

Mental Well-being and Internet Addiction: Insights from Medical Undergraduates

Devendra Kumar¹, Mukesh Sharma², Bhumika Bhatt³, Nitin Tiwari⁴, Ankita Goyal⁵, Chandramani Yadav⁶

^{1,2,3,4,5}Department of Community Medicine, Autonomous State Medical College, Firozabad, Uttar Pradesh, India

⁶Department of Statistics, Central Council for Research in Unani Medicine, Ministry of Aayush, Government of India

CORRESPONDING AUTHOR

Dr Nitin Tiwari, Associate Professor, Department of Community Medicine, Autonomous State Medical College, Firozabad, Uttar Pradesh, India 283203

Email: doctor4unitin@gmail.com

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ABSTRACT

Background: Internet addiction is when people spend too much time on the internet and can't stop is now recognized as a major public health concern issue throughout globally. **Aim & Objective:** To examine how medical students now utilize the internet and how it affects their mental health. **Settings and Design:** A cross-sectional research was done among 300 medical undergraduate students who were chosen at random from 1st, 2nd, 3rd, and final year. **Material & Methods:** Internet Addiction Test (IAT) served as the instrument to assess online compulsive use and DASS-21 scale to look at how depressed, anxious and stressed students were. Spearman's rank correlation test was used to assess correlation among depression, anxiety, stress & internet addiction. **Results:** The scatter plot showed a significant positive association among depression as well as internet use, a strong favourable relationship among internet use as well as anxiety and a weak favourable relationship among internet use as well as stress. **Conclusion:** Early identification, awareness programs and promotion of healthy digital habits are essential to safeguard mental well-being and academic performance in this vulnerable population.

KEYWORDS

Medical Undergraduates, Mental Health, Internet Addiction

INTRODUCTION

Internet has profoundly transformed multiple domains of human life, including education, communication, and health care. For medical students, the Internet has become an indispensable tool for academic learning, clinical information retrieval, professional networking, and stress relief. Online educational platforms, digital libraries, and virtual discussion forums have enhanced access to medical knowledge and facilitated continuous learning. However, the growing dependence on digital technology has raised concerns regarding excessive and uncontrolled Internet use and its potential adverse effects on mental health.(1)

Students pursuing professional education represent a critically important population for the future growth and prosperity of any nation. Optimal physical and mental health is essential for acquiring professional skills, maintaining effective interpersonal relationships, securing employment, and achieving overall quality of life and if left unrecognized and untreated, these conditions may result in poor academic performance, burnout, and in severe cases, suicidal behaviour also. (2)

Internet addiction, defined as excessive and compulsive Internet use that interferes with daily functioning, is increasingly recognized as a significant public health concern worldwide. The World Health Organization (2018) (3) has

highlighted that problematic Internet use may negatively impact mental health, increasing the risk of anxiety, depression, sleep disturbances and psychosocial dysfunction.

Although the negative consequences of excessive Internet use were recognized earlier, Internet addiction was formally conceptualized as a psychological condition in the mid-1990s. It is currently classified as a subtype of behavioural addictions and has since gained considerable attention in psychiatric and public health research.⁽⁴⁾

Aims & Objectives: To assess the prevalence of Internet addiction among undergraduate medical students and its association with mental health outcomes, including depression, anxiety and stress.

MATERIAL & METHODS

Study design and duration: This was a cross-sectional study conducted from June to September 2024.

Study setting and population: The study was conducted among 300 medical undergraduate students from the Autonomous State Medical College in Firozabad, Uttar Pradesh. The students were chosen by simple random sampling technique using the lottery method from the first, second, third and final year of the MBBS course. A validated, self-administered instrument was provided to the participants to get the relevant information.

Sample size estimation was performed using the following formula:

$$n = [Z^2_{1-\alpha/2} \times p \times (1-p)] / d^2$$

where $Z_{1-\alpha/2} = 1.96$ (equivalent to a 5% significance threshold), $d = 0.05$ (absolute precision) and p represents the estimated prevalence in the population. Assuming a depression prevalence of 24% among medical students⁽⁵⁾, the final sample size was calculated as 300, considering a confidence level of 95% level, 5% absolute error, and an anticipated 5% non-response rate.

Study tools: Dr. Kimberly S. Young created the Internet Addiction Test (IAT), which was administered to assess internet dependency. The tool is a survey with 20 questions, and each answer may get a maximum of 5 points. (6) A score of 0–30 shows typical internet use, while a score of 100 shows the highest possible score. A score of 31–49 shows a mild internet addiction, scores between 50 and 79 shows moderate-level addiction, while scores of 80 or more shows a severe addiction. Greater the scores represents worse the intensity of compulsive internet use.

The Depression Anxiety Stress Scale (DASS-21) scale was used to evaluate the severity of stress, anxiety

and depression. It has 21 statements that are broken up into three parts. One part is for anxiety, another is for stress and the last is for sadness. (7)

The depression subscale looks at feelings of features such as low mood, hopelessness, self-worth loss, reduced motivation, anhedonia, and fatigue. The anxiety scale looks at how physiological arousal, muscle tension, situational unease, and how nervous someone feels. The stress scale measures how hard it is to relax, how readily you become apprehensive, how easily you get upset or angry, how irritable you are, and how impatient you are. **Statistical analysis:** Data obtained from participants was entered into Microsoft Excel followed by SPSS software Version 21. The results were presented following the principles of descriptive statistical analysis. Pearson correlation test was used to see for presence of correlation of internet addiction with depression, anxiety and stress. P-value of less than 0.05 was considered statistically significant.

Ethical clearance: The research was conducted after getting the ethical approval from the Institute's ethics committee.

RESULTS

These findings indicate that the majority of participants predominantly engage with social media and communication platforms with a preference for internet use distributed across the entire day.

We conducted and reported the Shapiro–Wilk normality test for all main continuous variables (IAT scores and DASS-21 scores). All variables were found to be non-normally distributed ($p < 0.05$). In accordance with these findings, we used the Spearman Rank Correlation as the appropriate method.

There was a substantial positive relationship between internet use and depression as seen by the scatter plot that compared the IAT score based on Young's scale with the Depression Anxiety Stress Scale (DASS) scale's Depression sub scale score. The computed rank correlation value was $R = +0.620$. (p value - 0.000)

The scatter plot demonstrated a rank-based association of $R = +0.531$, (p value- 0.000) indicating that there is a significant positive correlation between using the internet usage and anxiety.

The scatter plot showing the correlation between the Internet use and the DASS- 21 subscales Stress score had a Rank Correlation of $R = +0.458$ (p value- 0.000), which is less than +0.5. This means that there is a weak positive correlation between using the internet usage and stress.

Table 1: Classification of Participants by Socio-demographic Variables

Particulars	Category	Frequency (n)	Percentage (%)
Age(years)	18-21	131	43.6
	>21-24	106	35.3
	>24-27	47	15.7
	>27	16	5.4
Gender	Male	176	58.6
	Female	124	41.4
Place of Schooling	Rural	64	21.3
	Urban	236	78.7
Place of Stay	Day scholar	23	7.7
	Hostel	277	92.3
Socio-Economic class	Upper class	58	19.3
	Upper middle	83	27.7
	Lower middle	94	31.4
	Upper lower	52	17.3
	Lower	13	4.3

Table 2: Distribution of study subjects based on internet usage pattern

		Frequency (n)	Percentage (%)
<i>Internet used for academic purpose</i>	0 - 1 hour	68	22.7
	>1 - 3 hour	138	46.0
	>3 - 5 hour	65	21.6
	≥5 hours	29	9.7
<i>Preferable time of internet usage</i>	Day	182	60.7
	Night	118	39.3
<i>Most frequently used website/Application</i>	Google/Chrome browser	12	4.0
	WhatsApp	112	37.3
	Instagram	118	39.3
	Facebook	18	6.0
	Shopping Apps	17	5.6
	Others (You Tube, Marrow, Telegram, Gaming Apps)	23	7.6

Table 3: Distribution of study subjects based on prevalence of Internet addiction and Mental illness

Particulars	Categories	Frequency (n)	Percentage (%)
Internet addiction	Normal	197	65.7
	Mild	89	29.6
	Moderate	12	4.0
	Severe	2	0.67
Depression	Normal	277	92.3
	Mild	20	6.7
	Moderate	3	1.0
	Severe	0	0
	Extremely Severe	0	0
Anxiety	Normal	272	90.7
	Mild	16	5.3
	Moderate	11	3.7
	Severe	1	0.3
	Extremely Severe	0	0
Stress	Normal	261	87.0
	Mild	28	9.3
	Moderate	9	3.0
	Severe	2	6.6
	Extremely Severe	0	0

Figure 1 Scatter plot graph showing correlation between Depression and Young's IAT Score

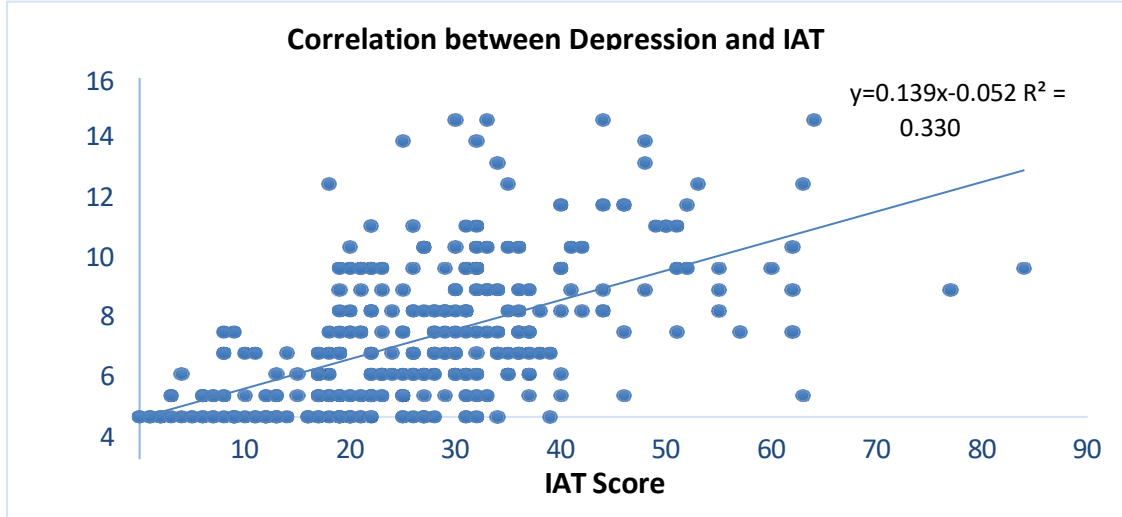


Figure 2: Scatter plot graph showing correlation between Anxiety and Young's IAT Score

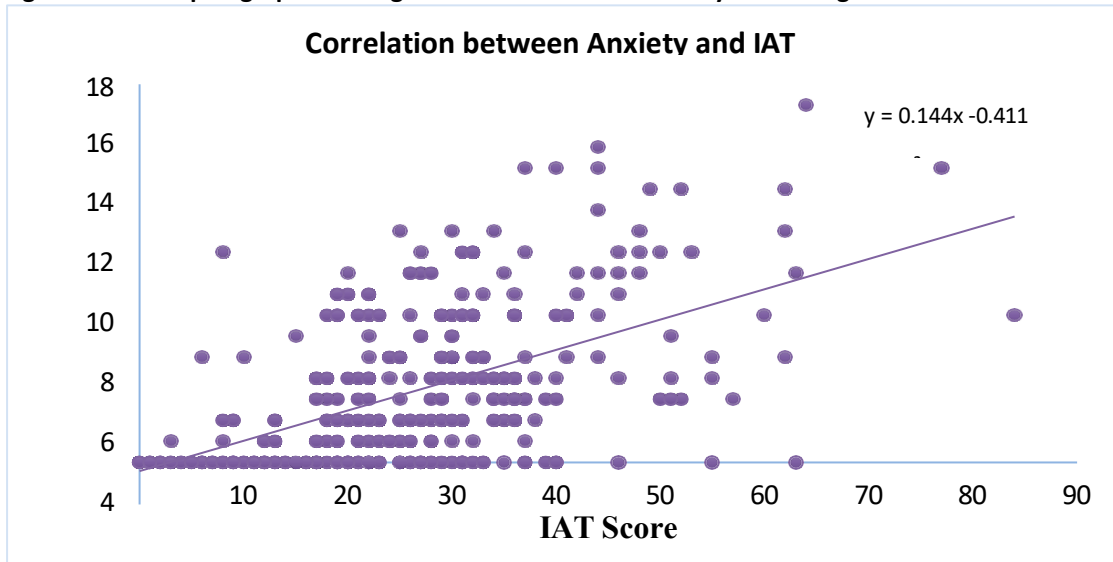
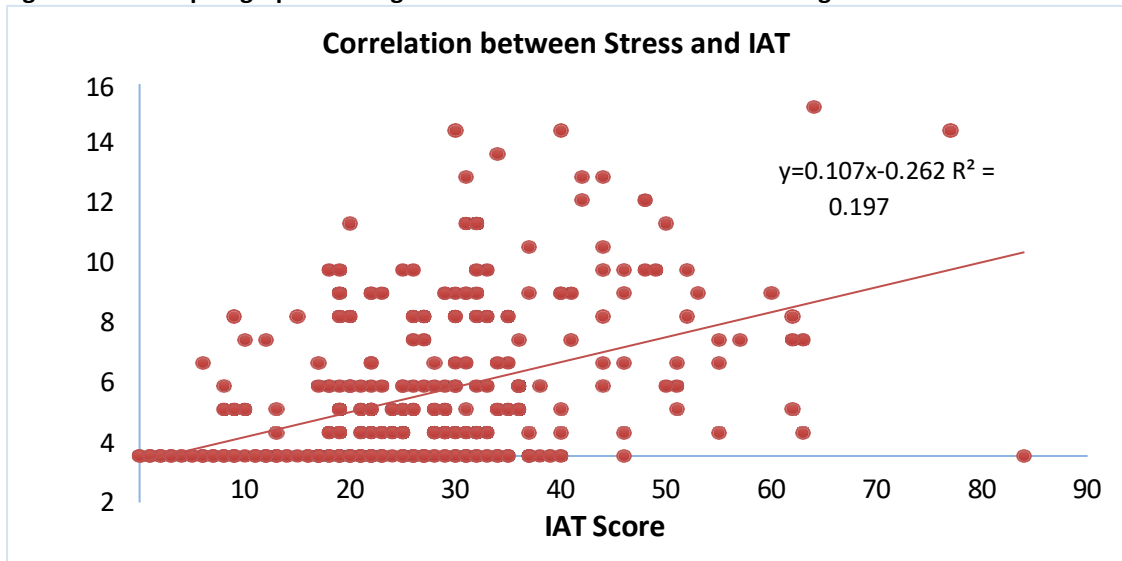


Figure 3: Scatter plot graph showing correlation between Stress and Young's IAT Score



DISCUSSION

The study results showed that most of the medical students did not have internet addiction but a significant number (29.6%) do show signs of moderate internet addiction. There may be high proportion of mild internet addiction than moderate or severe addiction since medical students have a lot of academic and social pressure. These stresses might make people engage in internet activity more as a way to deal with them, even if it is not bad enough to be called an addiction. Agarwal et al.'s 2020 research reported a higher tendency among medical students to be stressed and anxious, which might be why they spend more time online. (8)

Dyrbye et al.'s study in 2006 (9) and other studies have found that medical students are more likely to be depressed, anxious, and stressed. However, the lower rates in our study may be due to the fact that students are generally good at dealing with these problems, which could include being resilient, getting support from friends, or being able to handle academic challenges. This might mean that mental health problems are common but not very common in the group investigated, and that most students could handle them.

However, it's crucial to remember that medical students have a higher tendency to have psychological disorders. A study by Slavin et al. in 2014 (10) found that symptoms of depression, anxiety, and psychological strain are more frequent within the population of MBBS students than among the general population. The fact that this research found fewer mental health problems than others may be because it had a smaller sample size or because people reported their own problems, which might mean that they didn't disclose all of their mental health problems.

Also, since medicine is an academic subject, it sometimes encourages a culture of silence regarding mental health which makes students less inclined to discuss about their emotional or mental health issues (Kramer et al., 2017) (11). The most important thing this research found is that an association exists between using the internet and having psychological well-being problems. The scatter plot statistical evaluation showed a substantial positive association between using the internet and being depressed ($R = +0.620$) and a comparable high positive association between using the online engagement and being anxious ($R = +0.531$). These findings are consistent with prior research which show that spending too much time

online, especially for non-academic reasons, might make sadness and anxiety worse. This aligns with the findings of Kuss and Griffiths (2017) (12). The observed association between internet dependency and depressive symptoms may stem from factors such as increased social isolation, disrupted sleep patterns, and heightened exposure to negative cognitive stimuli due to prolonged online activity. Similar conclusions were drawn by Primack et al. (2017) (13) who highlighted these mechanisms as contributors to depression.

The study observed an association between using the internet and feeling anxious. This could be because talking to people online can make you anxious, and being on social media all the time can make you feel like you're not real, like Twenge et al. 2017 found (14) medical students, who are under a lot of academic stress, may be more likely to do things online that make them feel anxious or worse. The striking correlation between internet use and anxiety in this research also shows how too much screen time might affect students' mental health.

CONCLUSION

The results show that medical colleges need to quickly put in place tailored treatments and support structures to deal with and lessen the harmful impacts of internet addiction. Schools may better support the health of their students by teaching them how to use the internet in a balanced way and raising awareness about the possible mental health effects of too much internet usage.

RECOMMENDATION

Enhance Mental Health Support Services: Colleges and universities should improve their mental health resources by delivering counselling and psychological help that focuses on problems connected to internet addiction.

Promote Awareness and Education: Programs that teach people about the indicators of internet addiction and how it affects mental health should be part of the medical curriculum.

Encourage Healthy Lifestyle Choices: Helps people in having balanced life by encouraging them to be active, spend time with others and do things that don't involve the internet.

Implement Structured Digital Detox Programs: Students might learn better internet habits by taking part in workshops or lectures on time management and digital well-being.

LIMITATION OF THE STUDY

Sample Size and Generalizability: The research may not be generalized to all medical under graduate

students or students in other areas since the sample size was not big enough.

Self-Reported Data: The research uses self-reported metrics to find out about internet addiction and mental health, which might lead to bias. People may not tell the truth about how much time they spend online or how bad their mental health is because they want to seem good or don't comprehend the questions.

Study Design: This design makes it hard to figure out if the association between internet addiction and mental health is causal or varies over time.

Confounding Variables: Other factors such as academic stress, socio-economic status or mental health problems that may be already were not taken into account

RELEVANCE OF THE STUDY

The study showed important tips to find internet addiction early in this group as it may have negative effects on academic performance, mental health and quality of life. The results may help shape treatments and support techniques that seek to help students develop better digital habits and manage their mental health in high-stress academic settings.

AUTHORS CONTRIBUTION

All authors have contributed equally.

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Nil

CONFLICT OF INTEREST

There are no conflicts of interest.

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DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The author's haven't used any generative AI/AI assisted technologies in the writing process.

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