

Prevalence and Risk Factors of Problematic Internet Use among Undergraduate Medical Students of Bangladesh

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ABSTRACT

Background: Problematic Internet Use (PIU) is now a global social issue and comprises an important area of research since its negative consequences have been found as a stumbling block to our everyday functioning, interpersonal relationships and emotional well-being. Several severe psychiatric symptoms, depressive episodes, attention deficit hyperactivity disorder (ADHD) and alcohol abuse, are pronounced in those who regard themselves as dependent on the internet. To estimate the prevalence and risk factors of problematic internet use among undergraduate medical students of Bangladesh, this study was done.

Materials and methods: This study was a descriptive cross-sectional type of study conducted among randomly selected 280 undergraduate medical students in selected medical colleges in Bangladesh from July to December 2021. All the data were computed and analyzed with the proper statistical method.

Results: 62.9% of the participants had some form of Problematic Internet Use (PIU). The prevalence of severe PIU was found to be 3.6%. 32.1% of the subjects were normal users, and 25.7% had moderate PIU. Mild PIU was noted among 38.6% of the participants. Medical students who spend more than 3 hours daily on the internet ($p < 0.001$) and have problematic relations with parents ($p < 0.001$) are problematic internet user and their grades or productivity also suffers ($p < 0.001$).

Conclusion: The result of this study provides the baseline information regarding the prevalence of PIU among the undergraduate medical students of Bangladesh which needs utmost attention from the concerned sectors.

Key words: Behavioral change; Internet addiction; Problematic Internet Use (PIU).

Introduction

In this day in age, science has reached its envious big and bestowed us with its latest inventions and discoveries. But all of these will go in vain without the contribution of the 'worldwide web', i.e., Internet. Internet has become the center of focus, especially within the adolescent and emergent adult population for whom technological literacy is pivotal to both workplace and recreation.¹ The global digital landscape continues to grow rapidly as there are now 4.1 billion internet users, which is 52% of the world's population.² The proportion of young people, aged 15-24, using the Internet (71%) is significantly higher compared to that

of the total population (48%).³ The average time spent on the internet by the users is around 6 hours each day.⁴ In Bangladesh, the total number of internet subscribers has reached 120.95 million at the end of June 2021 and the number of mobile internet users is 110.90 million.⁵ The concept of internet addiction disorder emerged for the first time in 1996 initially as a satirical hoax as a response to the perceived anthropologizing of everyday behaviors.⁶ Goldberg understood the condition as an analog to substance dependence, as based on criteria in the Diagnostic and Statistical Manual for Mental Disorders (DSM-IV).⁷ Problematic Internet Use (PIU) has been proposed as a novel entity of dysfunctional behavioral patterns similar to those identified within the spectrum of impulse control disorders.⁸ PIU was defined as the use of the Internet that creates psychological, social, school, and/or work difficulties in a person's life.⁹ It has been considered a subset of behavioral addictions and has dawned considerable attention of researchers.¹⁰ Though internet addiction is a worldwide phenomenon, researchers have shown that the young population, especially college students are more prone to be victims of the negative impact of internet.¹¹ This is an emerging public health concern over the increase in Internet usage, particularly among students.¹² Several factors have been attributed to these vulnerabilities, such as faster acquaintance with ever-

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changing technology with a greater urge of youth to use the latest gadgets as well as latest applications available on internet, unlimited access to internet provided by universities, a large proportion of unstructured time available for internet use, emergence of high-speed 3G, 4G internet, the psychosocial and developmental needs that importantly includes developing a sense of identity as well as building a meaningful and intimate relationship, relatively limited or no parental supervision, extensive internet-dependent academic courses.^{13,14} The results of such extravagant use of internet could be disastrous in the long run. This addiction can lead to various psychological, physical and social problems including poor academic performance, impaired function at workplace, sleep disturbance, irregular dietary habits, headache, eye strain, social isolation and relationship problems.^{15,16,8} Strong association has also been found between internet addiction and some psychiatric disorders like alcohol abuse, attention deficit, hyperactivity, depression and anxiety as well.¹⁷ As internet technology has revolutionized medical education and practice worldwide, medical schools in both developed and developing countries are utilizing this state-of-the-art technology to bring far more effective changes, at the same time inviting the potential harms to the future medical practitioners.¹⁸ Furthermore, greater expenditure of both money and time on internet by IA medical students may inversely impact their academic achievements and result in undesirable financial consequences, putting off their healthy professional development with deleterious social consequences.¹⁹

Knowledge on the prevalence and risk factors of problematic internet use among undergraduate medical students of Bangladesh reveal the real scenario of the respondents.

Materials and methods

This study was a descriptive cross-sectional study conducted from July to December 2021 among randomly selected 280 undergraduate medical students in selected medical colleges in Bangladesh using a face-to-face pretested Semi-structured questionnaire. Undergraduate medical students who are Bangladeshi, use the internet and were interested to join were included in this study. A letter of consent was taken from each respondent before the interview.

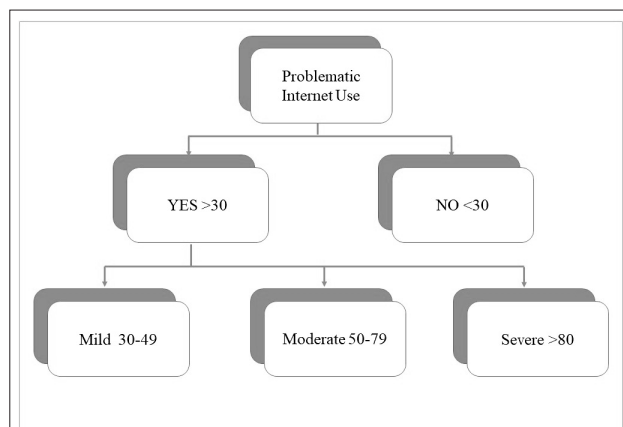
Tools-A self-administered questionnaire containing information on socio-demographic and other indicators and Internet usage. Another is the self-rating scale for Internet Addiction, Young's 'Internet Addiction Test'.

Collected data were coded manually and analyzed in the software Statistical Package for the Social Sciences (SPSS- V20).

Scoring and Classification

The Internet Addiction stage of samples was classified as PIU yes and PIU no. According to Young's Internet Addiction Scale:

- ❖ 20-29 points: Average online user. They do not show any behavioral problems related to internet use. They may surf the Web a bit long at times but have control over their usage. They will be considered as PIU absent.
- ❖ 30-49 points: These scores will be considered as mild PIU.
- ❖ 50-79 points: Experiencing occasional or frequent problems because of the internet and will be considered as moderate PIU.
- ❖ >80 points: These people are severely addicted to the internet. And they will be considered as severe PIU.



Results

Findings of this study provide a scenario on prevalence and risk factors of problematic internet use among undergraduate medical students of Bangladesh.

Table I Frequency distribution of sociodemographic characteristics of the study subjects

Attributes	Frequency (%)
Age (Years) (Mean±SD)	21.51±1.618
Gender	
Male	99 (35.4)
Female	181 (64.6)
Marital status	
Married	09 (3.2)
Unmarried	271 (96.8)
Year of study	
Year I	58 (20.7)
Year II	64 (22.9)
Year III	50 (17.8)
Year IV	63 (22.5)
Year V	45 (16.1)

The study participants (280) mean age was 21.51±1.618 years. Among them, 64.6% and 35.4% were female and male, respectively. Most of them (96.8%) were single and 20.7%, 22.9%, 17.8%, 22.5%, and 16.1% were from Year 1, 2, 3, 4 and 5 respectively (Table I).

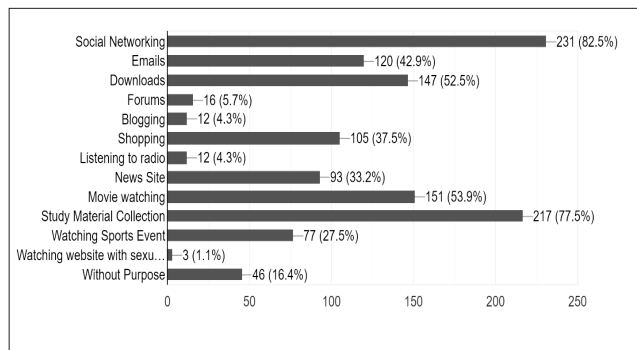


Figure 1 Purpose of Internet Use

77.1% of students log into internet for study purpose and ends in web surfing for social media and entertainment. On assessing the purpose of Internet use, the majority of the students used internet for social networking (82.5%), study material collection (77.5%), movie watching (53.9%), downloading media files (52.5%) and shopping (37.5%) [Figure 1].

Table II Accessibilities of internet use of the participants (n = 280)

Characteristics	Sub Group	Frequency
Device Used	Mobile	276 (98.6)
	Laptop/ Desktop	4 (1.4)
Type of Internet Used	Mobile Internet	121 (43.2)
	Broadband	56 (20)
	Both	103 (36.8)
Computer & BroadBand Connection at Residence	Yes	206 (73.6)
	No	74 (26.4)

Data analysis revealed that the vast majority of the participants used Mobile as the preferred device for internet use (98.6%) and only 1.4% used computers for internet use purposes. 43.2% of the respondent uses mobile internet, 20% uses broadband internet and 36.8% uses both mobile and broadband internet and 73.6% of the participants reported that they have Computer and Broadband connection at residence (Table II).

Table III Distribution of answers in Internet addiction test (n=280)

Question	Rarely, frequency (%)	Occasionally, frequency (%)	Frequently, frequency (%)	Often, frequency (%)	Always, frequency (%)	Not known, frequency (%)
Stay online longer than intended	18 (6.4)	70 (25.0)	64 (22.9)	64 (22.9)	55 (19.6)	09 (3.28)
Neglect household chores to spend more time online	78 (27.9)	73 (26.1)	42 (15.0)	43 (15.4)	14 (5.0)	30 (10.7)
Prefer the excitement of the Internet to intimacy with partner	45 (16.1)	26 (9.3)	17 (6.1)	20 (7.1)	06 (2.1)	166 (59.3)
Form new relationships with fellow online users	100 (35.7)	32 (11.4)	13 (4.6)	04 (1.4)	02 (0.7)	129 (46.1)
Others complain about the amount of time spent online	66 (23.6)	63 (22.5)	46 (16.4)	23 (8.2)	27 (9.6)	55 (19.6)
Grades or college work suffers because of the amount of time spent online	69 (24.6)	54 (19.3)	55 (19.6)	32 (11.4)	28 (10)	42 (15)
Check email before something else	90 (32.1)	62 (22.1)	33 (11.8)	18 (6.4)	20 (7.1)	57 (20.4)
Academic performance or productivity suffers because of Internet	59 (21.1)	68 (24.3)	44 (15.7)	51 (18.2)	22 (7.9)	36 (12.9)
Become defensive or secretive when anyone asks regarding online presence	51 (18.2)	53 (18.9)	53 (18.9)	35 (12.5)	29 (10.4)	59 (21.1)
Block out disturbing thoughts about life with soothing thoughts of the Internet	51 (18.2)	53 (18.9)	53 (18.9)	35 (12.5)	29 (10.4)	59 (21.1)
Find yourself anticipating to go online again	59 (21.1)	67 (23.9)	54 (19.3)	34 (12.1)	18 (6.4)	48 (17.1)
Fear that life without Internet would be boring, empty, and joyless	49 (17.5)	63 (22.5)	43 (15.4)	36 (12.9)	44 (15.7)	45 (16.1)
Snap, yell, or act annoyed if someone bothers you while you are online	74 (26.4)	61 (21.8)	41 (14.6)	21 (7.5)	14 (5.0)	69 (24.6)
Lose sleep due to late-night log-ins	53 (18.9)	57 (20.4)	54 (19.3)	40 (14.3)	39 (13.9)	37 (13.2)
Feel preoccupied with Internet when offline or fantasize about being online	70 (25)	60 (21.4)	41 (14.6)	29 (10.4)	07 (2.5)	73 (26.1)
Find yourself saying "just a few more minutes" when you are online	39 (13.9)	57 (20.4)	51 (18.2)	47 (16.8)	61 (21.8)	25 (8.9)
Try to cut down the amount of time spent online and fail	33 (11.8)	64 (22.9)	49 (17.5)	53 (18.9)	47 (16.8)	34 (12.1)
Try to hide how long you have been online	65 (23.2)	64 (22.9)	22 (7.9)	25 (8.9)	32 (11.4)	72 (25.7)
Choose to spend more time online over going out with others	72 (25.7)	38 (13.6)	38 (13.6)	20 (7.1)	16 (5.7)	96 (34.3)
Feel depressed, moody, or nervous when offline, which goes away once are back online?	66 (23.6)	66 (23.6)	31 (11.1)	28 (10)	22 (7.9)	67 (23.9)

The distribution of answers in the questionnaire is shown in Table III, 22.9 % of the participants mentioned that they often stayed online longer than they intended. Approximately 20% were always online longer than they planned. It was also found that 26.1% of the participants occasionally neglected their household chores to spend more time online, had their academic performance or productivity suffer because of the Internet (24.3%), became defensive or secretive when anyone asked them what they were doing online (19.6%), blocked out disturbing thoughts about their life with soothing thoughts of the Internet (18.9%), found themselves anticipating when they would go online again (23.9%), feared that life without the Internet would be boring, empty, and joyless (22.5%), found themselves saying “just a few more minutes” when online (20.4%), and tried to cut down the amount of time they spent online but failed (22.9%).

Table IV Internet Usage pattern

Duration	Frequency	Percent
Years of Using Internet	1-2 yrs	12.9
	3-5 yrs	30.7
	5-7 yrs	28.9
	8-10 yrs	19.6
	>10 yrs	7.9
Hours Spent Daily	>1hrs	1.1
	1-2 hrs	3.6
	2-3 hrs	20.7
	3-4 hrs	32.1
	>5 Hrs	42.5

Variable	Mean	Std. Deviation	Minimum	Maximum
Years Using Internet	2.79	1.137	1	5
Hours Spend Daily	4.11	.928	1	5

The majority of the participants used internet for 3 to 5 years (30.7%) and for >5 years (28.9%). The mean duration of Internet use per day was 4.11 hours (SD 0.92). The majority of the participants used Internet for >5 hours in a day (42.5%) and only 1.1% of them used Internet for >1 hour in a day (Table IV).

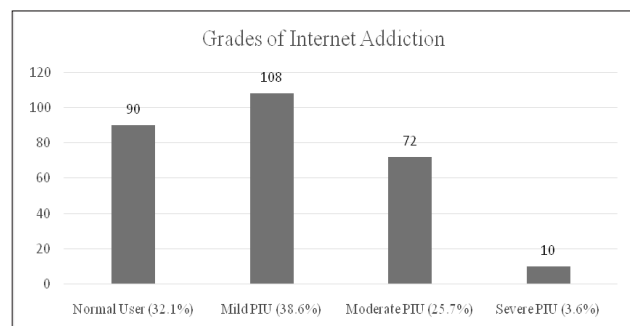


Figure 2 Grades of Internet Addiction

The study elucidated that, 62.9% of the participants have some form of Problematic Internet use (PIU). As shown in Figure 2, the overall prevalence of severe PIU was found to be 3.6%. The internet addiction test revealed that 32.1% of the subjects were normal users, 25.7% had moderate PIU. Mild PIU was noted among 38.6% of the participants.

Table V Association with pattern of internet use and internet addiction

Variables	Normal User	Problematic internet User	Chi-Square (A ²)	p-value
Gender				
Male	33	66	3.6102	0.3068 ns
Female	57	124		
Duration of internet Use				
1-2 yrs	19	17	15.886	0.1965 ns
3-5 yrs	30	56		
5-7 yrs	21	60		
8-10 yrs	14	41		
>10 yrs	06	16		
Duration of Study				
1 st year	22	36	8.620	0.735 ns
2 nd year	20	44		
3 rd year	15	35		
4 th year	20	43		
5 th year	13	32		
Daily Time spent on the internet				
>1hr	2	1	42.609	0.000026 *
1 - 2 hours	6	4		
2-3 hours	32	26		
3-4 hours	25	65		
>5 hours	25	94		
Apps Mostly used				
Facebook	23	67	13.587	0.557 ns
What's app/ Snapchat	12	28		
Google	1	7		
YouTube	32	60		
Messenger	10	13		
Others	12	15		
Problematic relation with parents				
Yes	5	38	30.901	0.000001 *
No	85	152		
Grade/ productivity Suffer				
Yes	26	143	140.4	<0.000001 *
No	64	47		

The study findings in the Table V, illuminated that the medical students who spend more than 3 hours daily on the internet (p<0.001) and had problematic relations with parents (p<0.001) are a problematic internet user and their grades or productivity also suffers (p<0.001). On the contrary, no significant association was found among gender, duration of internet use, duration of study and types of online application used (p>0.05).

Table VI Association between Personality type and PIU

Multiple Comparisons						
Dependent Variable: Pattern of PIU						
Tukey HSD						
(I) Personality Type	(J) Personality Type	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Extrovert	Introvert	-.462*	.149	.006	-.81	-.11
	Average	-.430*	.125	.002	-.72	-.14
Introvert	Extrovert	.462*	.149	.006	.11	.81
	Average	.032	.125	.964	-.26	.33
Average	Extrovert	.430*	.125	.002	.14	.72
	Introvert	-.032	.125	.964	-.33	.26

*. The mean difference is significant at the 0.05 level.

One-way ANOVA reveals that there was a significant difference in PIU category among the students with introvert and average personality type in comparison to extrovert type. ($p < 0.05$ was considered as significant).

The finding of Descriptive statistics coincides with the findings of inferential statistics in case comparison between the personality type of the students and the category of PIU. As it was found that in extroverts the most prevalent PIU category was normal while in introverts and average types the most prevalent category was mild PIU, especially there was a noticeable higher percentage of students with a moderate level of PIU (Table VI).

Table VII Correlation between age and IAT score among the participants (n=280)

Correlations			
		Age	IATscore
Age	Pearson Correlation	1	.192**
	Sig. (2-tailed)		.001
	n	280	280
IATscore	Pearson Correlation	.192**	1
	Sig. (2-tailed)	.001	
	n	280	280

** . Correlation is significant at the 0.01 level (2-tailed).

Pearson's correlation coefficient found significant describing that age was significantly correlated with IAT score (Table VII).

Discussion

Among the study population of 280 medical students, the mean age of the participants was 21.51 ± 1.618 years. Male constituted 35.4% of the study population and females constituted 64.6% of the study population, which is consistent with other researchers.²⁰

In this study, the prevalence of severe Problematic Internet Use (PIU) was found to be 3.6%, which is in accordance with other studies performed among medical students. A study conducted by Patil, Deshmukh and Dagdiya in Nagpur, India reported a prevalence of severe PIU to be 3.68%. Pramanik, Sherpa and Shrestha in Nepal reported that 3.07% of the medical students were categorized as severe PIU. Whereas Sayyah and Khanafereh found the prevalence of severe PIU among medical students in Iran to be 12.9%.²¹⁻²³

The study revealed that the vast majority of the participants used mobile phone devices and Mobile internet services which might be the result of the effort of the Government of Bangladesh to convert ours into a technologically advanced country by 2021.²⁴

The mean duration of Internet use per day was 4.11 hours in our study, compared to 4 hours per day in a study by Ching et al in Malaysia.²⁵

In our study, the most mentioned purpose of internet use was social networking (82.5%), study material Collection (77.5%), and movie watching (53.9%). Similar findings were noted by Kundu, Singh, Ray, Sachdeva and D. R. and Debata where a majority of the students used the internet for social media.^{26,27} Among the participants 77.1% log into the internet for study purpose and ends in web surfing for social media and entertainment.

Study findings showed that the medical students who spend more than 3 hours daily on the internet and have problematic relations with parents are problematic Internet users. No significant association with PIU was found among gender, duration of internet use, duration of the study, and types of online application used, which was similar to other studies conducted by Malviya et al in Indore, Chennam Sett et al in Andhra Pradesh of India.^{28,29}

Limitations

Being a cross-sectional study with a narrow sample size, taken from four Government as well as Private Medical Colleges, it was quite difficult to portray the relatedness interim the causative factors and PIU in this study. Identifying the associated risk factors requires longitudinal and multi-centered studies that include a larger sample.

Conclusion

The study outcomes, despite having some flaws, hold in valuable implications in the Public Health sector for planning new policies at the same time implementing those interventions. According to the conducted study, 62.9% of total participants had some sort of PIU which was quite an alarming proportion, whereas, the prevalence of severe internet addiction was found to be

in 3.6% regardless of sexes. These results delineate the fearsome picture of reckless internet use, craving the imperative attention of Public Health authorities. Since the medical students have span less access to internet both for curricular and extracurricular purposes with trivial supervision, they remain at the top of the high-risk groups, requiring utmost attention of concerned sectors.

Recommendations

- To validate the severity of PIU a large-scale epidemiological study is necessary.
- Upon recognition of the intensity and rapidity of the negative impacts of the internet on medical students, prudent and pragmatic preventive measures should be planned and instituted promptly to curb the detrimental effects of unimpeded internet usage.
- Sensitizing medical students through fruitful awareness programs would help to a great extent, whereas, ascertaining the sign symptoms of PIU might play a significant role in assessing and formulating psychological health issues by student counselors and psychotherapists.
- A Healthy and secure internet culture amidst medical campus along with enriching extracurricular activities would foster empirical use of this technological boon that might provide us with sound, diligent as well as skilled health care professionals in the near future.

Disclosure

All the authors declared no competing interest.

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