

Internet Addiction among Undergraduate Medical Students and its association with psychological distress: A cross-sectional study

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Abstract

Introduction

Globally, the number of internet users has been increasing every day. In 2021, about 4.9 billion people in the world were using the internet. In India, 622 million people were active internet users in 2020. The figure is higher among the younger population. The study aims to measure the prevalence of Internet addiction among undergraduate medical students and its association with psychological distress.

Materials and Methods

A cross-sectional study was conducted among medical students (n = 450) studying at the Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry, India. The study period was from January 2020 to December 2021. To assess internet addiction and psychological distress, Young's Internet Addiction Scale and Kessler Psychological Distress Scale were used, respectively.

Results

Out of 450 medical students, 39.8% were females and 60.2% were males. There were 45.3%, 29.8%, and 0.9% of students with mild, moderate, and severe internet addiction, respectively. There is a significant positive correlation between internet addiction and psychological distress.

Conclusion

The prevalences of internet addiction and psychological distress were found to be high in medical students. However, most of them had a mild to moderate level. Most of the students with severe internet addiction and psychological distress were in their final year, and they were recommended to consult mental health professionals.

Keywords

Internet addiction, medical students, psychological distress

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INTRODUCTION

Globally, the number of internet users has been increasing every day. During the COVID-19 pandemic, the use of the internet has played the most prominent role in communication.¹ It has made the information easily accessible and faster.² However, excessive use of the internet may result in neglect of social and occupational responsibilities.³ Since the last two decades, internet usage has been rapidly

increasing worldwide. The International Telecommunication Union (ITU) estimates that 63% of the world's population (4.9 billion) will be using the Internet in 2021, 96% of them living in developing countries.⁴ The figure is higher among the younger population. As per the International Consortium of Universities for the Study of Biodiversity and the Environment (iCUBE) report, 622 million people are active internet users, which increased by 8% in 2020 in India.⁵

IA is defined as "excessive or poorly controlled preoccupations, urges, or behaviors regarding computer use and internet access that lead to impairment or distress,"⁶ In

literature, similar terms such as compulsive internet use, problematic internet use, and pathological internet use are used for IA.⁷ IA may be associated with depression, mood changes, low self-esteem, and poor physical health.⁸ Since the last decade, IA has become a public health issue in developing countries. While many studies^{2,7} have focused on the prevalence of IA, this study is distinct in that it estimates not only the prevalence but also the association of IA and psychological distress specifically among medical students—a population particularly vulnerable to high stress and mental health challenges. The result of the study will help to create awareness, plan mental health policies, and formulate some interventional strategies to ensure healthy internet use. The outcome may be valuable as it can help clinicians understand the association between IA and psychological distress, ultimately supporting better mental health outcomes for medical students. This study aims to estimate the prevalence of IA and its association with psychological distress among undergraduate medical students.

MATERIALS AND METHODS

A cross-sectional study was carried out among medical students pursuing an MBBS course at JIPMER, Puducherry. Institutional Ethics Committee (IEC) of Jawaharlal Institute of Postgraduate Medical Education and Research approved this study. The study period was from January 2020 to December 2021. Only undergraduate medical students studying at JIPMER willing to participate in the study were included. Students who were using the internet solely for academic purposes and who incompletely filled out the questionnaire were excluded. The sample size was calculated using Open Epi v3.03. Considering the prevalence of IA, 42% (Krishnamoorthy et al.), at 5% absolute precision, 95% confidence interval, and design effect of 1.2, the required sample size was 450.

The Young Internet Addiction Test (YIAT) was used to measure IA. YIAT was a 20-item questionnaire developed by Dr. Kimberly Young. It is a reliable measure of the severity of compulsive internet usage. Each question is rated on a 5-point Likert scale from 0 to 5. Based on scoring subjects were classified into normal users (0–30), mild (31–49), moderate (50–79), and severe (80–100) IA. It is a valid and

reliable scale with satisfactory internal consistency (Cronbach's alpha of 0.84).⁹

The Kessler Psychological Distress Scale (K10) was used to measure psychological distress. It is a self-administered, 10-item questionnaire developed by Kessler. Participants rate each item based on the frequency of distress experienced in the past month. It is a five-point Likert scale ranging from 1 to 5. The scores were classified as follows: 20–24 is classified as mild stress, 25–29 as moderate stress, and 30–50 as severe stress. The questionnaire is valid and has good psychometric properties with a Cronbach's alpha of 0.89.¹⁰ Both YIAT and K10 scales were administered in their original English versions, as the participants were proficient in English, given their academic background.

After getting clearance from the PG Research Monitoring Committees (PGRMC) and Institutional Ethics Committee (IEC), approval from the Dean's Office of JIPMER to conduct the study in the institute was obtained. A non-probability purposive sampling technique was used to select participants. Recruitment was conducted through announcements made in classrooms. The purpose of the study was explained, and written informed consent was obtained from all participants. Socio-demographic information was collected using semi-structured proforma. The Young Internet Addiction Test and Kessler Psychological Distress Scale were administered to participants. They completed the questionnaires in a controlled environment to minimize distractions and ensure confidentiality. The questionnaires were answered anonymously. Continuous variables were expressed as mean with standard deviation. Categorical variables were expressed as the frequency with percentage. Data were analyzed using SPSS (Version: 28.0.1.0). The distribution of continuous variables was assessed, and it was found that the data did not follow a normal distribution. Therefore, Spearman's rank correlation coefficient was utilized to evaluate the association between internet addiction and psychological distress. A P-value less than 0.05 was considered statistically significant.

RESULTS

The result of the demographic features is presented in Table 1. A total of 488 students participated in the study with a response rate of 92.2% (n = 450), and 7.8% (n = 38) students were not included due to incomplete responses. Out of 450 students, 271 (60.2%) were males and 179

(39.8%) were females. The mean age was 20.57 ± 1.85 years (range = 18-32). The mean period of internet use was 4.68 ± 2.36 hours/day, with a range between 1 and 12 hours. The mean duration of internet use was 6.73 ± 2.84 years with a range from 1 to 15 years (Table 2). Among them, 69 (15.3%), 124 (27.6%), 86 (19.1%), and 171 (38.0%) were in the first, second, third, and final year of their studies, respectively. Most of them, 423 (94.0%) were living in a hostel, 375 (83.3%) were from an urban background, and 338 (75.1%) were from middle socioeconomic strata as per the Indian economic standards, which are based on a family's monthly income.

Table 1. Sociodemographic characteristics of the participants (N = 450)

Variable	Frequency (%)
Gender:	
Male	271 (60.2)
Female	179 (39.8)
Residence:	
Rural	75 (16.7)
Urban	375 (83.3)
Year of study:	
First-year	69 (15.3)
Second-year	124 (27.6)
Third-year	86 (19.1)
Final year	171 (38.0)
Socioeconomic strata:	
High	101 (22.4)
Medium	338 (75.1)
Low	11 (2.5)
Place of stay:	
Hostel	423 (94.0)
Outside	27 (6.0)
The main purpose of internet use:	
Non-academic	320 (71.1)
Academic	130 (28.9)
The main mode of internet usage:	
Smartphone	422 (93.8)
Other gadgets	28 (6.2)

Table 2. Continuous Variable

Variable	Mean \pm SD
Age	20.57 ± 1.85
Years of internet use	6.73 ± 2.84
Hours of internet use/day	4.68 ± 2.36

Table 3. Internet addiction in relation to sociodemographic characteristics

Variable	No Addiction n (%)	Mild Addiction n (%)	Moderate Addiction n (%)	Severe Addiction n (%)
Gender:				
Male	65 (24.0)	114 (42.1)	89 (32.8)	3 (1.1)
Female	43 (24.0)	90 (50.3)	45 (25.1)	1 (0.6)
Residence:				
Rural	18 (24.0)	37 (49.3)	20 (26.7)	0 (0.00)
Urban	90 (24.0)	167 (44.5)	114 (30.4)	4 (1.1)
Year of study:				
First year	18 (26.1)	35 (50.7)	16 (23.2)	0 (0.0)
Second year	46 (37.1)	46 (37.1)	31 (25.0)	1 (0.8)
Third year	14 (16.3)	49 (57.0)	23 (26.7)	0 (0.0)
Final year	30 (17.5)	74 (43.3)	64 (37.4)	3 (1.8)
Socioeconomic strata:				
High	39 (38.6)	38 (37.6)	23 (22.8)	1 (1.0)
Medium	67 (19.8)	162 (47.9)	106 (31.4)	3 (0.9)
Low	2 (20.0)	4 (40.0)	5 (50.0)	0 (0.0)
Place of stay:				
Hostel	102 (24.1)	187 (44.2)	131 (31.0)	3 (0.7)
Outside	6 (22.2)	17 (63.0)	3 (11.1)	1 (3.7)
Main purpose of internet use:				
Non academic	73 (22.8)	148 (46.2)	95 (29.7)	4 (1.2)
Academic	35 (26.9)	56 (43.1)	39 (30.0)	0 (0.0)
The main mode of internet usage:				
Smartphone	101 (23.9)	193 (45.7)	124 (29.4)	4 (1.0)
Other gadgets	7 (25.0)	11 (39.3)	10 (35.7)	0 (0.0)
Total participants	108 (24.0)	204 (45.3)	134 (29.8)	4 (0.9)

Prevalence of IA:

The outcomes of IA are shown in Table 3. Out of 450 students, 108 (24.0%) students were found without IA. There were 204 (45.3%), 134 (29.8%), and 4 (0.9%) students with mild, moderate, and severe IA, respectively. Regarding gender, 114 (42.1%) males and 90 (50.3%) females with mild IA, 89 (32.8%) males, and 45 (25.1%) females were moderately addicted, and severe IA was seen among 3 (1.1%) males and only 1 (0.6%) female. But there were 65 (24.0%) males and 43 (24.0%) females who were found without IA. The majority of students, i.e., 204 (45.3%), were found with mild IA. Very few, i.e., only 4 (0.9%) students, were reported with severe IA. Among first- and third-year students, no one was found with severe IA, and among 2nd-year students, 1 (0.8%) student had severe IA. In the case of 4th-year students, 3 (1.8%) students were reported with severe IA.

Table 4. Psychological distress in relation to sociodemographic characteristics

Variable	No psychological distress n (%)	Mild psychological distress n (%)	Moderate psychological distress n (%)	Severe psychological distress n (%)
Gender:				
Male	122 (45.0)	47 (17.4)	41 (15.1)	61 (22.5)
Female	82 (45.8)	23 (12.9)	23 (12.8)	51 (28.5)
Residence:				
Rural	34 (45.3)	15 (20.0)	8 (10.7)	18 (24.0)
Urban	170 (45.3)	55 (14.7)	56 (14.9)	94 (25.1)
Year of study:				
First year	43 (62.3)	10 (14.5)	8 (11.6)	8 (11.6)
Second year	78 (62.9)	18 (14.5)	10 (8.1)	18 (14.5)
Third year	41 (47.7)	15 (17.4)	13 (15.1)	17 (19.8)
Final year	42 (24.6)	27 (15.8)	33 (19.3)	69 (40.3)
Socioeconomic strata:				
High	49 (48.5)	14 (13.9)	16 (15.8)	22 (21.8)
Medium	151 (44.6)	56 (16.6)	46 (13.6)	85 (25.2)
Low	4 (40.0)	0 (0.0)	2 (20.0)	5 (50.0)
Place of stay:				
Hostel	194 (45.9)	66 (15.6)	61 (14.4)	102 (24.1)
Outside	10 (37.0)	4 (14.8)	3 (11.2)	10 (37.0)
Main purpose of internet use:				
Non academic	156 (48.8)	49 (15.3)	32 (10.0)	83 (25.9)
Academic	48 (36.9)	21 (16.2)	32 (24.6)	29 (22.3)
The main mode of internet usage:				
Smartphone	192 (45.5)	65 (15.4)	62 (14.7)	103 (24.4)
Other gadgets	12 (42.9)	5 (17.9)	2 (7.1)	9 (32.1)
Total participants	204 (45.3)	70 (15.6)	64 (14.2)	112 (24.9)

Prevalence of Psychological Distress:

Out of 450 students, 70 (15.6%), 64 (14.2%), and 112 (24.9%) students were found with mild, moderate, and severe psychological distress, respectively (Table 4). The remaining 204 (45.3%) students were found without psychological distress. Regarding gender, 122 (45.0%) males and 82 (45.8%) females were found without psychological distress. However, 47 (17.4%) males and 23 (12.9%) females were found with mild psychological distress, 41 (15.1%) males and 23 (12.8%) females were found with moderate distress, but severe distress was seen among 61 (22.5%) males and 51 (28.5%) females. There were 122 (45.0%) males and 82 (45.8%) females who were found without psychological distress. The majority of students, i.e., 204 (45.3%), were found without psychological distress. A significant number of students, i.e., 112 (24.9%) students, were reported with severe psychological distress. Among first-, second-, and third-year students, 8 (11.6%), 18 (14.5%), and 17 (19.8%) students were found with

severe psychological distress, respectively. In the case of the final year, the majority of the students, i.e., 69 (40.3%), were found with severe psychological distress.

Association of IA with Psychological Distress:

The association between IA total score and psychological distress scale score is shown in Figure 1. There is a significant positive correlation between them ($r^2 = 0.1825$, $p < 0.0001$), which shows that the students with higher IA scores had higher psychological distress.

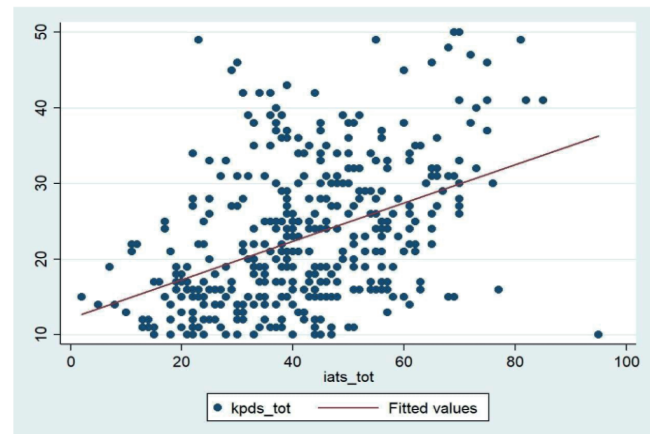


Figure 1: Scatter plot showing a positive correlation between internet addiction total score and psychological distress total score.

DISCUSSION

This study aimed to measure the prevalence of IA among undergraduate medical students. The findings revealed that 45.3%, 29.8%, and 0.9% of students were found with mild, moderate, and severe IA, respectively. These results are consistent with previous research, including Zenebe et al., which reported 55.6% and 27.9% of students with mild and moderate internet addiction, respectively,⁷ and Chaudhari B. et al.¹¹, who found that 51.4% of medical students have mild addiction. The prevalence of severe IA (0.9%) in this study is supported by the findings of Anand et al. (0.8%)¹², Shettar et al. (1.3%)¹³, Nagori et al. (0.9%)¹⁴, and Gedam et al. (1.2%)¹⁵ in medical students. The prevalence of severe IA is similar to the findings (0.7%) of a related study from South India on medical students.¹⁶ Furthermore, Shehata et al., echoed the 76% of students who reported spending more time online than intended.¹⁷ Students are more vulnerable to IA than others due to easy and unlimited access to the internet, being free from parental control, and having more desire for modern technologies.¹⁸ The accessibility can lead to excessive internet use, driven by both academic demands and recreational use.

The pressures of medical education may lead students to seek distraction in the online world, increasing the risk of developing IA. Notably, a higher prevalence of severe IA and psychological distress was observed among final-year students, with rates of 1.75% and 40.35%, respectively. These findings may partly reflect the sample composition rather than a definitive trend. However, the finding corroborates the work of Okwaraji et al., who reported that final-year students were at greater risk of developing IA and depression.¹⁹ The prevalence of IA in this study was higher than reported in other universities in India (ranging from 19.85% to 42.9%)²⁰⁻²² and Nepal (35.4%).²³ These discrepancies may be attributed to the differences in assessment instruments, study populations, sample sizes, and study durations.

In this study, 54.7% of students experienced psychological distress, with 15.6%, 14.2%, and 24.9% experiencing mild, moderate, and severe psychological distress, respectively. In this study, 0.7% of students living in a hostel were severely addicted in comparison to 3.7% of students living outside the hostel. Similarly, 24.1% of students living in the hostel and 37.0% of students living outside had severe psychological distress. Nagori et al. reported a significant association between IA and sleep quality.¹⁴ Most of the students were found using the Internet for non-academic activities such as entertainment, news, and social networking. To avoid the negative consequences of excessive internet usage, it is essential to promote education about IA and encourage appropriate use of the internet. Identifying problematic users and providing supervision from administrative bodies can be beneficial. This study utilized standardized questionnaires to assess the prevalence of IA and psychological distress, making it one of the few studies to focus on these issues among medical students. Consequently, it paves the way for further research examining psychological distress and addictive behaviors in this population. Awareness programs addressing IA should target all students, not just those having symptoms of IA and psychological distress. However, some limitations should be acknowledged. The sample size was relatively small, and no definitive criteria were used to diagnose IA. Self-reported questionnaires may lead to an underestimation of IA prevalence. Additionally, as the present study was conducted in a single institute, generalization of the results may be limited. The study is cross-sectional rather than longitudinal, so the findings cannot be used to attribute a causal relationship.

CONCLUSION

Our study aimed at the assessment of IA among undergraduate medical students and its association with psychological distress. It was a cross-sectional study, and the main findings included the high prevalence of IA and psychological distress found in medical students. However, most of them had a mild to moderate level of IA. Most of the students with severe IA and psychological distress were in their final year. There was a significant positive association between IA and psychological distress. A longitudinal study with larger sample sizes will be required to explore further IA and psychological distress among medical students in the future.

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CONFLICT OF INTEREST

None

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