

Compulsive Internet use among Undergraduate Medical Students: A Cross-Sectional Study from a North Indian Tertiary Care Institution

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Abstract: Background: Compulsive Internet Use (CIU), commonly referred to as internet addiction, is a growing behavioural problem that adversely affects psychological health, academic performance, and social relationships. With increasing dependence on digital technology, medical students represent a high-risk group for developing CIU. **Aim:** To determine the prevalence of compulsive internet use among undergraduate medical students and to assess its correlation with demographic and social factors. **Settings and Design:** An analytical cross-sectional study was conducted among undergraduate medical students of a medical college in Srinagar, Kashmir, India. **Methods and Materials:** A total of 281 students who had been using the internet for at least three months were included. Data were collected using a pre-tested, validated questionnaire comprising sociodemographic variables and Young's Internet Addiction Test (IAT). **Statistical Analysis Used:** Data were analysed using SPSS software. Descriptive statistics, proportions, and Chi-square tests were applied, and a p-value of <0.05 was considered statistically significant. **Results:** Of 281 participants, 66% demonstrated internet addiction, with 43% showing mild and 23% moderate addiction. Gender, year of study, place of stay, socioeconomic class, parental education, duration of internet use, money spent, and purpose of internet use showed statistically significant associations with CIU ($p < 0.05$). Mobile phones were the primary device used (98%), and addicted students spent 6.5–7.2 hours online daily. **Conclusions:** A high prevalence of compulsive internet use was observed among medical students. Targeted interventions, including digital literacy, counselling, and awareness programs, are essential to promote balanced and healthy internet habits.

Keywords: Compulsive Internet Use; Internet Addiction; Medical Students; Digital Behaviour; Young's Internet Addiction Test.

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INTRODUCTION

Evidence suggests that some individuals can lose control over the use of the Internet, and this negatively interferes with core aspects of their lives both in the short term (e.g., increased levels of stress at work, diminish work life-balance); and in the long term (e.g. social isolation, depression and anxiety). This maladaptive use of the Internet has been coined as 'Compulsive Internet Use' (CIU). The literature often uses terms like "compulsive internet use," "problematic internet use," "pathological internet use," and "internet addiction" interchangeably. Psychologist Mark Griffiths, a leading authority on addictive behaviors, provides one of the most cited definitions: "Internet

addiction is a non-chemical behavioral addiction that involves human and machine (computer-Internet) interaction." As a behavioral issue, Compulsive Internet Use has gained increasing scientific attention over the past decade, with some researchers describing it as a "21st-century epidemic. The term "internet addiction" was introduced by Dr Ivan Goldberg in 1995 to describe a pattern of compulsive internet use. In some cases, Compulsive Internet use itself may reflect underlying mental health issues. Compulsive Internet Use is marked by symptoms such as psychomotor agitation, anxiety, intense craving, loss of control, and impaired functioning, which can negatively impact areas like academic performance. Within the fields of

psychology and psychiatry, Compulsive Internet Use is a relatively recent concept [1,2].” In 1996, Dr. Kimberly Young made a significant advancement in diagnosing Compulsive Internet Use/ internet addiction by proposing diagnostic criteria. Young developed the Internet Addiction Test (IAT), initially based on an 8-question Internet Addiction Diagnostic Questionnaire derived from the DSM-IV criteria. Over time, she expanded the test to include an additional 12 items, creating a comprehensive tool to assess internet addiction. The IAT is the only diagnostic instrument for internet addiction that has undergone extensive psychometric validation by researchers [3-5].

A random effects meta-analysis estimates the global prevalence of internet addiction at 6.0% [6]. Over the past two decades, there has been an increasing trend in internet addiction, which has been exacerbated by the COVID-19 pandemic. In 2021, a meta-analysis focused on Indian college students revealed a 40% prevalence rate of internet addiction according to the Young Internet Addiction Test [7]. In Jammu, the prevalence is notably higher at 78.7%, with male students exhibiting a significantly greater incidence of addiction compared to their female counterparts [8].

The rationale for this research paper was to investigate the prevalence of internet addiction among undergraduate medical students. Given the increasing integration of the internet into daily life and its potential impact on academic and personal well-being, it is crucial to identify the hidden burden of internet addiction within this demographic. Understanding the extent of internet addiction among medical students will allow for the development of targeted preventive measures. By implementing educational and counselling programs focused on responsible and practical internet use, we aim to mitigate the negative effects associated with excessive online engagement.

MATERIALS & METHODS

Study Design, Setting, and Participants

This analytical cross-sectional study was conducted among undergraduate medical students of a medical college in Srinagar, Kashmir, India, over a period of three months. The study protocol was reviewed and approved by the Institutional Ethics Committee of SKIMS Medical College (approval no. SIMS 131/IEC/SKIMS/2025/49), and informed consent was obtained from all participants before their inclusion. All undergraduate students who had been using the internet for at least three months and were willing to participate were included in the study. Students who had been using the internet for less than three months, those who declined participation, and those with a known history of neurological or psychiatric disorders were excluded to minimise potential confounding factors.

The sample size was calculated using the standard formula $n = 4pq/d^2$, where p was taken as 0.78 based on

previous literature, $q = 1 - p$, and d (absolute precision) was set at 0.05. The calculated sample size was 278, and efforts were made to include the required number of participants during the study period.

Data Collection

Data were collected using a structured, predesigned, self-administered questionnaire comprising two sections. The first section included sociodemographic variables such as age, gender, and academic details, along with questions related to internet accessibility, availability, daily routine, and patterns of internet usage. These questions were designed to capture both qualitative and quantitative aspects of internet exposure among participants.

The second section consisted of the Internet Addiction Test (IAT), a validated 20-item instrument developed by Kimberly Young. Each item was scored on a 5-point Likert scale reflecting the frequency of behaviours associated with internet use. Participants were instructed to select the response that best described their behaviour over the past month. The total score ranged from 0 to 100, with higher scores indicating greater levels of internet addiction. Based on standard cut-offs, participants were categorised as normal users (<20), mildly addicted (20–49), moderately addicted (50–79), and severely addicted (80–100).

Statistical Analysis

All collected data were entered into a computer-based spreadsheet and thoroughly checked for completeness and accuracy before analysis. Statistical analysis was performed using SPSS software. Descriptive statistics, including means, standard deviations, and proportions, were used to summarise the data. Inferential statistics were applied using the Chi-square test to evaluate associations between internet addiction and various sociodemographic factors, as well as patterns of internet use. For cells with expected frequencies less than 5, Fisher’s exact test was applied. To compare mean values for variables such as age and time spent on the internet, analysis of variance (ANOVA) was used. A p -value of less than 0.05 was considered statistically significant for all analyses.

RESULT

In total, 281 undergraduate medical students were surveyed. Most subjects were in the 22-to 24-year age group (Table 1). It was found that 52% of the participants were females and 48% of the participants were males. It was found that 45% of the participants were from pre-final, 20% were from the second year, and 18 % were from the first year. (Table 2) The device used for the internet by students was mostly mobile phones (98%). The mean number of hours spent online by students was 4.6 hours, but the mean number of hours spent by IA students was 6.5 and 7.2 for mild and moderate addiction students. The maximum number of participants reported spending 300 to 599 per month on



internet facilities. 66% participants were addicted to the internet, although to a variable degree. 34% were not addicted to the Internet. Mild addiction was found to be maximum (43%), they were using internet for mean hours of 6.5, moderate addiction was present in 235 with mean hours spending on internet to be 7.2 hours per day. (Table 3) Chi-square test was applied to test the association of IA with the sociodemographic

variables and variables related to IA usage pattern; a P value less than 0.05 was considered statistically significant. Gender, year of study, place of current stay, socioeconomic class, parents' education, money spent on internet use, location of internet access, time spent on internet, purpose of internet use, and age were found to be statistically significant.

Table-1: Age-wise distribution of study participants (n=281)

Age group	Number	Percentage
Less than or equal to 18	4	1
19 to 21	97	35
22 to 24	156	56
More than or equal to 25	24	8

Table 1 shows the age-wise distribution of the 281 study participants, with the majority (56%) belonging to the 22–24 years age group

Table-2: Showing the association between demographic variables and internet addiction

S No.	Demographic variable	No addiction (95)	Mild addiction (121)	Moderate addiction (65)	Total (281)	P value
1	Age (mean)	22.09	22.08	22.1		<0.001
2	Gender					
	Male	45	50	39	134	0.01
	female	50	71	26	147	
3	Year of study					
	First	22	18	12	52	<0.001
	Second	19	21	16	56	
	prefinal	30	66	32	129	
	final	0	0	2	2	
	intern	24	16	2	42	
4	Residence					
	Urban	15	18	7	40	0.33
	rural	80	103	25	241	
5	place of current stay					
	Hostel	56	83	47	186	0.0007
	Home	16	27	8	51	
	Paying guest	23	11	10	44	
6	Socioeconomic class (BG Prasad)					
	Lower middle class	0	12	12	24	<0.001
	middle class	12	16	8	36	
	upper class	60	63	31	156	
	upper middle class	23	30	12	65	
7	Fathers' education					
	Post graduate	16	15	2	33	0.002
	graduate	44	60	29	133	
	below graduate	35	46	34	115	
8	Mother education					
	Post graduate	13	02	2	17	<0.001
	graduate	18	18	20	56	
	below graduate	58	101	49	208	

Table 2 demonstrates the association between demographic variables and internet addiction, revealing statistically significant differences for gender, year of study, place of stay, socioeconomic class, and parental education ($p < 0.05$ for each).

Table-3: Showing the association between internet use variables and internet addiction.

S No.	Demographic variable	No addiction (95)	Mild addiction (121)	Moderate addiction (65)	Total (281)	P value
1	Device used for using the internet					
	Mobile	94	120	62	276	0.4
	Mobile and fixed	1	1	3	05	
2	Money spent on the internet used					
	Less than 300	38	27	28	93	0.0003
	300 to 599	57	88	35	180	
	More or equal to 600	0	06	2	8	
3	Location of internet access					
	Home	84	103	54	241	0.0001
	College	8	16	3	27	
	Both	3	02	8	13	
4	Time spent on the internet (in hours)					
		4.04	4.60	5.60		<0.001

Table 3 presents the association between internet usage patterns and internet addiction, showing that money spent, location of access, and time spent online were significantly associated ($p < 0.001$).

Table-4: Association between purpose of internet use and internet addiction.

	No Addiction (95)	Addiction Present (mild + moderate) (186)	P value
Academic	12	11	0.0025
Entertainment	6	32	
Both	77	143	

Table 4 illustrates the association between the purpose of internet use and internet addiction, with students using the internet for entertainment or mixed purposes showing higher addiction rates ($p = 0.0025$).

Table-5: Association between Age & internet addiction.

Age group	Normal	Mild	Moderate	P-value
Less than or equal to 18	2	2	0	<0.001
19 to 21	33	29	35	
22 to 24	49	77	30	
More than or equal to 25	11	13	0	
total	95	121	65	

Table 5 provides the distribution of internet addiction across different age groups, confirming that the 19–21-year age group had the highest proportion of moderate addiction.

DISCUSSION

The present study investigated patterns of internet addiction among students and yielded several important findings that resonate with national and regional research over the past decade. We found that 66% of the medical students had internet addiction. About 43% of the students were mildly addicted, while 23% of the students were moderately addicted to the internet. A study in Kashmir on university postgraduate students revealed that 41.53% were found to have mild internet addiction, where as 28.47% were found to have moderate and 30% were found to have severe internet addiction [9]. The finding is comparable with the prevalence of 78.75% as reported by Rashmi Kumari [8] in a study among college students from the Jammu region. They found 56.6% to be mild addicts, while

21.6% to be moderate addicts. In another study, Sharma *et al.* [5] reported 42.7% prevalence of internet addiction, 35% was mild, 7.4% moderate, and 0.3% severe addict professional college students in India. The finding is comparable with the prevalence of 56.6% as reported by Duraimurugan *et al.* [10] in a study among college students from South India. They found 41.3% to be mild addicts, while 15.2% to be moderate addicts.

Our observation that 66% of both male and female students showed signs of internet addiction, with no significant gender difference, contrasts with earlier studies from India, which often reported higher addiction levels in males due to their greater access to digital resources and fewer societal restrictions [3,8]. However, recent studies, particularly from Jammu and

Kashmir, report a narrowing gender gap in internet usage due to increased digital penetration and smartphone availability among females [11]. This finding aligns with the national trend of growing digital equality across genders [12]. In a study, a significant difference was observed between the IA among males and females [13]. Females showed a higher proportion of addiction as compared to males. Similar to the study from Nagpur, the study found the mean total IAT score for male students was 50.71 ± 14.05 and for female students 52.01 ± 10.91 [14]. This shows that Internet usage levels of females have increased in recent years.

Another notable finding was that students living in hostels and at home were more prone to internet addiction than those in private accommodations or as paying guests. This could be attributed to lifestyle structure—students staying independently often engage in time-bound household chores and responsibilities that may naturally limit their screen time. This aligns with the study, which reported that structured environments and routine activities help in reducing compulsive online behavior [15]. Usha *et al.* found that internet addiction among localities (52%) was observed to be more than hostilities (48%), whereas in a study by Chaudhari *et al.* found that students staying in private accommodation are more prone to internet addiction [16,17].

Consistent with national surveys, nearly all students used smartphones for internet access, with no significant variation in usage patterns. This mirrors the current digital landscape in India, where mobile phones are the primary mode of internet access for over 96% of users [18]. The same was found by Hussain *et al.* personal device was owned universally by all subjects for using the internet [13]. Usha *et al.* found that among internet addicted students, the most common gadget used to access the internet was a mobile, 63% [16]. Easy and uninterrupted access via mobile data, made cheaper by competitive data plans, facilitates prolonged and often unchecked use, a trend identified in various studies across.

The study also confirmed that internet-addicted students spent significantly more time online compared to non-addicted peers. This finding supports global observations where excessive internet use is directly associated with increased addiction scores, especially when usage exceeds four hours daily [19]. In a study the mean hours spent online by students with IA was 3.12 ± 0.7 hours; however, the time spent online by nonaddicted students was 1.57 ± 0.5 hours [13]. Less hours were reported by other studies: 3.34 ± 1.80 hours/day, 4.4 hours/day were observed in other studies [20,17].

Interestingly, financial affordability was not a limiting factor in internet addiction. With data prices among the lowest globally, Indian students find it easy to access

the internet regardless of their economic background. In our study, most subjects spent INR 300–600, similar to the observation in another study [13,17]. Internet addicts tend to spend more money and time online, which can lead to financial issues and negatively impact their academic performance [21].

Fathers' and mothers' education levels were significantly associated with internet addiction ($P = 0.002$ and $P = 0.000$, respectively). Students with less-educated parents were more vulnerable, possibly due to a lack of digital awareness and monitoring. Parental education levels also emerged as a strong influencing factor. This may be attributed to limited digital literacy among parents, leading to reduced supervision and understanding of harmful online behaviours. These findings mirror those of Rajasekhar [22].

The purpose of use significantly affected addiction levels ($P = 0.0025$). Students using the internet for entertainment or both academic and non-academic purposes had higher addiction rates than those using it only for academics.

Implications for Jammu & Kashmir – With widespread mobile internet access and cheap data, focusing on usage purposes is crucial. Students should be guided toward academic use and away from compulsive entertainment browsing. Institutions across Jammu & Kashmir and India should promote digital literacy, awareness campaigns, and behavioural interventions that differentiate between healthy academic use and problematic entertainment-driven use.

CONCLUSION

The present study highlights a high prevalence (66%) of compulsive internet use among undergraduate medical students, with the majority having mild to moderate levels of addiction. Factors such as year of study, place of stay, parental education, time spent online, expenditure on internet usage, and the primary purpose of internet access were found to have a significant association with internet addiction. The predominance of mobile-based internet use and the ease of access to inexpensive data plans appear to further reinforce compulsive patterns.

These findings underscore the need for targeted preventive strategies within medical institutions. Structured awareness programs, counselling services, and digital literacy initiatives can help students develop healthier internet use habits while maintaining academic productivity and mental well-being. Considering the increasing digital penetration in Jammu & Kashmir, early recognition and timely interventions are crucial to mitigate the adverse consequences of compulsive internet use in this vulnerable population.

Declaration by Authors



Ethical Approval: The study was reviewed and approved by the Institutional Ethics Committee of SKIMS Medical College.

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