits. Compulsive behaviors often stem from an inability to regulate internet usage, driven by a perceived need to seek information to resolve health

concerns. These behaviors are closely linked to smartphone addiction, as demonstrated by El-Zoghby SM et al,^[27] who found compulsive digital use was a predictor of cyberchondria severity ($p < 0.0001$). Such findings highlight the importance of interventions promoting balanced digital habits, such as screen-time regulation and structured internet use.

The third domain i.e. distress determines the factors related to anxiety, depression and deranged sleep pattern and it affected 39.44% of the medical students mildly, 13.61% of them moderately and 3.89% of them severely. Santi NS et al,^[25] reported that the domain had a moderate impact on 59.43% and severe impact on 32.24 % of the study subjects. The fourth domain i.e. reassurance which determines the parameters linked with the clinician's consultation and assurance in the current study affected 45.00 % of the study subjects mildly, 16.67% of them moderately and 3.89% of them severely. The high proportion of reassurance-seeking by the medical students reflected a broader trend of dependency on external validation, often involving clinicians or trusted peers. This behaviour, while seemingly adaptive, can lead to heightened reliance on medical consultations or further internet searches, perpetuating the cycle of anxiety. Addressing this domain requires strategies to empower students with the confidence to interpret health information independently. This contradicted with Santi N et al.^[25] who observed that the domain had a moderate impact on 19.67% of the study subjects and severe impact on 22.27% of them. The fifth domain or mistrust of medical professionals measures the belief in the diagnosis of the clinician and following their treatment protocol. 1.11 % of the medical students were affected severely, 11.11% of them moderately and 29.72% of them mildly. Santi NS et al.^[25] observed that the domain had a moderate impact on 9.84% of the medical students and severe impact on 15.57% of them.

The frequency of health-related searches increased, so did the severity of cyberchondriasis symptoms. For those who searched more than 10 times per week, 60.00% exhibited moderate symptoms, while only 20.00% reported no symptoms. In contrast, students who did not engage in any searches (0 times per week) showed lower levels of cyberchondriasis, with 52.33% reporting no symptoms. A statistically significant association ($p < 0.001$) was found between higher search frequency and increased severity of cyberchondriasis. From this it could be understood that frequent health-related searching exacerbates anxiety and compulsive behaviors associated with cyberchondriasis. This was in line with the study by El-Zoghby et al,^[27] and contradicted with the a study by Kanganolli SR et al.^[26]

The duration of daily health-related searches also had a significant effect on the severity of symptoms. Students who searched for more than two hours per day reported 25.00% moderate symptoms and 75.00% mild symptoms, while those who spent less than 15 minutes (37.55%) searching had no symptoms. The relationship between longer search durations and higher severity of cyberchondriasis was statistically significant ($p < 0.001$). This indicates that extended time spent searching for health information online tends to heighten the intensity of cyberchondriasis symptoms. The

finding were not concurrent with the studies by Kanganolli SR et al,^[26] and El-Zoghby et al.^[27]

Late-night and weekend health-related searches were associated with increased severity of cyberchondriasis. Among students searching late at night, 60.34% exhibited mild symptoms and 18.97% moderate symptoms. Similarly, weekend searches resulted in 20.00% moderate symptoms. The association between the timing of internet usage for searches and cyberchondriasis severity was statistically significant ($p < 0.001$). These findings suggest that searching during off-hours may contribute to greater emotional distress and compulsive searching. The same has been reported by Kanganolli SR et al.^[26] This confirmed the idea that the time spent online is a key determinant and late-night usage might lead to higher levels of anxiety as there is no immediate professional advice or comfort for those who suffered such searches. This can establish a vicious circle of increased anxiety and compulsive search behaviours.

Medical websites were the most popular source for medical-related searches with 47.33% of the total medical searches, followed by social media websites with 24.75%, general search engines with 16.58% and health forums with 11.38% of the medical searches performed. This suggested that people preferred to use credible and specialized sites such as medical websites. The inclusion of social media platforms and general search engines, however, revealed that a reliable health information dissemination was required to be done on various types of online media. In his study, El Zoghby SM et al,^[27] found that the most commonly cited and influential platform used by participants was Facebook (65.2%), followed by WhatsApp (61.6%), YouTube (48%), and Google (30.5%) with participants indicating that these platforms were accessible, prompting health-seeking behaviours.

Academic performance was not found to be significantly associated with cyberchondriasis ($p=0.86$) and was similar to the findings of El Zoghby SM et al.^[27] There was no difference in the rates of health-related behaviours among students performing at different academic levels. anxiety and compulsive online searching, suggesting that cyberchondriasis is independent of academic achievement.

CONCLUSION

The present study highlights a strong connection between medical students and cyberchondria (71.67%) arising from their behaviors in the digital world, academic stress, and socio-demographic characteristics. Results indicate that all components of the construct of cyberchondria (excessiveness, reassurance-seeking, compulsive behaviours) are significantly impacted by online health-seeking behaviours, with reassurance-seeking and compulsive behaviours being the most affected.

Recommendations: The urge to seek health information is often driven by a subconscious desire to remove uncertainty and, consequently, it often causes more distress and anxiety. The psychological effects of unregulated Internet use are not limited to the person using the Internet; they affect how the person feels his or her health is at risk and how the person's anxieties are magnified in the social environment.

A major focus of research as it relates to helping students cope with cyberchondria may be towards the use of Cognitive

Behaviour Therapy (CBT), Mindfulness Based Therapies, Digital Literacy Education, Limiting Internet Use, and the use of a psychologist/psychiatrist to provide tailored interventions for severe or persistent cases may play a crucial role in helping students to deal with health related anxieties and reduce the psychological burden of cyberchondria. Promoting a healthy relationship with digital health resources and empowering students to critically assess information that can be found online, educators and healthcare providers can help to reduce the negative impact of cyberchondria and promote the health of this vulnerable group.

Limitations: Since the study is cross-sectional, none of the variables, such as socio-demographic factors, can be concluded to cause any severity of cyberchondria. A self-reporting instrument was used in the study, making it potential for recall bias and response bias. The survey was biased by the fact that some students who were motivated and interested in doing the survey, were the ones who had access to Internet and social media platforms, which in turn were the ones who participated in the survey. Due to the medical student only group, generalization of this study to students, other than medical, was not possible. That makes it nondiagnostic of its use for outside experiments.

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Conflicts of interest

There are no conflicts of interest.

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