RESEARCH ARTICLE

Internet addiction and its association with life satisfaction among university students in Bangladesh

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Abstract

Background: Internet addiction (IA) is a serious issue for students because it hampers their daily activities and academic performance negatively impacting mental health. Therefore, this study aimed to determine the prevalence of IA and the factors associated with it among university students.

Methods: A total of 1,168 students of four Bangladeshi universities (50.2% males, 49.8% females, mean age 22.7 and standard deviation 2.2 years) were collected using multistage cluster sampling for this cross-sectional study. The Bangla-adapted Young's Internet Addiction Test (IAT) was used to assess the presence of IA.

Results: A total of 78% of individuals had IA. The key factors associated with IA were marital status, self-reported physical health condition, sleep quality, physical exercise, social engagement, and life satisfaction. Students who reported dissatisfaction with life were more likely to have IA than those who were satisfied (92.8% versus 69.8%). Unmarried individuals were more likely to experience IA compared to married individuals (83.9% versus 63.2%). Respondents with poor physical health status exhibited higher IA rates than those with good physical health status (91.5% versus 62.1%). Higher IA was found to be more prevalent among individuals with poor sleep quality than those with good sleep (89.2% versus 59.8%). Individuals who did not engage in social activities were more likely to have IA than those who engaged in social activities (81.6% versus 71.8%). Multiple logistic regression analysis supported these relationships.

Conclusion: IA is widely prevalent among university students, with nearly three-fourths of them being addicted. Therefore, university administrators and relevant authorities should take necessary measures to mitigate the adverse effects of IA.

Key messages

Internet addiction affects 78% of university students of Bangladesh, with key risk factors including marital status, physical health, sleep quality, exercise, social engagement, and life satisfaction. Unmarried students, along with those in poor health, experiencing inadequate sleep, and exhibiting low social engagement, are more vulnerable to internet addiction, while life dissatisfaction further increases the risk. Given its high prevalence and negative impact, universities should implement measures to address internet addiction and support students' well-being.

Introduction

The internet is essential to modern life, with users and online time increasing exponentially [1]. Globally, the number of internet users has been rising [2], and in July 2024, the number of internet users reached 5.45 billion [3].

In Bangladesh, mobile internet subscribers numbered 117.5 million in February and 125.15 million in April 2024 [4]. Thus, it is evident that each month the internet use rate has been growing presumably, the prevalence of internet addiction (IA) is also increasing. A study conducted in 2020 found that 27.1% of young adults in Bangladesh experienced IA [5].

Many studies have shown that gender [6, 7] and marital status [7] can influence the IA of university students. Other studies have also found that physical health status [8], sleep quality [7, 9], and physical exercise [6, 7, 9, 10] are important factors in predicting IA. These factors not only predict IA but also have a detrimental effect on mental health issues like depression, anxiety, and chronic physical health problems such as diabetes and high blood pressure [5, 7, 9, 10]. Engagement with other organisations (debating club, science club, research society, various research groups, etc.) increases social support, which decreases IA [11]. Life satisfaction externalises people's psychological necessities [12]. A Chinese study reported that individuals who are satisfied with their lives are more likely to have their mental needs met in real life than on the internet, making them less prone to IA compared to those who are not satisfied [13]. Lower life satisfaction and IA lead to anxiety, depression, suicidal behaviors, and aggressivenes [14].

Several studies were conducted to determine the prevalence of IA in Bangladesh [5, 9]. Two studies identified the prevalence of IA in college students and adolescents [15, 16]. Previous studies also indicated that IA leads to physical and mental health problems among university students [7, 8]. Therefore, the objective of the study was to determine the prevalence of IA and its association with life satisfaction and other factors among university students.

Methods

Study design and study settings

This is a cross-sectional study, and data were collected from four universities located in four divisions of Bangladesh from November 2023 to January 2024. The universities are Dhaka University, Rajshahi University, Khulna University, and Begum Rokeya University. These universities have approximately 1,30,000 students from various regions of Bangladesh.

Sample size and sampling method

Using the equation, $(z^2pq)/d^2$ [17], where z=1.96 (95% CI); p = prevalence estimate (0.271) [5]; q=1-p; and d=10% of 0.027 the calculated sample size was 1,033. Multistage clustered sampling was used to select the sample for the study. Firstly, we randomly selected four divisions from the eight divisions. Secondly, we randomly selected one university from each division. Thirdly, eight halls from Dhaka University (four males and four females) and Rajshahi University (four males and four females), two halls each from Khulna University (one male and one female) and the Begum Rokeya University (one male and one female), were randomly selected from all halls of the respective universities. The simple random sampling technique was applied to select 60 participants from each hall. We randomly drew participants from a list of all students residing in the male and female halls, ensuring diverse representation of the student population from each hall. Finally, the total selected sample was 1200 (600 males and 600 females), but 24 (nine males and 15 females) students did not agree to provide their data, and eight (five males and three females) students did not correctly fill in the socio-demographic information and questionnaire. Therefore, they were not included in this study. Consequently, the final sample size was 1,168 students from four universities. We considered Bangladeshi regular students but excluded students from other countries, and evening M.Phil and Ph.D. courses.

Risk factors

We considered age, sex, marital status (married or unmarried), and self-reported sleep quality (poor, average, and good), physical health status (poor, average, and good), physical activity (average minutes spent daily), social engagement (engaged or not engaged), and life satisfaction (not satisfied or satisfied).

Measuring instruments

The Internet Addiction Test (IAT)

IAT developed by Dr. Kimberly S. Young in 1998, is a 20-item self-report tool designed to measure the severity of internet dependency and its effects on daily life, including productivity, social interactions, and emotional well-being [18]. A validated Bangla version of the IAT is available that has been culturally adapted and psychometrically tested to ensure its reliability and validity among Bangladeshi populations [19]. The Bangla IAT retains the original 20-item structure and assesses the extent of problematic internet use across dimensions such as emotional well-being, time management, and interpersonal relationships. Each statement is scored from 1 to 5 (never to very often). The total score ranges from 20 to 100. For this scale, scores under 50 are considered no IA (coded 0), and scores above 50 are indicated as IA (coded 1). In this study, Cronbach's alpha for this scale was 0.86, reflecting good internal consistency.

Satisfaction with life scale (SWLS)

The SWLS was developed by Diener *et al.* [20] to measure individuals' overall life satisfaction using 5 items rated on a 7-point scale ranging from 1 (extremely dissatisfied) to 7 (highly satisfied). The total scores, which range from 5 to 35, reflect a person's global life satisfaction, and the scale has demonstrated good reliability and validity across diverse populations. The Bangla-adapted version of the SWLS was validated in Bangladesh by Shahnaz

Table 1 Descriptive characteristics and associated factors of internet addiction among university students

Variables	Participants, number (%)			Internet addiction, number (%)		
	Overall	Males	Females	Overall	Males	Females
	(n=1,168)	(n=586)	(n=582)	(n=911)	(n=443)	(n=468)
Life satisfaction						
Not satisfied	416 (35.6)	202 (34.5)	214 (36.8)	386 (92.8)a	189 (93.6)a	197 (92.1)a
Satisfied	752 (64.4)	384 (65.5)	368 (63.2)	525 (69.8)	254 (66.2)	271 (73.6)
Marital status						
Married	84 (7.2)	34 (5.8)	50 (8.6)	45 (53.6)a	19 (55.9)a	26 (52.0)a
Unmarried	1084 (92.8)	552 (94.2)	532 (91.4)	866 (79.9)	424 (76.8)	442 (83.1)
Self-reported physical health status						
Poor	211 (18.1)	95 (16.2)	116 (19.9)	205 (91.5)a	91 (95.8)a	107 (92.2)a
Average	826 (70.7)	414 (70.7)	412 (70.8)	624 (76.8)	309 (74.6)	328 (89.6)
Good	131 (11.2)	77 (13.1)	54 (9.3)	82 (62.1)	43 (55.8)	33 (61.1)
Self-reported sleep quality						
Poor	345 (29.5)	163 (27.8)	182 (31.3)	321 (89.2)a	156 (95.7)a	173 (95.1)a
Average	677 (57.9)	338 (57.7)	339 (58.2)	489 (76.5)	255 (75.4)	268 (79.1)
Good	146 (12.6)	85 (14.5)	61 (10.5)	101 (59.8)	32 (37.7)	27 (44.3)
Physical exercise (in minutes)						
<15	629 (53.9)	295 (50.3)	334 (57.4)	532 (84.6)a	249 (84.4)a	283 (84.7)a
15-30	471 (40.3)	249 (42.5)	222 (38.1)	339 (72)	168 (67.5)	171 (77.0)
>30	68 (5.8)	42 (7.2)	26 (4.5)	40 (58.8)	26 (61.9)	14 (53.9)
Social engagement						
Engaged	433 (37.1)	213 (36.4)	220 (37.8)	311 (71.8)a	151 (70.9)b	160 (72.7)a
Not engaged	735 (62.9)	373 (63.6)	362 (62.2)	600 (81.6)	292 (78.3)	308 (85.1)

aP <0.01; bP <0.05 (comparisons are overall-and sex-specific).

and Karim [21]. This study involved translating the scale and assessing its psychometric properties among university students. It was found that the Bangla version exhibited good internal consistency and construct validity, confirming its reliability in measuring life satisfaction in the Bangladeshi context. A higher score indicates greater life satisfaction. Here, scores of 5-20 are considered not satisfied (coded 0), while scores of 21-35 are deemed satisfied (coded 1), and this SWLS has shown good psychometric properties [22]. In this study, the Cronbach's alpha for this scale was 0.81, reflecting good internal consistency

Ethical considerations

Data collection was started after obtaining ethical approval. Purpose of the study was explained to all participants, and informed consent was obtained. All data were anonymised and kept confidential.

Statistical analysis

The characteristics of the participants were summarised using descriptive statistics. The chi-square test was utilised to examine the association between the outcome variable (IA) and the independent variables. Variables significantly associated with the IA were included as independent variables in the binary logistic model to identify the predictors of IA independent of other variables. We performed sex-stratified analysis also. The multicollinearity of the variables selected for the model was tested prior to their entry into the model. All statistical analyses were conducted using SPSS Statistics for Windows, Version 26.0 (IBM Corp., Armonk, NY, USA). Statistical significance was established using a 95% confidence interval, with a 5% significance level.

Results

Participants' background and IA prevalence

All characteristics of the participants are presented in (Table 1). This study recruited 1,168 respondents. About half (50.2%) were male, and 7.2% were married. According to participants' self-reports, 19.2% had poor physical health, and 30.8% had poor sleep quality. More than six in ten (62.9%) had no social engagement. Only 5.8% spent over 30 minutes on physical activity per day. More than one-third (35.6%) did not have life satisfaction.

Overall, 78% students had IA of (males, 75.6%; females, 80.4%). Most students (92.8%) who were unsatisfied with their lives had IA compared to those satisfied with their lives (69.8%) (P <0.01). Similarly, IA was significantly greater among females (80.4%), unmarried students (79.9%), those with poor physical health (91.5%), those who had poor sleep quality (89.2%), those who were not socially engaged (81.6%), and those who were sedentary (84.6%). A sex-stratified analysis also showed similar results.

Predictors of IA

A multivariate logistic regression analysis was done using all variables presented in Table 1. Results are presented in (Table 2). Individuals who were unsatisfied with life had 2.2 times (95% confidence interval (CI) 1.4 – 3.5) more IA than those who were satisfied with their lives. Unmarried individuals had 3.4 times (95% CI 2.2 – 5.4) more IA than married individuals. Individuals with poor and average physical health status had 5.9 times (95% CI 2.9 – 11.9) and 2.3 times (95% CI 1.5 – 3.6) more IA than those who rated their health as good. Similar results were found for poor sleep quality, sedentary lifestyle, and non-engagement in social activities. Social

Table 2 Adjusted odds ratios (95% confidence intervals) as obtained by multiple logistic regression analysis

Variables	Adjusted odds ratios (95% confidence intervals)		
	Overall (n=1,168)	Males (n=586)	Females (n=582)
Life satisfaction (Ref. Satisfied)			
Not satisfied	2.2 (1.4 – 3.5)[a]	2.4 (1.2 – 4.9)[a]	1.9 (1.0 – 3.6)[a]
Gender (Ref. Male)			
Female	1.2 (0.9 – 1.7)	-	-
Marital status (Ref. Married)			
Unmarried	3.4 (2.2 – 5.4)[a]	2.6 (1.3 – 5.3)[a]	4.5 (2.5 – 8.3)[a]
Self-reported physical health status (Ref. Good)			
Poor	5.9 (2.9 – 11.9)[a]	9.1 (2.8 – 29.5)[a]	4.6 (1.8 – 11.7)[a]
Average	2.3 (1.5 – 3.6)[a]	2.2 (1.2 – 3.9)[a]	2.5 (1.3 – 4.9)[a]
Self-reported sleep quality (Ref.Good)			
Poor	18.3 (9.4 - 35.7)[a]	22.2 (8.3 – 59.7)[a]	15.7 (6.3 – 39.4)[a]
Average	5.1 (3.3 – 7.9)[a]	5.0 (2.8 – 9.0)[a]	5.1 (2.7 – 9.6)[a]
Physical exercise (in minutes) (Ref.>30)			
<15	1.9 (1.0 – 3.5)[a]	1.9 (0.8 – 4.5)	2.0 (0.8 – 5.0)
15-30	1.3 (0.7 – 2.4)	1.1 (0.5 – 2.5)	1.7 (0.7 – 4.3)
Social engagement (Ref. Engaged)			
Not engaged	1.7 (1.2 – 2.4)[a]	1.4 (0.8 – 2.3)	2.1 (1.3 – 3.4)[a]

[a]$P < 0.05$

engagement in male participants was however not statistically significant.

Discussion

The current study found a higher prevalence of IA and identified the associated factors among university students. This study revealed that 78% of participants were classified as addicted internet users, which is more than double that of the pre-COVID-19 studies [5, 9]. However, studies conducted post-COVID-19 have reported comparable rates 63% [15] and 88% [16]. among adolescents and college students. The COVID-19 pandemic might have sparked overuse of the internet among university students, leading to a higher level of mental health problems [7].

The higher prevalence of IA in our study, compared to previous reports, may be due to the living conditions of the university students in our sample, who reside in hostels without familial supervision. Unlike students living with families, those in hostels in Bangladesh often experience greater independence, social isolation, and unstructured routines, which can lead to increased internet use for academic, entertainment, and social purposes [5, 23]. Previous studies in Bangladesh have shown that living with family provides more regulatory control and alternative social activities, which help reduce excessive internet use [5, 24].

The current study found that unmarried students were more likely to be addicted than married students, similar to previous studies [7]. Poor health status was a significant predictive factor of IA [8]. The present study found that poor health status was also associated with addictive internet usage. Individuals with poor sleep quality were more likely to be addicted to internet usage than good sleepers [9]. Those who engaged in physical activity for less than 25 minutes daily were more likely to have IA than those who exercised for more than one hour. This suggests that physical activity significantly decreases IA [9, 10].

Social engagements reduce isolation and introduce new friends who can enhance social support. Involvement with any organisation allows students to achieve various goals, thereby increasing their interaction and fostering strong social support. However, studying IA is critical because it contributes to various physical health-related issues, such as high blood pressure, diabetes, headaches, and pain [8, 10], as well as mental health issues, such as depression and anxiety [7].

Strengths and limitations

Face-to-face interviews may reduce misunderstandings in answering the self-reported data, which may create advantages over the data collected online. Multistage cluster sampling gives advantages over convenience sampling. However, some limitations were in the present study: (i) the study was cross-sectional, so establishing a causal relationship was impossible; (ii) this study used self-reported data, which creates the chance of information bias or social desirability bias.

Conclusions

The results showed a significant increase in IA among Bangladeshi university students in recent years. University students with life satisfaction are less likely to experience IA. This study identifies other influential factors related to internet addiction, such as being unmarried, having poor physical health, experiencing poor sleep quality, engaging in less physical activity, and lacking social engagement. Effective interventions could be planned based on these findings

Author contributions
Conception or design of the work; or the acquisition, analysis, or interpretation of data for the work: MAHM, TK, MH, MNIM, MGH. *Drafting the work or reviewing it critically for important intellectual content:* MAHM, TK, MH, MNIM, MGH. *Final approval of the version to be published:* MAHM, TK, MH, MNIM, MGH. *Accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved:* MAHM.

Conflict of interest

We do not have any conflict of interest.

Data availability statement

We confirm that the data supporting the findings of the study will be shared upon reasonable request.

Supplementary file

None

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