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Proportion and Risk Factors of Internet Addiction among Medical Students in A Medical College in A Non-Metropolitan City in West Bengal

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Abstract

Introduction: Internet addiction (IA) is an emerging public health problem worldwide, especially among adolescents and young adults. Medical students, due to high academic pressure and easy access to digital platforms, are particularly vulnerable. This study aimed to determine the prevalence of internet addiction and factors associated with moderate to severe internet addiction among undergraduate medical students in a government medical college of West Bengal.

Materials and Methods: A descriptive cross-sectional study was conducted June to August 2024 among 63 second-year MBBS students at Jalpaiguri Government Medical College. Data were collected using a pretested questionnaire and the Young's Internet Addiction Test (IAT). Sociodemographic variables and internet use patterns were assessed. Univariate logistic regression was used to identify predictors of moderate to severe internet addiction.

Results: The mean age of participants was 21.9 (± 1.5) years; 69.8% were male. Overall, 41.3% showed some level of internet addiction—23.8% mild, 14.3% moderate, and 3.2% severe. On univariate analysis, using more than one gadget for internet access (OR=3.7, 95% CI:1.0–13.9), internet use >6 hours/day (OR=13.2, 95% CI:1.2–140.7), and father's postgraduate education (OR=6.6, 95% CI:1.5–28.5) were significant predictors. Initiating internet use at 16–20 years was protective (OR=0.22, 95% CI:0.07–0.69).

Conclusion: A substantial proportion of medical undergraduates were affected by internet addiction. Longer screen time, access via multiple devices, and socio-familial factors were strongly associated with higher odds of moderate to severe addiction.

INTRODUCTION

Internet addiction is one of the fastest growing addictive behaviours and is a significant public health problem affecting a large number of people worldwide.¹ Internet addiction is a psychological dependence on the internet characterized by salience/ excessive use, withdrawal, tolerance, negative repressions, conflict, craving and mood modification.^{1,2,3} The phenomenon of internet abuse has been called by different names such as computer addiction, compulsive internet use, internet addiction (IA).^{4,5,6,7,8} The use of the internet among students in universities and college has grown considerably.^{3,9,10} Internet addiction among university/ college students increases the risk of negative mental, physical, social and financial consequence.^{1,11,12} These include suicide, depression, psychological distress (depressive symptoms), anxiety, aggression, poor academic performance, cognitive impairment, social isolation and substance abuse such as cigarette smoking and alcohol.^{11,13,14,15} The physical health consequences also include thromboembolism, Musculo-skeletal, ophthalmic and metabolic problems.¹¹

The global burden of internet addiction among university students may vary from country to country. Studies from the USA have shown that 5-12% students from different colleges have problematic internet use.^{14,16} In Asian countries, the prevalence ranged between 3.7% in India,¹⁷ to 37% in Malaysia and Iraq.^{9,10} while in the African countries, prevalence ranged between 6.1-16.8%.^{18,19} Internet use has been overwhelmingly increasing in India, involving especially the youth population.

Keywords: internet addiction disorder, medical students, risk factors



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Since adolescents contribute a significant proportion of the productive population.

Their involvement with internet overuse and addiction may lead to significant adverse consequences. Although many studies have been conducted regarding internet addiction in India, not much has been studied in the state of west Bengal in this regard. Hence the present study was undertaken to investigate the patterns and prevalence of internet usage and the risk factors of moderate to severe addiction in young adults in undergraduate medical students of Jalpaiguri Government Medical College.

MATERIALS AND METHODS

Study type and design: The present study was a descriptive study with cross sectional design.

Study setting: The study was conducted by the department of Community Medicine, Jalpaiguri Government Medical College and Hospital (JGMCH). JGMCH is a new government medical institution located in the district of Jalpaiguri, West Bengal, India, admitting 100 medical students for the MBBS course under the West Bengal University of Health Sciences (WBUHS).

Study period: The study was conducted between June'24 to August'24, a period of 3months.

Study population: Second year medical students (batch 2022-27) of Jalpaiguri Government Medical College.

Inclusion criteria: Students who were willing to participate and gave an informed consent

Exclusion criteria

- Students who were part of the research team
- Students with diagnosed mental disorders
- Students acutely ill at the time of data collection

Sample size: There were 97 students in the 2022 MBBS batch of JGMC of when 33 were part of the research team and 1 student was acutely ill during the data collection period. So final sample size was $(97-34) = 63$.

Sampling technique: A complete enumeration of all eligible participants was done for the study.

Tools and techniques

Tools: A predesigned, pretested semi structured questionnaire was used which contained the following parts

1. **Part 1:** Questionnaire to assess the background characteristic of the study population
 - a. *Age:* Age was documented as in completed years as stated by the participants
 - b. *Sex:* Sex was recorded as declared by the participant
 - c. *Place of stay during study:* As stated by participants

whether in hostel/ PG/rent/ own home

- d. *Types of family:* Recorded as nuclear or joint
 - i. Nuclear family was defined as a social unit typically consisting of a married couple and their biological or adopted children living together.
 - ii. Joint family is defined as a multigenerational family unit where two or more families, typically from the same paternal or maternal live, live together under one roof, sharing resources and responsibilities.
- e. *Education of the father and mother:* recorded as undergraduate, graduate and post graduate.

2. **Part 2:** Young's Internet Addiction Test (IAT) Questionnaire : This pre-validated questionnaire consists of 20 statements. Each statement refer to offline situations or actions unless otherwise specified and is graded upon the 5-point Likert scale scored as 0 = Not Applicable 1 = Rarely 2 = Occasionally 3 = Frequently 4 = Often 5 = Always

Definitions used in the study

Internet addiction: As per DSM IV, Internet addiction is defined as an impulse control disorder that does not involve an intoxicant. It shares characteristics with pathological gambling including excessive use, withdrawal, tolerance and negative repercussions. In the present study the Young's IAT questionnaire was used to detect internet addiction. Based on the scores participants were divided into

0-30: Reflects normal level of internet use

31-49: Mild level of internet usage

50-76: Moderate

80-100: Severe dependence

Ethical considerations

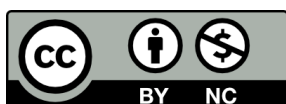
Informed consent: The purpose and objectives of the study were clearly explained to the participants. Verbal consent was obtained before participation. Participation was entirely voluntary and no coercion was involved.

Anonymity and confidentiality: The responses of participants were kept anonymous. Confidentiality was ensured throughout data collection and analysis. The data were used exclusively for research purpose.

Ethical approval: The study was conducted in accordance with ethical principles. The study was reviewed and approved by the administration of JGMCH.

No harm to participants: The study ensured no physical, emotional or psychological harm to participants

Statistical analysis: All data were cleaned using MS Excel (Microsoft Corp USA) and analysed using SPSS (IBM SPSS; Version 22). Categorical data were presented as frequency and percentage. Continuous data were presented as mean and standard deviation. Uni-



variate regression was done to predict the risk factors of internet addiction. All risk factors with an odds ratio of ≥ 2 were included in multivariate regression.

RESULTS

The mean age of the study population was 21.9 years, with male predominance (69.8%). Most of the study participants lived in the hostel/PG accommodation (93.7%), while 6.3% attended college from their home. Most of them belonged to nuclear families (79.4%). Among fathers, most were educated to graduate level (42.9%), while most mothers were below graduates in education (54%). Majority of the study cohort used internet for 4-6 hours per day (33.3%), started using internet between 6-10 years of age (84.1%). Almost 80% of the study participants used 1 gadget while 19% used more than 1 gadget for accessing internet. Most participants (41.3%) surfed the internet for entertainment, while 31.7% used the internet for academic purposes. (Table 1).

In the study population, 41.3% were found to have some degree of internet addiction. Of participants with internet addiction mild addiction was seen in 23.8%, moderate addiction in 14.3% while severe addiction was seen in 3.2%. (Figure 1)

Internet addiction was seen in a 41.3% of the study population, of whom 23.8% had mild, 14.3% had moderate and 3.2% had severe addiction.

Univariate analysis indicated that using more than one gadget [OR=3.7 (95% CI= 1.0-13.9)], spending more than 6 hours daily on the internet [OR= 13.2 (95% CI= 1.2-140.7)], having a father with postgraduate education [OR= 6.6 (95% CI= 1.5- 28.5)] and using internet predominantly for entertainment purposes [OR= 13.2 (95% CI= 1.2-140.7)] were all linked to significantly increased odds of internet addiction compared to their reference groups. On the other hand, age at initiation to internet at higher ages, i.e. (16-20 years) [OR= 0.22 (95% CI= 0.07 -0.69)] and > 20 years [OR= 0.11 (95% CI= 0.01 - 1.07)] showed lower odds of internet addiction of which the first was statistically significant. (Table 2).

Answers to individual questions on the 5 point Internet Addiction Test Likert scale is given in Table 3.

DISCUSSION

The present study aimed to assess the prevalence and risk factors of moderate to severe internet addiction among undergraduate medical students using logistic regression analysis. The findings may offer some insight to the growing literature documenting the challenges posed by internet addiction in this vulnerable population.

The prevalence of addiction in the present study is lower than those reported in most recent studies from other parts of India, although still substantially high. Sharma et al,²⁰ in 2014, reported 42.7% prevalence of IA, 35% was mild, 7.4% moderate, and 0.3% severe addiction among professional college students in India. Ranganatha et al,²¹ in 2017, reported internet addiction to the tune of 47.1% in their cohort of medical students from Bangalore. Kumari et al,²² reported a prevalence of internet addiction of 78.7% in 2022 among the students of

professional colleges in the Jammu region. A very recent study from a medical college in New Delhi reported that the prevalence of IA was significant, with 90% of participants being addicted to varying degrees.²³ In the preset study, the grading of IA revealed 10% with no addiction, 54.6% with mild addiction, 32% with moderate addiction, and 3.3% with severe addiction. This high prevalence underscores the need for heightened attention to internet usage behaviours among medical undergraduates, as excessive use has been linked to compromised well-being, poorer academic performance, and increased psychological distress.

Similar to the present study, mobile phones remained the primary device for access of internet in other studies from India. Raveendran et al,²⁴ in their study on 227 medical students from Kerala, found that 56% used only mobile phone for internet access. In contrast, Mazhari et al,²⁵ found 81.4% had access to the Internet through computers and 18.6% through both computers and cell phones in their cohort of Iranian medical students.

Despite some small differences in proportions, the usage pattern remained more or less similar in medical students from all parts of India. Padmanabha et al,²⁶ studied 146 second year medical undergraduates in Karnataka, and found that most students used internet for entertainment (90.4%) followed by social networking (89.6%) and academics (76.5%). In a study conducted by Maroof et al,²⁷ assessing internet usage by medical students, it was found that the main use of the internet was for communication and entertainment (58.5%), especially downloading movies and games (46.3%). In another study by Chathoth et al,²⁸ on internet behaviour pattern in undergraduate medical students in Mangalore showed most common purpose for internet use to be social networking (97.8%).

Padmanabhan et al,²⁶ found 60% of students in their cohort of second year medical students to use the internet for < 3 h and 27.83% from 4 to 6 h. Similar proportions were reported by Unnikrishnan et al,²⁹ in their cohort of medical students from coastal South India., where 48.5% of the 1st and 2nd year medical students used internet for < 3 hours.

Spending more than 6 hours daily on the internet [OR= 13.2 (95% CI= 1.2-140.7)] was also significantly associated with moderate to severe internet addiction. A study conducted in South India showed how internet usage for non-academic purposes of more than 3 hours was a statistically significant predictor of internet addiction.³⁰ In a 2009 study conducted in Iran, a greater proportion of internet addiction was diagnosed in students whose father had a post-graduate degree,³¹ similar to the findings of the present study. Although, less restrictive parenting style in higher socioeconomic classes has been suggested as a reason for the same,³² confirmation of the theory was beyond the scope of the present study. Interestingly, some other studies showed that harsh parental punishment predicted internet addiction.^{33,34,35}

Researchers have mentioned that early exposure to internet activities can increase the risk of internet addiction.³⁶ A study from West Maharashtra, in 2015, corroborated the findings of the present study, demonstrating a correlation between a younger age of internet initia-

tion and internet addiction.³⁷ Early internet initiation can lead to longer exposure, increasing the likelihood of developing addictive patterns.

LIMITATIONS

The study was conducted in a single center among students in a single year, and thus the results have a limited generalizability. The sample size was small, for which a multivariate analysis could not be done. The cross-sectional design of the study does not allow the establishment of causality. And finally, since data were self-reported, the possibility of bias cannot be ruled out. However, despite the limitations, the study may be considered as a preliminary to further larger studies among medical students with internet addiction.

RECOMMENDATIONS

Implementation of digital wellness programs, digital literacy and self-regulation training screening and early intervention, limited wi-fi access in hostels during night hours and limited mobile access in class hours, peer support groups etc. might be helpful in the current scenario. For those with excessive screen time and with moderate to severe addiction are referred to the department of psychiatry for further management of the condition.

CONCLUSION

The present study revealed a high prevalence (41.3%) of internet addiction among undergraduate medical students, with 14.3% and 3.2% suffering from moderate and severe addiction, respectively. Prolonged internet use (>6 hours/day), use of multiple devices, and having a father with postgraduate education were significantly associated with internet addiction, while using the internet for academic purposes and later initiation of internet use were associated with lower odds.

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CONFLICT OF INTEREST

None Declared

FUNDING

Not declared

Figure 1: Pie chart showing severity of internet addiction

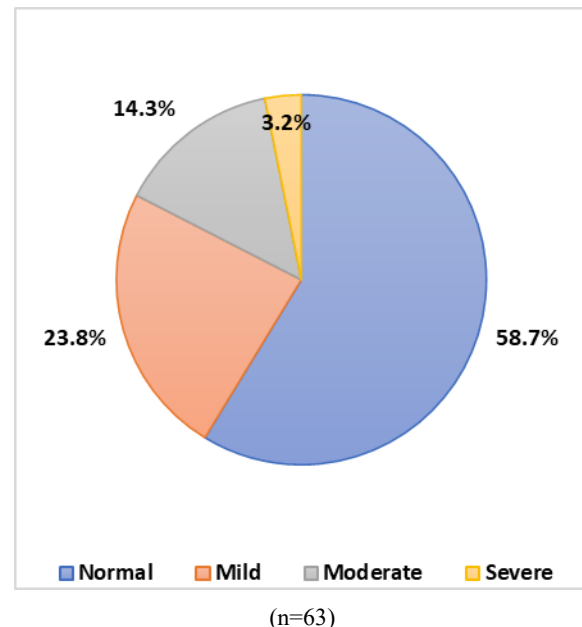


Table 1: Baseline characteristics of the study population (n=63)

Variables with levels		Frequency/ mean ± SD	Percentage
Mean ± standard deviation (years)		21.9 ± 1.5	
Gender	Male	44	69.8
	Female	19	30.2
Place of stay at the time of study	Hostel	59	93.7
	Home	4	6.3
Type of family	Joint	13	20.6
	Nuclear	50	79.4
Education of father	Below graduate	20	31.7
	Graduate	27	42.9
	Post graduate	16	25.4
Education of mother	Below graduate	34	54.0
	Graduate	22	34.9
	Post graduate	7	11.1
Duration of internet use	≤ 2 hpd	7	11.1
	2-4 hpd	19	30.2
	4-6 hpd	21	33.3
	>6 hpd	16	25.4
Age at starting internet	<16 years	4	6.3
	16-20	53	84.1
	>20	6	9.5
Number of gadgets used to access internet	1 (mobile)	51	81.0
	>1 (mobile + other device)	12	19.0
Predominant reason for using internet	Academics	20	31.7
	Entertainment	26	41.3
	Online gaming	5	7.9
	Social media	12	19.0
Total		63	100.0

Table 2: Univariable regression predicting internet addiction

(n=63)

Variables	Levels	No/ mild addiction n (%)	Moderate/ severe addiction n (%)	Unadjusted OR (95%CI)
Number of gadgets used	1	33 (64.7)	18 (35.3)	Reference
	More than 1	4 (33.3)	8 (66.7)	3.7 (1.0-13.9)*
Duration of time spent on the internet	≤ 2 hpd	6 (85.7)	1 (14.3)	Reference
	2-4 hpd	14 (73.7)	5 (26.3)	2.1 (0.2-22.5)
	4-6 hpd	12 (57.1)	9 (42.9)	4.5 (0.5 -44.3)
	>6 hpd	5 (31.3)	11 (68.7)	13.2 (1.2-140.7)*
Age at starting internet	Less than 16 years	8 (34.8%)	15 (65.2%)	Reference
	16-20 years	24 (70.6%)	10 (29.4%)	0.22 (0.07 -0.69)*
	More than 20 years	5 (83.3%)	1 (16.7%)	0.11 (0.01 - 1.07)
Mother's education	Below graduate	22 (68.8)	12 (31.2)	Reference
	Graduate	11 (50)	11 (50)	1.8 (0.6-5.5)
	Post graduate	4 (57.1)	3 (42.9)	1.4 (0.3-7.2)
Father's education	Below graduate	15 (75)	5 (25)	Reference
	Graduate	17 (63)	10 (37)	1.8 (0.5-6.3)
	Post graduate	5 (31.3)	11 (68.7)	6.6 (1.5-28.5)*
Predominant reason for internet	Entertainment	13 (50)	13 (50)	Reference
	Academics	13 (65)	7 (35)	0.54 (0.16 - 1.78)
	Mobile gaming	4 (80)	1 (20)	0.25 (0.02 - 2.55)
	Social media	7 (58.3)	5 (41.7)	0.71 (0.18 - 2.84)
Sex	Female	12 (63.2)	7 (36.8)	Reference
	Male	25 (56.8)	19 (43.2)	1.3 (0.4-3.9)
Place of stay	Home	1 (25)	3 (75)	Reference
	Hostel	36 (61)	23 (39)	0.2 (0.02-2.2)
Type of family	Nuclear	28 (56)	22 (44)	Reference
	Joint	9 (69.2)	4 (30.8)	0.57 (0.15 - 2.08)
Mean ± SD age (years)		21.8 ± 1.3	22 ± 1.7	1.1 (0.8-1.5)
Total		37 (100)	26 (100)	

*Statistically significant

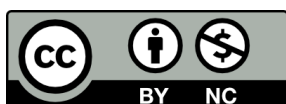
Table 3: Responses to Questions on the Internet addiction scale (n=63)

Sl no	Internet Addiction Questionnaire	0	1	2	3	4	5
1	How often do you find that you stay online longer than you intended?	5 (7.9)	14 (22.2)	12 (19)	15 (23.8)	8 (12.7)	9 (14.3)
2	How often do you neglect household chores to spend more time online?	16 (25.4)	18 (28.6)	13 (20.6)	7 (11.1)	4 (6.3)	5 (7.9)
3	How often do you prefer the excitement of the Internet to intimacy with your partner?	40 (63.5)	13 (20.6)	4 (6.3)	1 (1.6)	2 (3.2)	3 (4.8)
4	How often do you form new relationships with fellow online users?	41 (66.1)	10 (15.9)	5 (7.9)	4 (6.3)	1 (1.6)	2 (3.2)
5	How often do others in your life complain to you about the amount of time you spend online?	15 (23.8)	21 (33.3)	10 (15.9)	7 (11.1)	4 (6.3)	6 (9.5)
6	How often do your grades or school work suffer because of the amount of time you spend online?	16 (25.4)	16 (25.4)	13 (20.6)	6 (9.5)	8 (12.7)	4 (6.3)
7	How often do you check your email before something else that you need to do?	32 (50.8)	18 (28.6)	7 (11.1)	2 (3.2)	2 (3.2)	2 (3.2)
8	How often does your job performance or productivity suffer because of the Internet?	9 (14.3)	25 (39.7)	10 (15.9)	8 (12.7)	6 (9.5)	5 (7.9)
9	How often do you become defensive or secretive when anyone asks you what you do online?	27 (42.9)	14 (22.2)	11 (17.5)	2 (3.2)	2 (3.2)	7 (11.1)
10	How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?	13 (20.6)	17 (27)	13 (20.6)	9 (14.3)	4 (6.3)	7 (11.1)
11	How often do you find yourself anticipating when you will go online again?	22 (34.9)	17 (27)	11 (17.5)	6 (9.5)	4 (6.3)	3 (4.8)
12	How often do you fear that life without the Internet would be boring, empty, and joyless?	20 (31.7)	17 (27)	9 (14.3)	11 (17.5)	2 (3.2)	4 (6.3)
13	How often do you snap, yell, or act annoyed if someone bothers you while you are online?	27 (42.9)	17 (27)	8 (12.7)	6 (9.5)	2 (3.2)	3 (4.8)
14	How often do you lose sleep due to being online?	10 (15.9)	14 (22.2)	12 (19)	7 (11.1)	11 (17.5)	9 (14.3)
15	How often do you feel preoccupied with the Internet when off-line, or fantasize about being online?	26 (41.3)	18 (28.6)	10 (15.9)	6 (9.5)	1 (1.6)	2 (3.2)
16	How often do you find yourself saying "just a few more minutes" when online?	8 (12.7)	16 (25.4)	13 (20.6)	8 (12.7)	11 (17.5)	7 (11.1)
17	How often do you try to cut down the amount of time you spend online and fail?	16 (25.4)	15 (23.4)	13 (20.6)	6 (9.5)	6 (9.5)	7 (11.1)
18	How often do you try to hide how long you've been online?	26 (41.3)	14 (22.2)	11 (17.5)	4 (6.3)	1 (1.6)	7 (11.1)
19	How often do you choose to spend more time online over going out with others?	23 (36.5)	20 (31.7)	11 (17.5)	4 (6.3)	2 (3.2)	3 (4.8)
20	How often do you feel depressed, moody, or nervous when you are off-line, which goes away once you are back online?	27 (42.9)	19 (30.2)	6 (9.5)	6 (9.5)	2 (3.2)	3 (4.8)



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