

Association of Sleep Patterns, Social Media Use, and Lifestyle Factors with Internet Addiction among Undergraduate Medical Students in Bangladesh

Imranul Haider Chowdhury^{1*}, Sajid Salman Hamid², Abdullah Enam³, Dipak Mitra⁴

¹Medical Director, Department of Hospital Operation, AMZ Hospital Ltd, Dhaka, Bangladesh

²Senior Lecturer, Department of Community Medicine and Public Health, Ashiyan Medical College Hospital, Dhaka, Bangladesh

³Technical Coordinator, System Strengthen & Research, Department of Hospital Operations, AMZ Hospital Ltd, Dhaka, Bangladesh

⁴Dean, Department of School of Health and Life Sciences, North South University, Dhaka, Bangladesh

<p>Abstract: Introduction: The Internet has transformed daily life, but excessive use can cause addiction, mental health issues, and poor sleep, affecting students' well-being and academics. In Bangladesh, problematic internet use among university students is linked to poor sleep and health. This study aimed to examine the relationship between sleep patterns, social media use, lifestyle factors, and internet addiction among undergraduate medical students. Materials and Methods: A cross-sectional study among Shaheed M Monsur Ali Medical College students (Nov 2019–Feb 2020) examined internet addiction, sleep, social media use, and lifestyle factors using a self-administered questionnaire. Students with internet access who consented were included; those with incomplete data or certain medications were excluded. Associations were analyzed with Chi-square tests ($p < 0.05$) after IRB approval. Results: Among 196 students, 34.7% were addicted to the internet. Addiction was higher in those with abnormal sleep ($p = 0.025$), social media use before sleep ($p = 0.017$), and >2 hours/day usage ($p < 0.0001$). Platform and self-perceived addiction were not significant. Lifestyle and health factors showed no significant association with addiction. Conclusion: Over one-third of undergraduate medical students exhibited internet addiction, which was strongly associated with abnormal sleep patterns and prolonged or late-night social media use. Lifestyle and health factors showed no significant impact. Promoting healthy sleep habits and regulated social media use may help reduce internet addiction among students.</p>	<p>Research Paper</p>
	<p>*Corresponding Author: Imranul Haider Chowdhury Medical Director, Department of Hospital Operation, AMZ Hospital Ltd, Dhaka, Bangladesh</p>
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INTRODUCTION

The Internet is one of the modern society's greatest achievements, transforming daily life by enabling instant access to information, communication, education, science, and entertainment [1]. Excessive Internet use, especially among adolescents, can lead to addiction and serious issues such as school refusal, mental health problems, low self-esteem, loneliness, anxiety, depression, and sleep deprivation, resulting in increased tiredness [2]. Medical students commonly use the Internet for literature searches and medical information, as well as for stress relief through games, videos, and social networking [3].

Sleep is essential for physical and mental health, supporting growth and cognitive function. Poor

sleep can cause headaches, memory and learning difficulties, behavioral issues, and increase the risk of mental disorders and chronic diseases like cardiovascular problems and diabetes [4]. The rising use of smartphones has made bedtime screen use a common habit among students, disrupting sleep and altering circadian rhythms, especially in those with internet addiction [5].

Mostly, Internet World Stats depending on their data stated that no other continent in the world of internet users is as high as Asia, around 922.3 million, expressing 44% share of the world's Internet user people [6]. There has been a rising concern in Asia, on what has been categorized "Internet addiction." It has been seen in certain Asian states as an important public health issue. In Beijing capital of China, a leading judge named Shan Xiuyun has stated that 90% of young offenders in the

Beijing city was cyber-related [7].

Several cross sectional studies reported that medical students who overused the Internet, cell phones or social media had significantly worse sleep quality and poorer general health. For example, a study at Kermanshah University of Medical Sciences found that overuse of cell phones or internet and social network addiction were strongly associated with poor sleep quality and lower general health in medical science students [8]. Moreover, a study from 2016 on mobile phone overuse and engagement in social networks among students (not always strictly medical) demonstrated that heavy mobile phone/social network use negatively affected sleep quality, suggesting that late night screen use and frequent notifications could disturb normal sleep patterns [9].

A Bangladeshi study among university students found that problematic internet use was strongly linked to poor sleep quality, with affected students much less likely to have good sleep. Excessive internet use may negatively impact their health, well-being, and academic performance [10]. The aim of the study “Association of Sleep Patterns, Social Media Use, and Lifestyle Factors with Internet Addiction Among Undergraduate Medical Students in Bangladesh” was to investigate the relationship between sleep patterns, social media usage, and various lifestyle factors with the prevalence and severity of internet addiction among undergraduate medical students in Bangladesh.

SUBJECTS AND METHODS

This cross-sectional study was conducted among undergraduate students of Shaheed M Monsur Ali

Medical College, Uttara, Dhaka, Bangladesh, over a four-month period from November 2019 to February 2020. The target population included all enrolled undergraduate students, and participants were selected using a convenience sampling method. Students who were willing to participate voluntarily and had access to the internet were included, while those with incomplete questionnaires or taking medications for depression, anxiety, chronic insomnia, or thyroid disorders were excluded. Data were collected using a structured, self-administered questionnaire that captured sociodemographic characteristics, sleep patterns (normal, less, or more than 6–8 hours), social media usage habits (preferred time, platform, and daily duration), lifestyle and health-related factors (smoking, physical activity, stressful life events, living alone, depression, and physical comorbidities), and internet addiction status. Ethical approval for the study was obtained from the Institutional Review Board (IRB) of Shaheed M Monsur Ali Medical College, and written informed consent was obtained from all participants prior to data collection. Descriptive statistics were used to summarize the characteristics of participants, and Chi-square tests were applied to assess associations between internet addiction and sleep, social media use, and lifestyle factors, with a significance level set at $p < 0.05$.

RESULTS

Table 1 presents the distribution of internet addiction among the participants. Out of 196 undergraduate medical students, 128 (65.3%) were categorized as normal users, while 68 (34.7%) were addicted to the internet, indicating that more than one-third of students in this cohort exhibit internet addiction.

Table 1: Addicted and normal users' category

Addicted to internet vs Normal		
Category	Frequency	Percent
Normal	128	65.30
Addicted to the internet	68	34.70

Figure 1 illustrates participants' preferred time for using social media. The majority of students accessed

social media during free time (58.2%), followed by usage before sleep (34.2%), and during university hours (7.7%).

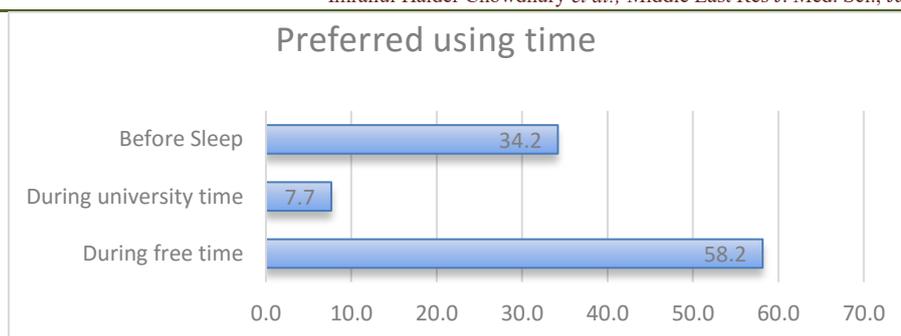


Figure 1:

Figure II depicts the sleeping patterns of participants. Most students reported normal sleep duration (6–8 hours), whereas a substantial proportion reported sleeping less or more than the normal range. Internet addiction was more common among students

with less than normal sleep (46.34%) and more than normal sleep (45.0%), while those with normal sleep showed a lower prevalence (26.96%). This indicates a significant association between sleep duration and internet addiction ($p = 0.025$), with abnormal sleep patterns potentially contributing to addictive behavior.



Figure 2:

Table 2 shows a significant relationship between sleep patterns and internet addiction ($p=0.025$). Students with less or more than the normal 6–8 hours of sleep had higher proportions of internet addiction (46.3% and 45.0%, respectively) compared to those with normal sleep (27.0%). Social media access during free time and before sleep was also significantly associated with addiction ($p=0.017$), with the highest addiction seen in

those using social media before sleep (47.8%). The duration of social media use per day showed a very strong association with addiction ($p < 0.0001$), with 63–66% of students using it >2 hours/day classified as addicted. Self-perceived social media addiction was not significantly associated with actual addiction ($p=0.419$). Most students used Facebook, but the platform itself was not significantly linked to addiction ($p=0.865$).

Table 2: Sleep Patterns, Social Media Use, and Internet Addiction Among Undergraduate Medical Students

Variables	Normal Users n (%)	Internet-Addicted n (%)	p-value
Sleeping Status			0.025*
Normal (6–8 hours)	84 (73.04%)	31 (26.96%)	
Less than normal	22 (53.66%)	19 (46.34%)	
More than normal	22 (55.00%)	18 (45.00%)	
Access to social media			0.017*
During free time	81 (71.05%)	33 (28.95%)	
During university time	12 (80.00%)	3 (20.00%)	
Before sleep	35 (52.24%)	32 (47.76%)	

Most Used Platform			0.865
Facebook	123 (65.43%)	65 (34.57%)	
WhatsApp	5 (62.50%)	3 (37.50%)	
Social Media Use per Day			<0.0001*
< 2 hours/day	113 (73.38%)	41 (26.62%)	
2–5 hours/day	11 (36.67%)	19 (63.33%)	
> 5 hours/day	4 (33.33%)	8 (66.67%)	
Self-Perceived Social Media Addiction			0.419
Yes	14 (73.68%)	5 (26.32%)	
No	114 (64.41%)	63 (35.59%)	

Table 3 shows lifestyle and health-related characteristics of participants in relation to internet addiction. None of the examined lifestyle and health-related factors were significantly associated with internet addiction among undergraduate medical students (all p -values > 0.05). Physical comorbidities, smoking status, physical activity, stressful life events, living alone, and depression status all showed similar proportions of normal and internet-addicted users, indicating no strong

link between these factors and addiction. For example, 29.6% of students with comorbidities were addicted compared to 36.2% without, and 32.4% of physically active students were addicted compared to 35.2% of inactive students. Living alone showed a slightly higher proportion of addiction (30.3%) compared to those not living alone (41.9%), but this was not statistically significant ($p = 0.099$).

Table 3: Lifestyle and Health-Related Factors Associated with Internet Addiction

Variables	Normal Users n (%)	Internet-Addicted n (%)	p-value
Physical Comorbidity			0.415
Yes	31 (70.45%)	13 (29.55%)	
No	97 (63.82%)	55 (36.18%)	
Smoking Status			0.359
Yes	44 (69.84%)	19 (30.16%)	
No	84 (63.16%)	49 (36.84%)	
Physical Activity			0.752
Yes	23 (67.65%)	11 (32.35%)	
No	105 (64.81%)	57 (35.19%)	
Stressful Life Events			0.518
Yes	13 (72.22%)	5 (27.78%)	
No	115 (64.61%)	63 (35.39%)	
Living Alone			0.099
Yes	85 (69.67%)	37 (30.33%)	
No	43 (58.11%)	31 (41.89%)	
Depression Status			0.256
Yes	42 (71.19%)	17 (28.81%)	
No	86 (62.77%)	51 (37.23%)	

DISCUSSION

This study found that 34.7% of undergraduate medical students were addicted to the internet, which is consistent with previous studies conducted in different countries. Taha *et al.* (2019) reported a prevalence of 33.7% among medical students in Saudi Arabia [11], while Ching *et al.* (2017) found 31.5% of Malaysian medical students exhibited internet addiction (IA) [3]. Similar rates were observed in Bangladesh, where Jahan *et al.* (2019) reported 35% of student's had IA [10]. These findings indicate that IA is a common concern

among medical students, with prevalence consistently around one-third of the population.

Sleep Patterns and Internet Addiction

Our results show that students with less than normal (46.3%) or more than normal (45.0%) sleep had higher rates of IA compared to those with normal sleep duration (26.96%). This aligns with prior research demonstrating a strong relationship between poor sleep and internet addiction. Mohammadbeigi *et al.* (2016) and Lin *et al.* (2019) found that overuse of mobile phones and social networks significantly impaired sleep quality among students [9,12]. Similarly, Kawyannejad *et al.*

(2019) observed that excessive internet use was strongly associated with lower sleep quality in medical students [8]. Bangladeshi studies also support this pattern: Jahan *et al.* (2019) and Bhandari *et al.* (2017) reported that poor sleep quality was significantly correlated with higher IA scores [10,13]. These findings reinforce the bidirectional relationship between disrupted sleep and addictive internet use.

Social Media Usage and Timing

This study identified that social media use before sleep (47.8%) and prolonged daily use (>2 hours/day) were strongly associated with IA. Rahman (2019) similarly highlighted that late-night social media use negatively affects students' sleep and increases the likelihood of problematic internet use [14]. Mamun *et al.* (2019) also reported that excessive time spent on social networking platforms significantly predicted IA among Bangladeshi students [15]. These findings suggest that both timing and duration of internet use are critical determinants of IA risk.

Lifestyle and Health Factors

Unlike previous studies linking IA with depression, anxiety, and stress [16], our study did not find significant associations between IA and lifestyle factors such as physical activity, smoking, comorbidities, stressful life events, living alone, or self-reported depression. While some studies, including Ahmed *et al.* (2020), have shown mental health conditions and living alone increase IA risk [17], the lack of association in our study may reflect cultural differences, small sample size, or underreporting of mental health issues among students.

Overall, the study highlights that abnormal sleep patterns and excessive or late-night social media usage are the strongest predictors of internet addiction among undergraduate medical students in Bangladesh. These findings are consistent with international and local research, suggesting that interventions focusing on healthy sleep hygiene and regulated social media use could help mitigate IA.

CONCLUSION

Internet addiction affected over one-third (34.7%) of undergraduate medical students in this study. Students with abnormal sleep patterns—either less than or more than the recommended 6–8 hours—showed higher rates of addiction. Similarly, prolonged daily social media use, particularly use before sleep, was strongly associated with internet addiction. In contrast, lifestyle and health-related factors such as smoking, physical activity, comorbidities, stressful life events, living alone, and self-reported depression were not significantly linked to addiction. These findings suggest

that interventions promoting healthy sleep habits and responsible, regulated social media use may help mitigate the risk of internet addiction among medical students.

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