

Original Research Article

Pattern of internet use and its association with academic performance among undergraduate medical students of Silchar Medical College, Assam

Nirman Deka, Ajit K. Dey*

Department of Community Medicine, Silchar Medical College and Hospital, Silchar, Assam, India

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*Correspondence:

Dr. Ajit K. Dey,

E-mail: drajit.smc@gmail.com

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ABSTRACT

Background: The internet has emerged as an essential tool in medical education, providing widespread access to academic resources. While it offers numerous benefits, excessive or unregulated use may adversely affect students' academic performance. This study aimed to assess the patterns of internet usage, levels of internet addiction, and their association with academic performance among undergraduate medical students at Silchar Medical College, Assam.

Methods: A descriptive cross-sectional study was conducted among MBBS students across all academic years. Data were collected using a pre-designed, pretested, self-administered questionnaire comprising socio-demographic details, internet usage behavior, and the internet addiction test (IAT). Academic performance was measured using internal assessment and university examination scores. Statistical analysis included chi-square tests and logistic regression to determine associations between variables.

Results: A total of 188 students participated in the study. The majority (56.4%) demonstrated mild internet addiction, 20.2% moderate, and 23.4% normal usage. A statistically significant association was observed between daily internet usage and year of study ($p=0.005$), with senior students spending more time online. Demographic factors such as gender, place of residence, and guardian's occupation were significantly associated with internet addiction levels.

Conclusion: Internet use among medical students is widespread and generally perceived as academically beneficial. However, the presence of mild to moderate levels of addiction in a substantial proportion of students calls for timely interventions. Promoting balanced internet use and digital literacy could help optimize academic outcomes and safeguard students' well-being.

Keywords: Internet addiction, Academic performance, Medical students, Online learning

INTRODUCTION

The rapid development and widespread accessibility of the internet have transformed healthcare systems globally, impacting domains such as medical education, training, diagnosis, and patient care. In particular, the internet has emerged as a vital resource for medical students, serving as a comprehensive digital library that facilitates the dissemination of academic, social, financial, and entertainment-related information.^{1,2} Over the past two

decades, mobile phones have become the primary medium through which students access the internet.³

While mobile technology has immense potential to enhance medical education, studies also suggest it may adversely impact daily activities and academic engagement among students.⁴ The term "nomophobia"—a contraction of "no mobile phone phobia"—has emerged to describe the fear of being without mobile contact, reflecting rising dependence on mobile devices.⁴ But, mobile phones have great potential in the field of medical

education if used rationally.⁵ Despite these concerns, when used appropriately, the internet can significantly improve health literacy and academic efficiency, offering a low-cost, instantly accessible, and globally available information platform.¹ In the post-COVID-19 era, the role of the internet in education has become even more critical, with diversified and intensified usage among students. This increased dependence necessitates an assessment of how effectively the internet is being utilized in academic contexts and whether it supports or hinders students' performance. While several studies have been conducted globally, there remains a lack of region-specific research in northeastern India, particularly in medical colleges.

Objectives

The objectives of this research were to study the pattern of internet usage among undergraduate medical students of Silchar Medical College, to examine the factors associated with internet usage and its impact on academic performance, and to assess the level of internet addiction among undergraduate MBBS students.

METHODS

A descriptive cross-sectional study was conducted among undergraduate MBBS students of Silchar Medical College, Assam, to assess internet usage patterns and their association with academic performance. The study included students from all academic phases (first to final year) who provided informed consent.

Study period

The study was conducted in between November 2024 to April 2025.

Sample and sampling technique

The sample comprised 188 students selected through complete enumeration, encompassing all MBBS students willing to participate during the data collection period. No sampling technique was applied, as the study aimed for inclusive participation across all batches.

Inclusion criteria

All undergraduate MBBS students enrolled during the study period who provided written informed consent were included.

Exclusion criteria

Students who were absent during data collection or who declined participation were excluded from the study.

Data collection tool

Data were collected using a pre-designed, pretested, and self-administered questionnaire. The tool gathered

information on socio-demographic characteristics (age, sex, year of study, and socioeconomic status), internet access patterns (type of device used, daily data usage, time spent online, and purpose of internet use), internet addiction level, and self-perceived influence of internet use on academic performance.

To maintain anonymity and encourage honest responses, personal identifiers such as name or roll number were not collected.

Measurement of internet addiction

The validated internet addiction test (IAT) developed by Dr. Kimberly Young was used to assess the level of internet addiction.⁶ The IAT consists of 20 items rated on a 5-point Likert scale (0=not applicable to 5=always), yielding a total score between 0 and 100. Based on standard scoring 0–30 (normal internet use), 31–49 (mild addiction), 50–79 (moderate addiction), and 80–100 (severe addiction).

Academic performance assessment

Academic performance was evaluated based on the percentage of marks obtained in internal assessments and university examinations, as declared by the institution. Average scores were calculated for analysis.

Data analysis

Collected data were entered into Microsoft Excel and analyzed using statistical software. Descriptive statistics were used to summarize demographic characteristics and internet usage patterns. Chi-square tests were applied to examine associations between categorical variables. Logistic regression was used to identify predictors of internet addiction. A p value of <0.05 was considered statistically significant.

RESULTS

A total of 188 undergraduate medical students participated in the study. The findings are presented under the following domains: sociodemographic profile, internet access patterns, internet addiction levels, purpose and barriers of internet use, and associations with academic and demographic variables.

Among the participants, 95 (50.5%) were male and 93 (49.5%) were female. The largest group of respondents were first-year students (53.2%), followed by third-year (26.6%), second-year (15.4%), and fourth-year students (4.8%). A majority practiced Hinduism (68.6%), followed by Islam (23.9%), while others followed Christianity, Buddhism, Jainism, and indigenous faiths. Most students resided in hostels (80.8%), with 19.2% being day scholars. Regarding educational background, the Assam Higher Secondary Education Council (AHSEC) and Central Board of Secondary Education (CBSE) were the most

common qualifying boards, representing 50.5% and 44.6% of students, respectively. The occupation of the guardian was most commonly in the government sector (56.9%), and students were nearly evenly distributed between urban (54.3%) and rural (45.7%) hometowns (Table 1).

Table 1: Distribution of study subjects according to sociodemographic characteristics.

Variables	Male (%)	Female (%)	Total
Current year of study			
1st	51 (51)	49 (49)	100
2nd	15 (51.72)	14 (48.27)	29
3rd	26 (52)	24 (48)	50
4th	5 (55.55)	4 (44.44)	9
Religion			
Buddhism	1 (50)	1 (50)	2
Christianity	3 (50)	3 (50)	6
Donyi polo		1	1
Heraka		1	1
Hinduism	62 (48.06)	67 (51.93)	129
Islam	30 (66.66)	15 (33.33)	45
Jainism		3	3
Current place of stay			
Hostel	73 (48.02)	79 (51.97)	152
Day scholar	24 (66.66)	12 (33.33)	36
Board of examination			
AHSEC	59 (62.10)	36 (37.89)	95
BSEB	3		3
BSER	1		1
CBSE	32 (38.09)	52 (61.90)	84
Meghalaya Board of School Education	1		1
U.P. board	1		1
SEBA		1	1
AMU		1	1
RBSE		1	1
Occupation of guardian			
Business	24 (54.54)	20 (45.45)	44
Agriculture	6 (85.71)	1 (14.28)	7
Govt. sector	49 (45.79)	58 (54.20)	107
Housewife		1	1
Private sector	9 (60)	6 (40)	15
Retired govt. employee	4 (50)	4 (50)	8
Driver	1		1
Unemployed	1		1
Hometown			
Rural	48 (55.81)	38 (44.18)	86
Urban	49 (48.03)	53 (51.96)	102

The most frequently reported duration of internet use was 2–6 hours per day (63.8%), followed by 8–12 hours (28.7%). A smaller proportion used the internet for more

than 12 hours (4.3%) or less than 2 hours (3.2%). Data consumption patterns showed that 64.8% of students used 1–2 GB/day, 21.3% used 2–4 GB/day, and 8.5% used less than 1 GB/day (Table 2).

Table 2: Internet access pattern of medical students.

Variables	Male	Female
Hours spent on internet per day		
<2	3	3
>12	4	4
2-6	62	58
8-12	28	26
What is your average daily data (internet) expenditure (in gigabytes)		
<1	7	9
>4	6	3
1-2	59	63
2-4	24	16

A significant majority of students (93.1%) preferred mobile phones for internet access. Tablets were used by 5.9% of students, while laptop and desktop usage was minimal (1.1%) (Table 3).

Table 3: Appliance chosen for internet usage.

Variable		Male	Female	Total
Which device do you currently prefer for accessing the internet?	Desktop	1		1
	Laptop	1		1
	Mobile phone	90	85	175
	Tablet	5	6	11

Common barriers to effective internet use included slow internet speed, frequent power outages, high data costs, and distractions from non-academic websites (Figure 1).

These infrastructural and behavioral barriers may hinder efficient academic use of the internet.

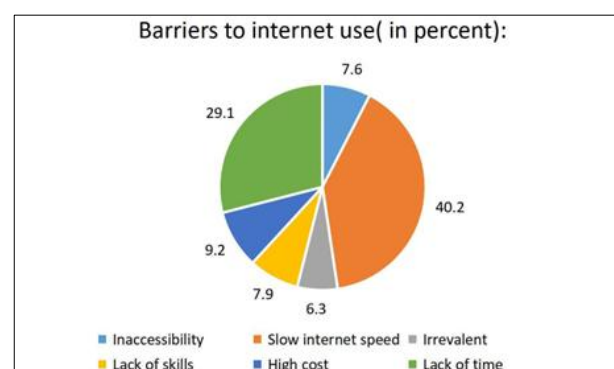


Figure 1: Barriers to internet use.

The internet was predominantly used for educational purposes, followed by entertainment and social

networking. Fewer students reported using the internet for financial transactions or news consumption (Figure 2).

Based on the internet addiction test

Based on internet addiction test (IAT) 23.4% of students exhibited normal use (score 0–30), 56.4% had mild addiction (score 31–49), and 20.2% demonstrated moderate addiction (score 50–79). No cases of severe addiction were found.

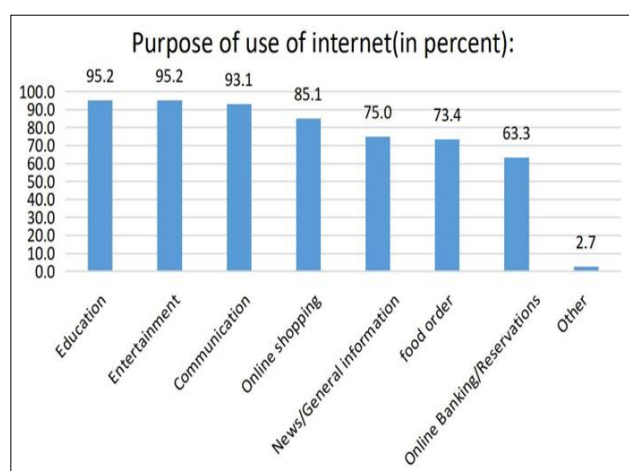


Figure 2: Purpose of use of internet.

There was a statistically significant association between academic year and hours of internet usage per day ($\chi^2=12.646$, $p=0.005$). Students in second year and above were more likely to use the internet for longer durations, including 8–12 hours and more than 12 hours daily.

However, the level of internet addiction was not significantly associated with academic year ($p=0.445$), indicating that addiction severity was relatively consistent across different stages of study.

Table 4: Internet addiction among study participants.

Score	Internet addiction	Frequency, N (%)
0 to 30	Normal	44 (23.40)
31 to 49	Mild	106 (56.38)
50 to 79	Moderate	38 (20.21)
Total		188 (100)

A majority of students believed that the internet had a positive influence on their academics. Specifically, 43.6% agreed and 29.7% strongly agreed. This perception was not significantly associated with academic year ($p=0.659$).

With respect to academic use, the most common internet resource was YouTube tutorials (71.8%), followed by college-provided online materials (11.1%). Other resources, such as e-books and digital platforms like Marrow, were less frequently used. Although the association between year of study and academic internet

use approached statistical significance ($p=0.054$), it did not meet the threshold. Multivariate logistic regression identified the following predictors for internet addiction.

Table 5: Association of internet use with current year of study of students.

Variables	1 st year	2 nd year and above	χ ² , P value
Hours spent on internet per day			
<2	5	1	12.646, 0.005
>12	2	6	
2-6	73	47	
8-12	20	33	
Addiction category			
Normal	27	17	1.620, 0.445
Mild	53	53	
Moderate	20	17	
Do you believe internet is positively influencing your academics?			
Agree	47	35	2.418, 0.659
Disagree	2	3	
Neutral	24	18	
Strongly agree	26	29	
Strongly disagree	1	2	
How do you use the internet to aid in your studies?			
Ebooks	17	11	12.379, 0.054
Marrow	0	1	
Online study materials from college	6	15	
You tube tutorials	77	58	

Gender

Female students were significantly less likely to have mild ($OR=0.40$, $p=0.04$) or moderate ($OR=0.41$, $p=0.09$) internet addiction compared to males.

Residence

Students living in hostels had higher odds of moderate addiction ($OR=3.46$, $p=0.07$), though the result was marginally significant.

Guardian's occupation

Those whose guardians worked in the government or private sector had significantly higher odds of mild addiction ($p<0.05$).

Other factors

Other factors including place of origin (urban versus rural), previous computer education, school curriculum, and age at first internet use—did not show significant associations with addiction levels.

Table 6: Parameter estimate of factors for internet addiction.

Variables	Mild					Moderate				
	B	Sig	Exp (B)	95% CI for Exp (B)		B	Sig	Ex p (B)	95% CI for Exp (B)	
				Lower bound	Upper bound				Lower bound	Upper bound
Gender										
Male-1, female- 2	-0.92	0.04	0.40	0.17	0.95	-0.88	0.09	0.41	0.15	1.16
Religion										
Hinduism	0.52	0.63	1.69	0.20	14.04	-0.93	0.38	0.39	0.05	3.15
Islam	0.01	0.99	1.01	0.10	10.28	-0.71	0.56	0.49	0.05	5.21
Christian	-0.81	0.60	0.44	0.02	9.06	-0.96	0.52	0.38	0.02	7.30
Other	0 ^b					0 ^b				
Place of residence										
Hostel	0.56	0.28	1.75	0.64	4.80	1.24	0.07	3.46	0.91	13.08
Day scholar	0 ^b					0 ^b				
Hometown										
Rural	0.77	0.12	2.17	0.82	5.74	-0.45	0.46	0.64	0.19	2.10
Urban	0 ^b					0 ^b				
Current year of study										
1st	-0.55	0.21	0.58	0.25	1.35	-0.28	0.59	0.76	0.27	2.11
2nd and above	0 ^b					0 ^b				
Occupation of head of family										
Govt. sector	2.14	0.01	8.53	1.55	47.08	1.69	0.17	5.41	0.49	60.15
Private sector	1.95	0.07	7.00	0.88	55.89	1.42	0.33	4.12	0.25	69.38
Business	1.97	0.03	7.14	1.25	40.63	1.50	0.23	4.48	0.38	53.19
Retired	22.26	1.00	463303 5061.10	0.00		1.24		3.45	3.45	3.45
Other	0 ^b					0 ^b				

Note: Addiction category, normal=1, mild=2, moderate=3, a: the reference category is: 1.0, b: This parameter is set to zero because it is redundant

DISCUSSION

This study explored the patterns of internet usage and its association with academic performance among undergraduate medical students of Silchar Medical College, Assam. The findings offer insights into how medical students engage with the internet across various academic years, their level of addiction, and how usage patterns may impact their academic behaviors.

The study indicates a significant association between the hours spent on the internet per day and the academic year. Notably, students in the 1st year spend fewer hours online compared to those in the 2nd year and above. This finding raises questions about the potential impact of increased internet usage on academic performance as students' progress through their academic journey (Table 2 and 5).

This trend aligns with previous findings that suggest increased academic workload and digital dependency as students' progress in medical education can lead to greater daily screen time.⁶ The use of mobile phones as the primary access device (Table 3) mirrors global and national trends among youth and students, reinforcing

concerns about overreliance on mobile-based learning platforms.³

The majority of students fall into the 'normal' and 'mild' categories of internet addiction, suggesting a prevalence of moderate to low addiction levels among the participants. Interestingly, there is no statistically significant association between addiction category and academic year.

This implies that internet addiction may not vary significantly across different academic years, highlighting the need for further investigation into the factors influencing internet addiction among students (Table 5). This finding contrasts with studies that suggest increased academic pressures can lead to higher internet dependency and addiction.⁷ The uniform distribution of mild to moderate addiction across all academic years may imply that students develop adaptive coping strategies or that the academic demands balance out potential excessive non-academic use.

More than three-quarters of students in the present study exhibited some level of internet addiction, predominantly mild (56.4%) and moderate (20.2%) (Table 4). These findings are consistent with prior studies indicating that

medical students are particularly vulnerable to internet addiction due to their high workload and need for constant information access.^{6,7} However, no students in this cohort were found to have severe addiction, suggesting that while internet use is intensive, it may not yet be pathological.

The barriers to effective internet use reported by students—including slow connectivity, frequent power failures, and high data costs (Figure 1)—are typical of infrastructural challenges in many parts of India. These limitations may hinder continuous learning despite increased internet dependence. The purpose of internet use predominantly skewed toward educational activities (Figure 2), affirming that students are leveraging digital resources positively. However, substantial engagement in entertainment and social media underscores the dual-use nature of internet access—a potential source of distraction noted in several earlier studies.^{8,10}

A majority of students reported that the internet positively influenced their academic performance. While subjective, this self-reported perception was consistent across academic years and may reflect the growing integration of digital learning into medical education, especially in the post-COVID era.¹ Despite this belief, the actual academic tools used varied; most students preferred YouTube tutorials over structured institutional platforms or paid resources like Marrow (Table 5). This preference may suggest accessibility, ease of use, and engagement as key factors driving platform choice.

The logistic regression model identified several sociodemographic predictors of internet addiction (Table 6). Female students had significantly lower odds of addiction than male counterparts, corroborating previous literature indicating higher addiction prevalence among males.⁷ Similarly, hostel residents were more likely to have moderate addiction levels, possibly due to fewer restrictions and more peer-driven digital engagement compared to day scholars. Interestingly, the occupation of the head of the family (particularly government and private sector jobs) was positively associated with addiction, which may reflect higher socioeconomic access to digital tools and data plans.⁹

In contrast, factors such as hometown (urban/rural), early computer education, school curriculum, and age at first internet use did not significantly influence addiction levels. This finding diverges from studies that suggest early internet exposure and lack of digital literacy training may increase vulnerability to problematic use.¹¹ It may be inferred that current medical students possess a baseline digital competence, minimizing the effect of such early exposures.

This study has certain limitations. Being cross-sectional in design, it does not allow causal inferences between internet usage and academic performance. The findings are limited to a single institution, which may restrict external generalizability. Furthermore, reliance on self-reported

responses may have introduced recall and social desirability bias. Future research employing longitudinal, multi-centric approaches is recommended to validate and extend these findings.

CONCLUSION

The study provides valuable insights into the relationship between internet usage behaviors, addiction levels, beliefs about the internet's influence on academics, and the use of the internet for educational purposes among undergraduate medical students. These findings underscore the importance of understanding and addressing the impact of internet use on academic performance and overall well-being in educational settings. Further research is warranted to explore the underlying factors driving internet usage patterns and addiction levels among students and to develop targeted interventions aimed at promoting healthy internet usage habits.

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