



INTERNET ADDICTION , SLEEP QUALITY AND DEPRESSION AMONG MEDICAL STUDENTS:AN ONLINE CROSS SECTIONAL SURVEY

Psychiatry

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ABSTRACT

Background:- Internet addiction is familiar problem affecting medical students. Evidence on the burden of depression, sleep quality and internet addiction is fairly low in Indian context. After Covid -19 pandemic, internet use became a necessity but it came with its demerits. The present study aims to assess the prevalence of Internet addiction, sleep quality and depression among medical undergraduates and postgraduates. **Methods:-** An online cross sectional study was done among the medical undergraduates and post graduates of Shridevi Institute of Medical sciences. Data collection was done through validated questionnaires like Patient Health Questionnaire-9, Young Internet Addiction Test and Pittsburgh Sleep Quality Index for Depression, Internet addiction and Sleep quality. **Results:-** Out of 220 study subjects , majority (68.6%) were of 20-25 years age group and 61.4% were females. Among these 36.4% used internet >4 hours per day. Most of them (49.5) used internet for social networking. Among them 31.8% , 11.4% and 5% scored validated cut off scores for mild, moderate and severe internet addiction respectively. Poor sleep quality was reported by 91.4% students. A total of 25.5%, 16.4% , 9.5% and 6.4 % had mild , moderate , moderately severe and severe depression. **Conclusion:-** In the current study , majority of the students met the criteria for internet addiction , poor sleep quality and depression . There was a positive correlation between Internet addiction , depression and sleep quality. The temporal link between Internet addiction , sleep and depression could not be studied due to cross-sectional nature of this study.

KEYWORDS

internet addiction, sleep deprivation, depression, postgraduate

INTRODUCTION

World as we know is rapidly changing with the advent of technology. From e-education to e-commerce internet has become integral part of our lives.

India is the second largest online market in the world with more than 560 million users.(1)

According to ICD-11 it is classified under 6C5Y "Other specified disorders due to addictive behaviors".(2)

According to Beard, and Young, the criteria for internet addiction are as follows(3,4) :-
Preoccupation with internet use.

Using the internet for increasing periods to ensure satisfaction with the internet.

Unsuccessful attempts to reduce, stop, and control the time spent on the internet.

Unrest, aggression, or boredom in the individual when reducing, stopping, and controlling the time spent on the internet.

Being active on the internet for more than the specified time.

In Indian context , Prevalence of Internet Addiction varied from 15%-25%.(5,6,7), while a study done among the professional college students revealed prevalence of internet addiction around 78%. (8)

50% of Indian medical students reported poor sleep quality due to internet addiction.(6) Internet Addiction has ill effects on physical and mental health . It also linked with low self esteem ,loneliness , substance abuse , self harm ,poor academic performance,anxiety.(9). Hence, we set out to perform this study with the aim to estimate the prevalence of internet addiction, poor sleep quality and depression in medical students. Additionally, we also aimed to determine the association between internet addiction, poor sleep quality and depression among medical students

METHODOLOGY

This was a prospective cross sectional study, conducted online, in Shridevi Institute of Medical Sciences & Research Hospital , Tumkur for which we enrolled 220 undergraduate and post graduate students who gave consent for this study.

A validated, self administered, structured questionnaire was used for data collection through online survey. Data pertaining to Internet addiction ,sleep quality and depression was collected using Young Internet Addiction Test, Pittsburgh sleep quality index and Patient Health Questionnaire.

Internet addiction Internet addiction of the students was assessed using Young's 20-item Internet Addiction Test (IAT). Score for individual item of IAT can range from 1 (rarely) to 5 (always). Composite score for IAT can range from 20 to 100 where a greater score is indicative of greater internet addiction. (10)

Pittsburg sleep quality index (PSQI) is a 19-item tool that evaluates sleep quality over a period of one month. PSQI score can range from 0 to 21, in which a greater score suggests poor sleep quality. We used PSQI global score greater than 5, which had sensitivity of 89.6% and specificity of 86.5% , to determine if the student met criteria for poor sleep quality.(11)

Depressive symptoms Depressive symptoms were assessed by nine-item scale, Patient Health Questionnaire-9 (PHQ-9). Score for each item of PHQ-9 ranges from 0 (not at all) to 3 (almost every day) based on the frequency of symptoms experienced. The total score ranges from 0 to 27, greater score reflecting more frequent and higher number of depressive symptoms.(12)

Statistical Analysis

Data was entered into Microsoft excel data sheet and was analyzed using SPSS 22 version software. Categorical data was represented in the form of Frequencies and proportions. Chi-square test was used as test of significance for qualitative data.

Normality of the continuous data, was tested by Kolmogorov –Smirnov test and the Shapiro–Wilk test. Continuous data was represented as mean and standard deviation.

Pearson correlation was done to find the correlation between two

quantitative variables and qualitative variables respectively.

RESULTS

Overall, we recruited 220 students out of which 18 were postgraduate students (MD, MS). Remaining 202 were undergraduate (MBBS) students. Out of these, 135 were females. Majority of the students were staying in hostel and belonging to 20-25 years age category.

Among these 80 students reported using internet for more than 4 hours a day. Majority (137) of them were using internet for 1-4 hours per day. Only 3 students reported using it for less than 1 hour per day. Most of the students (109) reported using internet for social networking followed by movies and shows. Only 18 students reported spending maximum time on internet for educational purposes. During the morning hours, 152 students reported spending less than 30 minutes on internet. For afternoon it is 91 students spending less than 30 minutes. At night this increases to more than 2 hours for 105 students. Around 40% students reported using internet as soon as they wake up and just before going to bed.

Table 1: Internet Addiction Score Classification

Internet Addiction Score	Count	%
Normal (0 to 30)	114	51.8%
Mild (31 to 49)	70	31.8%
Moderate (50 to 79)	25	11.4%
Severe (80 to 100)	11	5.0%
Total	220	100.0%

In terms of internet addiction severity 31.8%, 11.4% and 5% had mild, moderate and severe internet addiction respectively. Normal internet usage was found for 114 students i.e 51.8%. (Table 1)

Table 2: Depression Classification

Depression Total Score	Count	%
No Depression	38	17.3%
Minimal depression	55	25.0%
Mild depression	56	25.5%
Moderate depression	36	16.4%
Moderately severe depression	21	9.5%
Severe depression	14	6.4%
Total	220	100.0%

Out of these students 25%, 16.40%, 9.50%, 6.40% had mild, moderate, moderately severe and severe depression based on their PHQ-9 scores.

Table 3: Sleep Quality Classification

Sleep Quality Classification	Count	%
<5 Good Quality Sleep	19	8.6%
>5 Poor Quality Sleep	201	91.4%

In terms of sleep quality 91.40% reported a poor sleep quality based on Pittsburg sleep quality index scores.

Chi square test showed significant association between Internet addiction scores and depression. Majority of students with normal internet usage have no or minimal depression whereas students with moderate to severe internet addiction have moderate to severe depression.

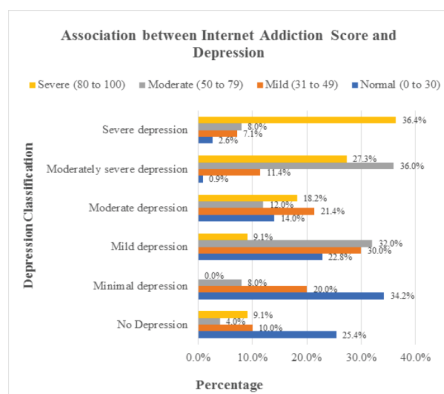


Figure 1: Bar Diagram Showing Association Between Internet Addiction Score And Depression

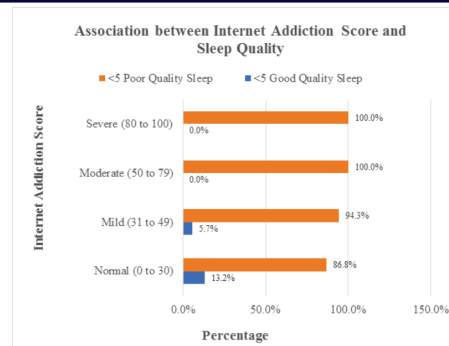


Figure 2: Bar Diagram Showing Association Between Internet Addiction Score And Sleep Quality

Sleep quality is overall poor for students but in those having good sleep quality all have normal internet usage or mild internet addiction.

In terms of pearson correlation, the correlation between Internet addiction score and depression was 0.448 which was positive moderate correlation. The correlation between internet addiction and sleep quality was 0.461 which was positive moderate correlation.

DISCUSSION

Our study was done in a medical college in karnataka and we assessed internet usage, sleep quality and depression among medical undergraduate and postgraduate students.

In our study, we found that a large percentage (49%) of undergraduate & postgraduate students meet the criteria for Internet addiction. Among those highest prevalence was among Interns followed by postgraduates. This is unlike a previous study which reported that older students have less internet addiction.(13)

A large proportion of students report poor sleep quality 91% of students. Around 40% students spent more than 4 hours during the day using Internet and 50% of them are using internet at night for more than two hours. Poor sleep quality when compared internationally with students from other countries like U.S.A(14), Saudi Arabia (15) and China(16) is much worse. In Indian scenario, sleep quality is worse for medical students when compared to law students. (17) Young individuals with sleep disturbances have more chances of internet addiction.(18) Although we found out that Internet addiction and sleep quality are positively correlated, it is unsure whether internet addiction causes poor sleep or the other way around.

Studies suggest that Internet addiction increases the risk of depression.(19). In our study we found out that Internet addiction and depression were positively correlated. What remains unknown is how this occurs. Internet Addiction causes individual's functionality to deteriorate which increases the vulnerability to develop affective symptoms.(20) It may also be true that IA and affective symptoms are interrelated and result in persistence of both these conditions. (21). Studies also reveal the medical students have significantly higher stress. (15) High levels of uncertainty in a medical student's life is strongly associated with IA.(22) Among those having normal internet usage, 22% & 14% have mild & moderate depression respectively. We also found out that moderate and severe depression was higher in individuals scoring high in IA scores.

CONCLUSION

There is a high prevalence of internet addiction, depression and poor sleep quality in medical undergraduate and post graduate students. Routine assessment of this vulnerable population should be done to assess these. There is also a need for longitudinal study to reveal temporal relationship between IA, Sleep quality and depression.

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REFERENCES

1. Statista[Internet]. Internet usage in India- statistics& facts [cited 2020May 02]. Available from: <https://www.statista.com/topics/2157/internet-usage-in-india>
2. International Classification of Diseases, Eleventh Revision (ICD-11), World Health Organization (WHO) 2019/2021 <https://icd.who.int/browse11>.
3. Young, K. Internet Addiction: Diagnosis and Treatment Considerations. J. Contemp. Psychother. 2009; 39, 241–246. [Google Scholar] [CrossRef]
4. Beard, K.W. Internet Addiction: A Review of Current Assessment Techniques and

- Potential Assessment Questions. *Cyberpsychol. Behav.* 2005, 8, 7–14. [Google Scholar] [CrossRef]
5. Joseph J, Varghese A, Vr V, Dhandapani M, Grover S, Sharma S, Khakha D, Mann S, Varkey BP. Prevalence of internet addiction among college students in the Indian setting: a systematic review and meta-analysis. *Gen Psychiatr.* 2021 Aug 20;34(4):e100496. doi: 10.1136/gpsych-2021-100496. PMID: 34504996; PMCID: PMC8381302.
 6. Kumar S, Singh S, Singh K, Rajkumar S, Balhara YPS. Prevalence and pattern of problematic internet use among engineering students from different colleges in India. *Indian J Psychiatry.* 2019 Nov-Dec;61(6):578–583. doi: 10.4103/psychiatry.IndianJPsychiatry.85.19. PMID: 31896863; PMCID: PMC6862987.
 7. Jain A, Sharma R, Gaur KL, Yadav N, Sharma P, Sharma N, Khan N, Kumawat P, Jain G, Maanju M, Sinha KM, Yadav KS. Study of internet addiction and its association with depression and insomnia in university students. *J Family Med Prim Care.* 2020 Mar 26;9(3):1700–1706. doi: 10.4103/jfmpc.jfmpc.1178.19. PMID: 32509675; PMCID: PMC7266242.
 8. Kumari R, Langer B, Gupta R, Gupta RK, Mir MT, Shafi B, et al. Prevalence and determinants of Internet addiction among the students of professional colleges in the Jammu region. *J Family Med Prim Care* 2022;11:325–9.
 9. Zhang Y, Liu Z, Zhao Y. Impulsivity, Social Support and Depression Are Associated With Latent Profiles of Internet Addiction Among Male College Freshmen. *Front Psychiatry.* 2021 Mar 25;12:642914. doi: 10.3389/fpsy.2021.642914. PMID: 33841210; PMCID: PMC8026875.
 10. Fernandez-Villa T, Molina AJ, Garcia-Martin M, Llorca J, Delgado-Rodriguez M, Martin V. Validation and psychometric analysis of the internet addiction test in Spanish among college students. *BMC Public Health.* 2015;15:953
 11. Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh sleep quality index: a new instrument for psychiatric practice and research. *Psychiatry Res.* 1989;28(2):193–213.
 12. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med.* 2001;16(9):606–13.
 13. Tahir MJ, Malik NI, Ullah I, et al. Internet addiction and sleep quality among medical students during the COVID-19 pandemic: A multinational cross-sectional survey. *PLoS One.* 2021;16(11):e0259594. Published 2021 Nov 5. doi:10.1371/journal.pone.0259594
 14. Brick CA, Seely DL, Palermo TM. Association between sleep hygiene and sleep quality in medical students. *Behav Sleep Med.* 2010;8:113–21. [PMC free article] [PubMed] [Google Scholar] [Reflist]
 15. Almojali AI, Almalki SA, Allothman AS, Masuadi EM, Alaqeel MK. The prevalence and association of stress with sleep quality among medical students. *J Epidemiol Glob Health.* 2017;7:169–74. [PMC free article] [PubMed] [Google Scholar]
 16. Azad MC, Fraser K, Rumana N, Abdullah AF, Shahana N, Hanly PJ, et al. Sleep disturbances among medical students: A global perspective. *J Clin Sleep Med.* 2015;11:69–74. [PMC free article] [PubMed] [Google Scholar] [Reflist]
 17. Palatty PL, Fernandes E, Suresh S, Baliga MS. Comparison of sleep pattern between medical and law students. *Sleep Hypn.* 2011;13:1–2. [Google Scholar] [Reflist]
 18. Zhang MW, Tran BX, Hinh ND, Nguyen HLT, Tho TD, Latkin C, et al. Internet addiction and sleep quality among Vietnamese youths. *Asian Journal of Psychiatry.* 2017;28:15–20. doi: 10.1016/j.ajp.2017.03.025 [PubMed] [CrossRef] [Google Scholar] [Reflist]
 19. Boonvisudhi, T., & Kuladee, S. (2017). Association between Internet addiction and depression in Thai medical students at Faculty of Medicine, Ramathibodi Hospital. *PLoS one*, 12(3), e0174209. <https://doi.org/10.1371/journal.pone.0174209>
 20. Lin SSJ, Tsai CC. Sensation seeking and Internet dependence of Taiwanese high school adolescents. *Comput Hum Behav.* 2002;18:411–26. [Google Scholar] [Reflist]
 21. Yen JY, Ko CH, Yen CF, Chen SH, Chung WL, Chen CC. Psychiatric symptoms in adolescents with Internet addiction: comparison with substance use. *Psychiatry Clin Neurosci.* 2008;62:9–16. 10.1111/j.1440-1819.2007.01770.x [PubMed] [CrossRef] [Google Scholar] [Reflist]
 22. Yang, Q., Wu, Z., Yang, X., Jiang, S., Wu, D., & Oliffe, J. L. (2022). Associations Between Uncertainty Stress, Life Stress and Internet Addiction Among Medical Students. *Frontiers in public health*, 9, 809484. <https://doi.org/10.3389/fpubh.2021.809484>