



Cyberchondria And Smartphone Addiction:

A Correlation Survey among Undergraduate Students

¹Ms. Sunaya Ghosh, ²Ms. Rimpa Karak, ³Ms. Trisha Bhunia, ⁴Ms. Anusree Maiti

^{1, 3, 4}M.Sc. Nursing (Medical Surgical Nursing),

²M.Sc. Nursing (Child Health Nursing),

Institute of Nursing, Brainware University, Kolkata, India

Abstract: This research provides information on the prevalence of cyberchondria and its correlation with demographic characteristics using data from Scientific World Journal. Internet-based medical information is becoming a major component of patient education. Numerous websites on health are readily accessible. Searching the Internet before going for a medical consultation has become common. The analysis of the results indicates a strong correlation between the history of metabolic illnesses and cyberchondria (CYB). The cyberchondria severity scale (CSS) was used to quantify the prevalence of cyberchondria and related components. Increasing wide public awareness is essential to reducing the potential negative effects of cyberchondria, such as anxiety and sadness. This cross-sectional research examines how smartphone addiction is becoming more common among medical students at seven Egyptian institutions, as well as how it could contribute to CYB.

Smartphone addiction was observed in 57.2% of individuals in the medical group and 55.9% of individuals in the non-medical group ($P = 0.68$). Medical students had a significantly lower mean well-being score than non-medical students (58.4 vs. 59.6; $P < 0.01$). There was a positive correlation between cyberchondria severity and smartphone addiction.

Smartphones are a medium for performing online activities, and one such activity could be the compulsive online health information search - cyberchondria. This study aimed to test whether cyberchondria and intolerance of uncertainty (IU) positively predict smartphone addiction (SA), adjusted for age, gender, daily use duration, the reason for using smartphones, and symptoms of anxiety and depression. The sample consisted of 471 adults.

Using the simple random sampling technique, the cross-sectional research aimed to determine the prevalence of cyberchondria among 160 B.Sc. computer science students. Data were collected through a self-administered Cyberchondria Severity Scale 12 questionnaire with a Likert scale scoring of 0-4.

Index Terms - Cyberchondria, Smartphone addiction, Correlation, Intolerance of uncertainty.

I. INTRODUCTION

Internet has seen an increase in the usage of it as a source of health information [1, 2]. Due to its speed, ease of use, anonymity, and affordability, the Internet has grown in popularity as a source of health information [3]. Misdiagnosis and exploitation are potential consequences of using the Internet for health information [1, 4, 5].

It's become common to do an online search before seeing a doctor. We call this phenomenon "cyberchondria." Four fundamental aspects comprise cyberchondria: Repeatedly searching the internet for medical information may lead to excessiveness, increased negative affect (distress), compulsive, interruption of everyday activities, and assurance seeking. People often experience health-related anxiety and despair as a result of the information they learn from internet sources [6].

You may get information on the Internet about peer or professional reviews, personal blogs, opinions, and experiences from other patients. Individuals who suffer from cyberchondria exhibit distinct behaviours and ideas, such as spending many hours a day on the internet monitoring their symptoms. While those with modest health anxiety spent comparatively less time online each day, those with greater levels of disease worry spent more time online. These people already have a fear of being sick, so getting medical advice online only makes them worry more about their health. High anxiety individuals are more prone to overstate how disabled they think they are [7].

They seldom find that one information source is sufficient, thus they often consult two or more websites at once. This may cause physical symptoms such as heightened anxiety, an accelerated pulse, dyspnoea, and tightness in the throat. The more emotionally burdened someone feels, the more likely they are to spend time looking for the specific symptom, and the more time they spend looking, the more confident they become that they have a certain condition. At this point, people are more prone to start believing the Internet and mistrusting doctors, which is a frequent sign of cyberchondria [8].

Self-medication is one of the other major effects of the excessive internet search for health-related information [9]. In India, it's becoming more common to do an online search before seeing a doctor. The current study was carried out to find out the prevalence of cyberchondria among patients with metabolic syndrome, despite some evidence suggesting that people with high levels of health anxiety may seek health information online more frequently and that this behaviour could fuel health anxiety. This has not been explicitly examined.

Anxiety over one's health is caused by excessive and recurrent searches for health-related information, a condition known as cyberchondria. Cyberchondria is further complicated by the existence of obsessive beliefs [10], pre-existing health anxiety and anxiety sensitivity [11, 12], problematic Internet use [12, 13], and metacognitive beliefs [14].

II. METHOD

1. Study Selection

Inclusion Criteria:

- a) Studies focusing on the prevalence and factors of cyberchondria.
- b) Research on smartphone addiction and its psychological impact.
- c) Cross-sectional, longitudinal, or experimental studies published in peer-reviewed journals.

Exclusion Criteria:

- a) Studies not available in English.
- b) Articles without a clear methodological framework.
- c) Publications in predatory journals.

2. Data Sources and Search Strategy

A comprehensive search was conducted using databases such as PubMed, PsycINFO, and Google Scholar. Keywords used included "cyberchondria," "smartphone addiction," "health anxiety," "online health information," and "digital addiction." The search was limited to articles published from 2010 to 2023.

3. Data Extraction and Quality Assessment

Data from the selected studies were extracted independently by two reviewers. The extracted information included study design, sample characteristics, measurement tools, key findings, and limitations. The quality of each study was assessed using a modified version of the Newcastle-Ottawa Scale for cross-sectional studies.

4. Synthesis of Results

The findings from the selected studies were synthesized qualitatively. Key themes were identified, and the results were grouped according to the major constructs of cyberchondria and smartphone addiction. Quantitative data were summarized using descriptive statistics.

5. Methodology of Included Studies

In a tertiary care hospital in South India, a descriptive cross-sectional survey was carried out between February and March of 2021. The institutional ethics committee granted ethical clearance, and subjects provided informed consent. 379 respondents in all took part in the survey. The Cyberchondria Severity Scale (CSS) questionnaire was used to gather information on the health data gleaned from the Internet. The research comprised literate individuals with metabolic syndrome disorders who were 30 years of age or older. The research eliminated patients who were very sick, less than thirty years old, illiterate, and without metabolic syndrome disorders.

Both descriptive and inferential statistics were used to analyse the data. The sociodemographic data included age, gender, education, religion, family type, income, and Internet use. The participants' chronic condition prevalence was also included. Cyberchondria prevalence was measured using the Cyberchondria Severity Scale (CSS)-15. The fifteen items on the scale are divided into five subscales, each with three questions. Compulsiveness (CM), distress (DS), excessiveness (EX), reassurance (RE), and distrust (MS) are the subscales that comprise this group.

The prevalence of the constructs was assessed using subscales, where each item was scored on a 4-point scale (0-never, 1-rarely, 2-sometimes, 3-often, and 4-always). The subject was classified as "moderately impacted" if their score ranged between 1 and 6, and as "extremely affected" if it was 7 or above. The person was deemed "not affected" if their score was zero [9]. The person was considered to have less cyberchondria if their overall score was less than 37, which was determined by summing their scores. If the participant's age fell between 37 and 40, it was deemed to have modest effects. It was classified as significantly affected if it was higher than forty. The Mann-Whitney U test and the Kruskal-Wallis ANOVA are two nonparametric inferential techniques that were used to determine if the average CSS scores for the various sociodemographic factors differed in a way that was statistically important. The link among the constructs was ascertained using Spearman's correlation.

In this cross-sectional research, a sample of Egyptian undergraduate medical students' smartphone addiction and CYB were evaluated. Between March and June of 2022, an anonymous internet questionnaire was used for this investigation. The Snowball Convenience Sampling approach was used, and a total of 398 samples were needed. An online Google Form that was circulated around several social media groups was used to gather data. The requirement for inclusion was undergraduate degree. Three sections made up the structured self-administrated questionnaire that was used: The Smartphone Addiction Scale—Short Version (SAS-SV) is the second section, followed by sociodemographic and smartphone data, and the Cyberchondria Severity Scale (CSS) is the third part.

The data used in this study was obtained from a different study that examined the Serbian version of the Smartphone Application-Based Addiction Scale. In that study, a convenience sample was acquired online by disseminating a questionnaire throughout many social media platforms and messaging apps. Participants in the research had to be smartphone users and above the age of

eighteen. Questions regarding gender, age, education level, and current financial situation were posed to the participants.

The scores of each construct were standardized and by k means cluster analysis, the study participants were classified into three clusters. Those with high cluster center scores were grouped as affected with cyberchondria and those with low cluster center scores as without cyberchondria.

III. RESULTS

The overall results of the research indicate that after looking for health information online, the participants were substantially (and to differing degrees) impacted by the five components. The dimensions that impacted a greater number of research participants were compulsion (85.7%), anguish (91.8%), excessiveness (96.6%), reassurance (76.1%), and distrust (33.0%) than the mistrust of medical professionals (33.0%). The results of this investigation concerning the elements of cyberchondria are consistent with those of a previous Indian study, which showed that excessiveness impacted every participant [15].

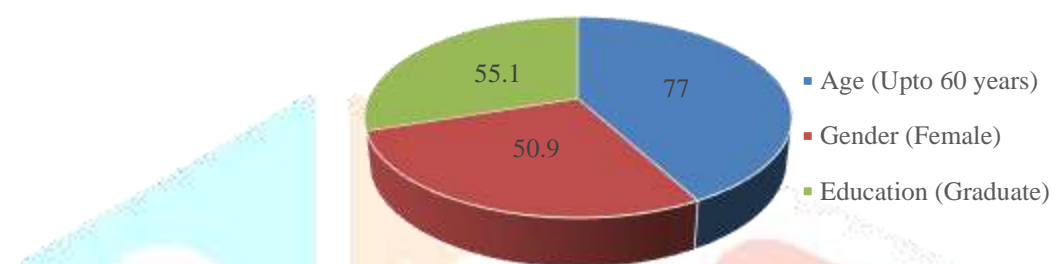


Figure 1: Sociodemographic Variables

Fig.1 showed that in socio-demographic variables, the majority of participants were female, up to the age of 60 years, and had graduate-level education. Diagram shows that age up to 60 years are more affected than people over 60 years, female and who are gradated qualification are more effected.

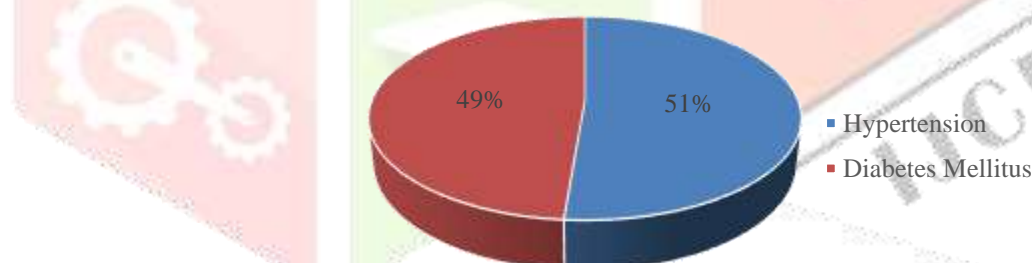


Figure 2: History of Chronic Conditions among the Participants

Fig.2 showed that the majority of participants - 49% and 51%, respectively - had diabetes mellitus and hypertension. The diagram shows the prevalence of chronic conditions among participants was also included hypertension and diabetes mellitus.

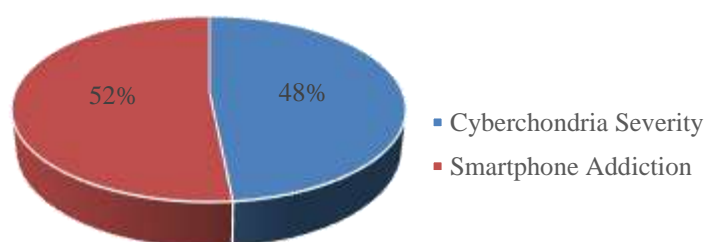


Figure 3: Descriptive Statistics of Cyberchondria Severity Scale and Smartphone Addiction Scale

The cyberchondria severity scale (CSS)-15 was used to determine the prevalence of cyberchondriasis, as shown in Fig. 3. Using the CSS-15 scale, it was found that 52% of students had smartphone addiction and

48% of students had severe cyberchondriasis. The fifteen items on the scale are divided into five subscales, each with three questions. Compulsiveness (CM), distress (DS), excessiveness (EX), reassurance (RE), and distrust (MS) are the subscales that comprise this group.

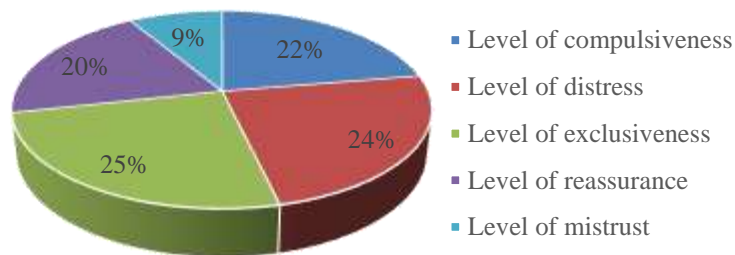


Figure 4: Prevalence of Different Constructs of Cyberchondria

Fig.4 depicts greater proportion of participants were affected by the dimensions of compulsion (22%), distress (24%), excessiveness (25%), and reassurance (20%) than by mistrust (9%) of medical experts.

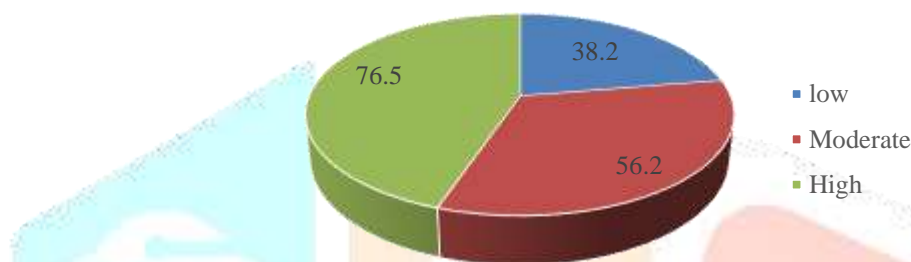


Figure 5: Analytic Statistics of Cyberchondria Severity Scale and Smartphone Addiction Scale for Addicted Participants

Fig.5 represents the overall research findings that the smartphone addiction level is on three scales: low (38.2), moderate (56.2), and high (76.5).

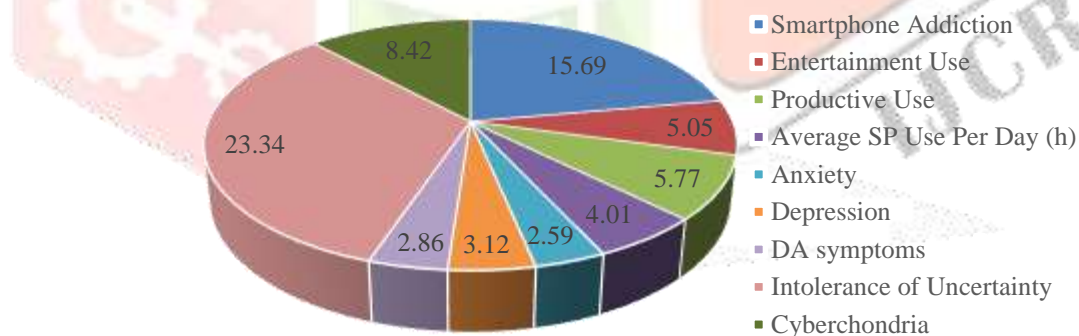


Figure 6: Mean Value of Variables

Fig.6 shows the general population was included in the sample, with those with chronic illnesses being omitted. Their respective scores for depression and anxiety were low, at 2.59 and 5.05. According to the statistics, the population with smartphone addiction was 15.69, while the overall population had 8.42 cyberchondria. This indicated that the general population's degree of cyberchondria was marginally lower than that of those with chronic illnesses and students.

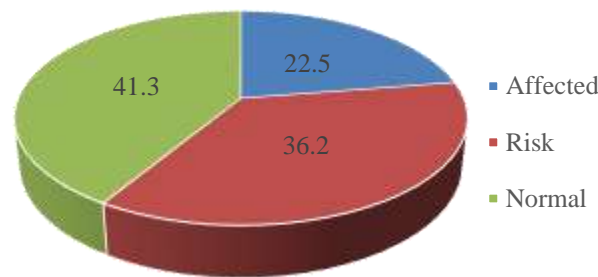


Figure 7: Mean Score Value of Prevalence of Cyberchondriasis

Approximately 36 (22.5%) of the 160 students had cyberchondria, 58 (36.2%) were at risk of developing the condition, and 66 (41.3%) were normal. This research has highlighted the increasing prevalence of cyberchondria among college degree holders, their recurrent practice of viewing health-related websites, and the students who are susceptible to the condition.

IV. DISCUSSION

The overall findings of the research “Prevalence of Cyberchondria among Outpatients with Metabolic Syndrome in a Tertiary Care Hospital in Southern India” show that after looking up health information online, the participants were impacted (in different ways) by the five components. Out of all the constructions examined, it was found that a greater proportion of research participants were impacted by the compulsion (85.7%), anguish (91.8%), excessiveness (96.6%), and reassurance (76.1%) constructs than by the mistrust of medical professionals (33.0%). These findings are consistent with those of another research that looked at the connection between health worry and looking for health-related information online. The research demonstrates that when a cyberchondriac searches the Internet for a second or third opinion, they begin to associate themselves with the most severe cases. This reassuring concept impacted 92% of the participants. According to the current research, 91.8% of the participants experienced discomfort, which is comparable to the results of a study that looked at the relationship between anxiety and seeking up information on health and an illness.

Seventy-five percent of the subjects suffered from compulsive behaviors, and a few additional investigations yielded comparable findings. Mistrust of the medical professional had an impact on 33%. Increasing health literacy may also assist distinguish between trustworthy and untrustworthy information, which can help prevent Internet-related increases in distress among those who are anxious about their health.

The goal of the current study “Cyberchondria and smartphone addiction: A correlation survey among undergraduate medical students in Egypt” [16] is to examine smartphone addiction, CYB, and the relationship between smartphone use and CYB in Egyptian medical students. According to the report, a sizeable portion of the student body (45.5%) uses smartphones for six to twelve hours every day. In accordance with the present research, 66.8% of participants in a study of medical students at Mansoura University in Egypt used their smart phones for social contact, while 65.8% of the participants used their smartphones for less than eight hours a day [17]. The rate in Malaysia was lower than this one, with 65.9% of students reporting using their smartphones for more than three hours a day [18]. However, these results are in line with other studies that have looked at smartphone usage patterns, like the one conducted in the Kingdom of Saudi Arabia, where 55.8% of students reported using their smartphones for more than five hours a day [19].

The research “Are Cyberchondria and Intolerance of Uncertainty Related to Smartphone Addiction?” [20] looked at the connection between cyberchondria and smartphone addiction. The results of a hierarchical linear regression analysis indicate that cyberchondria may be associated with anxiety and depression symptoms in addition to other factors including age, gender, the aim of smartphone use (such as productivity or amusement), and length of use. The findings confirmed our theories that each will contribute in a different way to the explanation of SA and that they will have a favourable association with SA. In other words, those who have higher IU and cyberchondria may also be more prone to problematic

smartphone use (PSU) and maybe SA. Instead of using a cross-sectional study design, a different longitudinal or experimental one would be necessary to determine causal linkages.

The study “Prevalence of cyberchondria among undergraduate students of a private degree college with Cyberchondria Severity Scale 12 in an urban area” [21] found that the prevalence of cyberchondria among degree college students was higher than that of patients who attended medical outpatient clinics in North Nottinghamshire, which was found to be 19.9% by Tyrer et al. [22] and lower than that of IT professionals, metabolic syndrome patients in a tertiary care hospital in South India, and dental students (98.7%). A study carried out in Manipur during the COVID 19 pandemic found that the mean score for cyberchondria was 9.09 and an association between cyberchondria and information overload was observed.

V. LIMITATIONS

In the present review, we included a large body of literature and applied a rigorous approach to identify publication bias. However, there are some limitations regarding the study which should be considered while interpreting the results. First, we only incorporated the studies published in English which might result in language bias. Lastly these studies had not discussed about gynecological issues.

VI. RECOMMENDATIONS

This review suggests that while not all individuals who browse health information online develop cyberchondria, there might be underlying psychopathological factors that contribute to this behavior. It also highlights that, need to educate students on the reliability of online health information and how to distinguish between trustworthy and untrustworthy websites. Future research should explore the underlying psychopathology of cyberchondria and develop targeted prevention and treatment strategies. Longitudinal studies could provide insights into the causal relationships between Internet use and the development of cyberchondria, while intervention studies could assess the effectiveness of various educational and therapeutic approaches.

VII. CONCLUSION

The findings show a moderately high risk of cyberchondria among young adults. This issue highlighted the importance of resolving psychological disorders and reducing their adverse effects. The research comprised patients who were seen in the outpatient departments of cardiology, endocrinology, and neurology at a single tertiary care institution. In some cases, appropriate information may be found in search results from reliable, scientific websites; nevertheless, there should be concerned for both the patient and the physician if individuals are exploring informal websites.

Excessive online searches for gynecological issues might medical consultations with healthcare providers, hoping to self-diagnose or self-treat based on online information. There is need for further study to determine how using the Internet for health-related purposes could adversely affect anxious people. Further research into cyberchondria is crucial for several reasons, given its growing prevalence and potential impact on overall health and healthcare systems. This indicates the need to educate the students regarding the reliability of the information obtained through the Internet and differentiate the trustworthy and untrustworthy websites. It is feasible to decrease smartphone addiction through promoting medical students' mental wellness via educational programmes. Increasing physical exercise will thus assist in reducing undergraduate students' levels of cyberchondria and, eventually, their addiction to smartphones.

Cyberchondria is a rapidly expanding public mental health concern in India that either requires urgent treatment or has the potential to seriously adversely affect the general population as a whole. The relationship between age and cyberchondria seems to be quite dependent on the sample, which could involve people from the general population ranging in age from high school or university students to others.

REFERENCES

- [1] Hart, A., Henwood, F. and Wyatt, S., 2004. "The role of the Internet in patient-practitioner relationships: findings from a qualitative research study". *Journal of Medical Internet Research*, 6(3), p.e50.
- [2] Fox, S. and Rainie, L., 2002. "How Internet users decide what information to trust when they or their loved ones are sick". *Pew Internet & American Life Project*.
- [3] McElroy, E. and Shevlin, M., 2014. The development and initial validation of the cyberchondria severity scale (CSS). *Journal of Anxiety Disorders*, 28(2), pp.259-265.
- [4] Eysenbach, G., Gray, J.M., Bonati, M., Arunachalam, S., Diepgen, T.L., Impicciatore, P. and Pandolfini, C., 1998. Towards quality management of medical information on the internet: evaluation, labelling, and filtering of information Hallmarks for quality of information Quality on the internet Assuring quality and relevance of internet information in the real world. *BMJ*, 317(7171), pp.1496-1502.
- [5] Heathfield, H., Pitty, D. and Hanka, R., 1998. Evaluating information technology in health care: barriers and challenges. *BMJ*, 316(7149), p.1959.
- [6] Fergus, T.A., 2013. Cyberchondria and intolerance of uncertainty: examining when individuals experience health anxiety in response to Internet searches for medical information. *Cyberpsychology, Behavior, and Social Networking*, 16(10), pp.735-739.
- [7] Doherty-Torstrick, E.R., Walton, K.E. and Fallon, B.A., 2016. Cyberchondria: parsing health anxiety from online behavior. *Psychosomatics*, 57(4), pp.390-400.
- [8] Singh, K. and Brown, R.J., 2014. Health-related Internet habits and health anxiety in university students. *Anxiety, Stress, & Coping*, 27(5), pp.542-554.
- [9] Mubeen Akhtar, T.F., 2019. Exploring cyberchondria and worry about health among individuals with no diagnosed medical condition. *JPMA*, 70(3), pp.90-95.
- [10] Demirtas, Z., Emiral, G.O., Caliskan, S., Zencirci, S.A., Unsal, A., Arslantas, D. and Tirpan, K., 2022. Evaluation of relationship between cyberchondria and obsessive beliefs in adults. *Puerto Rico Health Sciences Journal*, 41(4), pp.233-238.
- [11] Starcevic, V., Baggio, S., Berle, D., Khazaal, Y. and Viswasam, K., 2019. Cyberchondria and its relationships with related constructs: A network analysis. *Psychiatric Quarterly*, 90, pp.491-505.
- [12] Norr, A.M., Albanese, B.J., Oglesby, M.E., Allan, N.P. and Schmidt, N.B., 2015. Anxiety sensitivity and intolerance of uncertainty as potential risk factors for cyberchondria. *Journal of Affective Disorders*, 174, pp.64-69.
- [13] Durak Batıgün, A., Şenkal Ertürk, İ., Gör, N. and Kömürçü Akik, B., 2021. The pathways from distress tolerance to Cyberchondria: A multiple-group path model of young and middle adulthood samples. *Current Psychology*, 40(11), pp.5718-5726.
- [14] Hashemi, S.G.S., Hosseinneshad, S., Dini, S., Griffiths, M.D., Lin, C.Y. and Pakpour, A.H., 2020. The mediating effect of the cyberchondria and anxiety sensitivity in the association between problematic internet use, metacognition beliefs, and fear of COVID-19 among Iranian online population. *Heliyon*, 6(10).
- [15] Dagar, D., Kakodkar, P. and Shetiya, S.H., 2019. Evaluating the cyberchondria construct among computer engineering students in Pune (India) Using Cyberchondria Severity Scale (CSS-15). *Indian Journal of Occupational and Environmental Medicine*, 23(3), pp.117-120.
- [16] El-Zoghby, S.M., Zaghloul, N.M., Tawfik, A.M., Elsherbiny, N.M., Shehata, S.A. and Soltan, E.M., 2024. Cyberchondria and smartphone addiction: A correlation survey among undergraduate medical students in Egypt. *Journal of the Egyptian Public Health Association*, 99(1), p.7.
- [17] Eldesokey, S., Gomaa, Z., Sabri, Y., El-Gilany, A.H. and Elwasify, M., 2021. Smartphone addiction among medical students in mansoura university. *Egyptian Journal of Psychiatry*, 42(1), pp.50-56.
- [18] Nikmat, A.W., Hashim, N.A., Saidi, M.F., Zaki, N.S.M., Shukri, N.N.H. and Abdulla, N.B., 2018. The use and addiction to smart phones among medical students and staffs in a public University in Malaysia. *Asean J Psychiatry*, 19(1), pp.98-104.

- [19] Alhazmi, A.A., Alzahrani, S.H., Baig, M. and Salawati, E.M., 2018. Prevalence and factors associated with smartphone addiction among medical students at King Abdulaziz University, Jeddah. *Pakistan Journal of Medical Sciences*, 34(4), p.984.
- [20] Vujić, A., Volarov, M., Latas, M., Demetrovics, Z., Kiraly, O. and Szabo, A., 2023. Are cyberchondria and intolerance of uncertainty related to smartphone addiction? *International Journal of Mental Health and Addiction*, pp.1-19.
- [21] Kulsum, Ummu, et al. "Prevalence of cyberchondria among undergraduate students of a private degree college with Cyberchondria Severity Scale-12 in an urban area." *BLDE University Journal of Health Sciences* 8.1 (2023): 95-99.
- [22] Tyrer, P., Cooper, S., Tyrer, H., Wang, D. and Bassett, P., 2019. Increase in the prevalence of health anxiety in medical clinics: possible cyberchondria. *International Journal of Social Psychiatry*, 65(7-8), pp.566-569.

