



## Research article

## Health impacts of excessive use of Facebook among university students in Bangladesh



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## HIGHLIGHTS

- ~70% University students of Bangladesh use internet for at least 4–6 hrs/day, among them ~27% use Facebook for >3 hrs.
- Around half of the students felt using Facebook wasted time and reported sleeping disturbances.
- Excessive use of internet caused problems such as weakening vision, occasional and frequent headaches, and back and neck pain.

## ARTICLE INFO

**Keywords:**  
Facebook  
Student  
Time  
Health  
Bangladesh

## ABSTRACT

The internet has become an essential part of our daily life. But excessive usage can have a negative impact on the physical health of its users. Over the last decade, the use of Social Media (Facebook) has been increasing rapidly and the younger generations getting addicted to it. But all possible health impacts of excessive use of internet are yet to be thoroughly evaluated, especially in such a developing country as Bangladesh. The present study aims to understand possible health deteriorations from excessive use of Facebook in a cohort of university students of Bangladesh. A cross-sectional study was conducted on 1186 students from two public universities and 1472 from several private universities of Bangladesh using a comprehensive questionnaire. The data were analyzed using the chi-square test to understand the association between Facebook usage behaviors and physical health status. We found that ~70% of the students used the internet for at least 4–6 hours/day, and ~27% of them used Facebook for >3 hrs. Students frequently use social media (mostly Facebook) for news and social communication. About 50% of the students reported wasting time on Facebook and going to sleep late because of it. Importantly, 47.3% students reported that excessive use of Facebook results sleeping disturbance and has a negative impact on the concentration of daily works/studies ( $p < 0.001$ ). In addition, they experienced several other health problems, including worsening eyesight (71.2%), headaches (15.4%), back and neck pain (28%). Although not statistically important, a fair number of students sought medical attention due to the daily excessive use of internet ( $p$ -value = 0.112). These findings demands better understanding of the all possible impacts of using excessive internet among the University students, which can help take the necessary initiatives to encourage good use of the internet. Further extension of this study is suggested at all education levels to reveal the full scenario of degree of excessive internet use and its impact on the healths of Bangladeshi students.

## 1. Introduction

The internet has become an indispensable part of our daily life. Globally, about 4.1 billion people are using the Internet on modern

gadgets, which is 86.6% and 47% of the population of developed and developing countries, respectively. Use of social media (mainly Facebook, LinkedIn, Twitter, and WhatsApp) has become a “global consumer phenomenon” made particularly popular because of the amusement that

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<https://doi.org/10.1016/j.heliyon.2021.e07271>

Received 8 March 2021; Received in revised form 23 May 2021; Accepted 7 June 2021

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**Table 1.** Frequency distribution of different characteristics of the respondents from SUST and SAU.

Features	Variables	Frequency (n = 1186)	Percentage		
<b>Socio-demographic</b>	Age (Mean $\pm$ SD)	20 ( $\pm$ 2)			
	Sex	Female	417	35.2	
		Male	769	64.8	
	Religion	Islam	993	83.7	
		Other Religion	193	16.3	
	Smoking status	Yes	100	8.4	
		No	1085	91.6	
	Semester	First Semester	931	78.5	
		7 <sup>th</sup> Semester	255	21.5	
	Expense per month (BDT)	>10000	72	6.1	
		5000–10000	783	66.0	
		2000–5000	249	21.0	
		<2000	82	6.9	
	Monthly expense for internet (BDT)	100–300	855	72.1	
		300–500	219	18.5	
		500–800	53	4.5	
		800–1000	32	2.7	
		>1000	27	2.3	
	Father's Income/month (BDT)	<15000	259	21.9	
		15000–30000	495	41.8	
		30000–50000	248	21.0	
		>50000	92	7.8	
		None	89	7.5	
Mother's Income/month (BDT)	<15000	89	7.5		
	15000–30000	112	9.4		
	30000–50000	29	2.4		
	>50000	14	1.2		
	None	942	79.4		
<b>Internet use</b>	Time spend on internet in a day	>6 hr	291	24.6	
		4–6 hr	536	45.3	
		2–4 hr	237	20.0	
		1–2 hr	120	10.1	
	Using any social network	Yes	1165	98.4	
		No	19	1.6	
	Time spend on Facebook in a day	$\geq$ 3 hrs	318	26.9	
		2–3 hrs	418	35.3	
		1–2 hrs	246	20.8	
		<1 hr	201	17.0	
	Leisure time after Facebook	Less than 1 hr	273	23.0	
		1 hr	649	54.8	
		2 hr	141	11.9	
		More than 3 hr	122	10.3	
	Using Facebook is wasting time	Yes	581	49.3	
		No	597	50.7	
	Alternative opts of recreation	Yes	786	66.3	
		No	400	33.7	
	Facebook making sleep late	Yes	612	51.6	
		No	574	48.4	
	<b>Impact of internet use</b>	Sleeping time	Before 10 pm	13	1.1
			10pm–12am	304	25.7
			12am–2 am	674	56.9
After 2 am			194	16.4	
Wake up time		By 6 am	183	15.5	
		By 7 am	337	28.5	
		By 8 am	449	37.9	
		By 9 am	151	12.8	
		After 9 am	64	5.4	
Experiencing sleep disturbances		Very often	110	9.3	

(continued on next page)

Table 1 (continued)

Features	Variables	Frequency (n = 1186)	Percentage
	Often	142	12.0
	Sometimes	560	47.3
	Rarely	262	22.1
	Never	110	9.3
	Facebook causing health problems	Yes	41.3
	No	696	58.7
	Facebook overuse causing you problems of vision and eyesight	Yes	71.2
	No	341	28.8
	Experiencing headaches	Very often	5.6
	Often	183	15.4
	Sometimes	440	37.1
	Rarely	396	33.4
	Never	101	8.5
	Experiencing back pain or neck pain?	Very often	8.8
	Often	148	12.5
	Sometimes	332	28.0
	Rarely	307	25.9
	Never	293	24.7
	Find it hard to concentrate in works/studies?	Very often	13.1
	Often	273	23.0
	Sometimes	491	41.4
	Rarely	164	13.8
	Never	103	8.7
	How often do you seek medical attention?	Very often	4.8
	Often	88	7.4
	Sometimes	421	35.5
	Rarely	449	37.9
	Never	170	14.3
	How often do you get irritated?	Very often	7.8
	Often	186	15.7
	Sometimes	549	46.3
	Rarely	244	20.6
	Never	114	9.6
<b>Perception on Internet use</b>	Facebook good or bad?	Good	83.8
	Bad	192	16.2
	Why Facebook is good?	Communication	69.1
	Networking	342	28.8
	Others	24	2.0
	Why Facebook is bad?	No info	.2
	Misleading	227	19.2
	Addiction	787	66.4
	Others	169	14.3
	Social media makes you smoke frequently	Yes	5.8
	No	1117	94.2
	Accustomed to regular physical exercise	Very often	6.0
	Often	123	10.4
	Sometimes	335	28.3
	Rarely	407	34.4
	Never	248	20.9

it delivers alongside the crucial roles that it serves in our modern lives such as instant communication, and seeking information [1, 2, 3]. Remarkably, among internet users, 71% are young people aged between 15-24 [4, 5].

Over the past decade, the use of social media by undergraduates has unsurprisingly expanded at a rapid pace, with Facebook being the most highly used social media platforms. A research conducted in 15 countries reported that technologies, including the use of the internet play an important role in their academic success. Unfortunately, there is a lack of

information regarding how students use social media to facilitate offline engagement with other university student [6, 7, 8].

The impacts of using social media depend on the purpose and frequency of its use. The use of the internet to communicate with friends and family is reported to be associated with better psychological functioning, lower stress, and greater positive affect [9, 10]. By contrast, excessive use of the internet for gaming and gambling found to be associated with increased depression [11]. Social media usage usually brings short-term pleasure and does not give any useable reward in real life, leading to

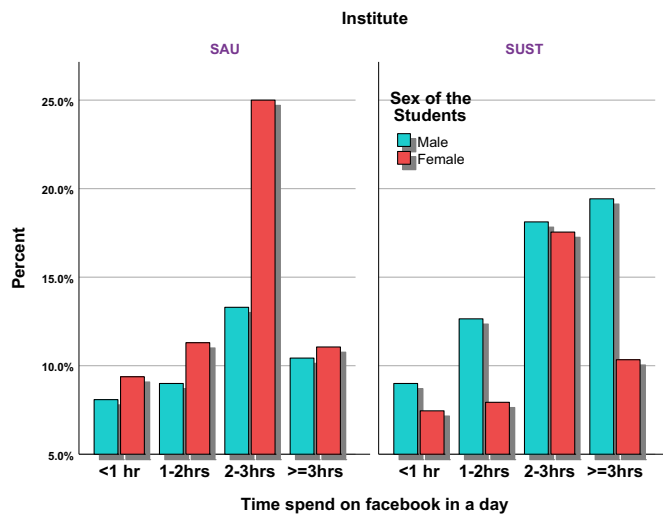


Figure 1. Distribution of Students according to their sex and time spend on the Facebook in SAU and SUST.

real-life depression [12, 13]. Furthermore, it has been observed that adults with significant depression spent more time online [14]. Besides this, the preoccupied individuals with electronic games, search, and recreational activities may be liable to neglect sporting and aerobic exercise, familial communication, and societal accomplishments [15, 16]. Recent reports have found that young users, who were actively and emotionally involved in their digital lives reported worse sleep, higher anxiety, and depression. Consistent social media usage is associated with a decrease in happiness and increase in depression [17].

Social media addicts are 2.21 times more likely to have physical symptoms than non-addicts, which include - backache, headache, neck pain, shoulder pain, wrist pain, strain of the eyes, neck problems, and myopia. In addition, excessive WiFi causes pathological conditions, including oxidative stress, sperm/testicular damage, neuropsychiatric effects including EEG change, apoptosis, cellular DNA damage, endocrine changes, and calcium overload [18, 19, 20, 21].

According to the BTRC (Bangladesh Telecommunication Regulatory Commission), the number of active internet connection in Bangladesh at the end of February 2020 has reached 99.984 million [22]. The prevalence of Internet Addiction (IA) among different Bangladeshi samples has been reported to be between 40-49.7% [22]. Excessive use of social media and associated health problem have been assessed in many countries, but so far remain only poorly studied in Bangladesh. The present study attempted to evaluate the socio-economic and health-related problems of excessive using Facebook in university students throughout the country.

## 2. Methods

### 2.1. Participants

We conducted a face-to-face cross-sectional survey among 1225 undergraduate students of two public universities (Shahjalal University of Science and Technology, and Sylhet Agriculture University) of the Sylhet division, Bangladesh. Among them, 1186 responses were used for the analysis as 15 of them were unwilling to participate, 13 of their responses were incomplete, and 11 of them previously suffered from chronic diseases. To compare variation of different parameters among junior and senior students, two separate cohorts of students from 1st and 7th semester were interviewed. Moreover, we extended our study with limited characteristics to 11 more universities such as AIUB (American International University-Bangladesh), DIU (Daffodil International University), DU (Dhaka University), EWU (East West University), IUB (Independent University), JNU (Jagannath University), NSU (North South University),

SEU (Southeast University), SUB (State University of Bangladesh), UAP (University of Asia Pacific), UIU (United International University) located in the capital city of Bangladesh. Data were collected through administering a questionnaire (Supplemental Figure 1) having both open-ended and close-ended questions from February 2018 to August 2018. English questionnaire was used, but explained in the native language (Bangla). Most of the questions were taken from previously published studies and new but valid questions were included considering the socio-demographic features of Bangladesh. Prior to the survey, a short lecture was given to carefully explain the questions to the participants. Notable among the questions were about the level of experiences of using the internet, especially of the social media and accompanying health impacts. Data were collected using stratified random sampling. Data was homogeneous for each group (1<sup>st</sup> year 1<sup>st</sup> semester and 4<sup>th</sup> year 1<sup>st</sup> semester) but heterogeneous between the groups.

### 2.2. Study variables

This study was conducted mainly to understand the health impact of using the internet with University students. To do so, critical variables including sleeping disturbance, headache, back pain, vision problems were mostly paid attention to (Supplemental Figure 1). In addition, some other associated variables, including money spent on internet, length of use, any impact on the study or daily life were also included.

### 2.3. Ethics

This study was reviewed and endorsed by the Research Ethics Committee (reference no. LS/GEB/EC/01/18; Headed by the Dean Prof. Dr. Shamsul Haque Prodhan), School of Life Sciences, Shahjalal University of Science and Technology. All study procedures were carried out following the guidelines of the Helsinki Declaration. Informed consent was obtained from the students prior to participating in the study.

### 2.4. Statistical analysis

We analyzed data using different descriptive statistics including frequencies, percentages, and means. The association between time spent on Facebook in a day and other important covariates were analyzed using the chi-square test. In our analyses, we mainly focused on the data that we collected from two universities (SUST and SAU) in Sylhet city.

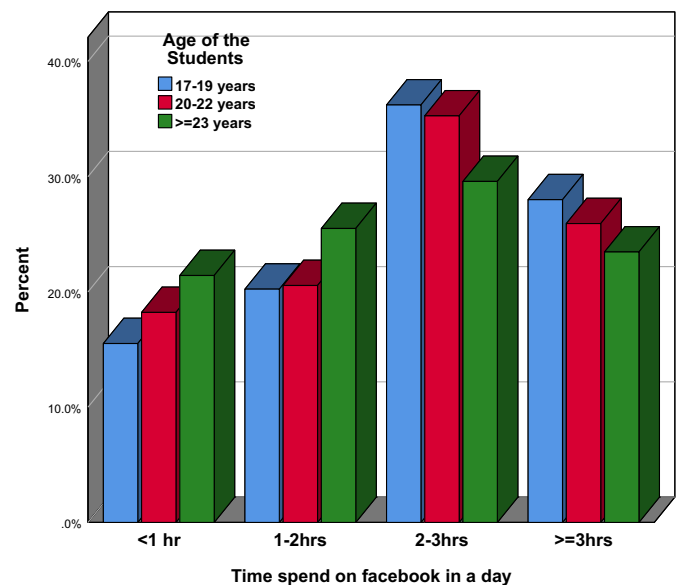


Figure 2. Distribution of Students according to their age groups and time spend on the Facebook in SAU and SUST.

**Table 2.** Association between Time spend on Facebook in a day and students demographic and health characteristics (SUST and SAU).

Variables		Time spend on Facebook in a day								p-value
		<1 hr		1–2 hrs		2–3 hrs		≥3 hrs		
		Count	Column %	Count	Column %	Count	Column %	Count	Column %	
Age (in years)	17–19	102	50.7	133	54.1	238	56.9	184	57.9	0.488
	20–22	78	38.8	88	35.8	151	36.1	111	34.9	
	≥23	21	10.4	25	10.2	29	6.9	23	7.2	
Sex	Female	70	34.8	80	32.5	177	42.3	89	28.0	0.001
	Male	131	65.2	166	67.5	241	57.7	229	72.0	
Facebook causing health problems	No	104	51.7	123	50.0	261	62.4	208	65.4	<0.001
	Yes	97	48.3	123	50.0	157	37.6	110	34.6	
How often do you get irritated?	Very often	23	11.4	23	9.3	26	6.2	21	6.6	<0.001
	Often	27	13.4	47	19.1	80	19.1	31	9.7	
	Sometimes	92	45.8	121	49.2	204	48.8	132	41.5	
	Rarely	42	20.9	34	13.8	70	16.7	97	30.5	
	Never	17	8.5	21	8.5	38	9.1	37	11.6	
Do you experience sleep disturbances?	Very often	37	18.4	20	8.1	32	7.7	20	6.3	<0.001
	Often	18	9.0	44	17.9	47	11.3	32	10.1	
	Sometimes	82	40.8	132	53.7	217	52.0	129	>40.7	
	Rarely	49	24.4	37	15.0	87	20.9	88	27.8	
	Never	15	7.5	13	5.3	34	8.2	48	15.1	
Do you experience headaches?	Very often	8	4.0	14	5.7	22	5.3	21	6.6	0.234
	Often	40	19.9	41	16.7	69	16.5	33	10.4	
	Sometimes	76	37.8	89	36.2	155	37.1	120	37.7	
	Rarely	61	30.3	84	34.1	142	34.0	108	34.0	
	Never	16	8.0	18	7.3	30	7.2	36	11.3	
Do you Experience back pain or neck pain?	Very often	17	8.5	22	8.9	36	8.7	29	9.1	0.021
	Often	32	15.9	37	15.0	40	9.6	39	12.3	
	Sometimes	61	30.3	69	28.0	129	31.0	72	22.6	
	Rarely	53	26.4	67	27.2	111	26.7	75	23.6	
	Never	38	18.9	51	20.7	100	24.0	103	32.4	
Is it hard to concentrate in works/studies?	Very often	39	19.4	44	17.9	43	10.3	29	9.1	<0.001
	Often	53	26.4	65	26.4	100	23.9	55	17.3	
	Sometimes	79	39.3	100	40.7	165	39.5	145	45.6	
	Rarely	21	10.4	26	10.6	66	15.8	50	15.7	
	Never	9	4.5	11	4.5	44	10.5	39	12.3	
How often do you seek medical attention?	Very often	11	3.5	26	6.2	13	5.3	7	3.5	0.112
	Often	19	6.0	31	7.4	21	8.5	17	8.5	
	Sometimes	108	34.0	142	34.0	96	39.0	75	37.5	
	Rarely	120	37.7	164	39.2	94	38.2	69	34.5	
	Never	60	18.9	55	13.2	22	8.9	32	16.0	
Do you do any physical exercise?	Very often	25	7.9	15	3.6	15	6.1	16	8.0	0.005
	Often	39	12.3	51	12.2	20	8.1	13	6.5	
	Sometimes	79	24.9	129	30.9	75	30.5	51	25.4	
	Rarely	100	31.5	155	37.2	85	34.6	66	32.8	
	Never	74	23.3	67	16.1	51	20.7	55	27.4	

UST, SAU and other universities.

Furthermore, in order to improve the reliability of our investigation, we extended our analyses using data from other universities in the capital city. In addition, we used a multivariable logistic regression model to assess the association between time spent on Facebook in a day and student's demographic and health characteristics. In this case, we made a binary variable in which one group time spent on Facebook was more than 2 hours a day and another group's was less than equal to two hours a day. Data were analyzed using Statistical Package for Social Science (SPSS) version 25.0.

### 3. Results

In total, 1186 students' information from SUST (53.7%) and SAU (46.3%) was collected, and among them, 64.8% were male students. The

majority (83.7%) of the students are followers of Islam, and their mean age was 20 years. Most of the data (78.5%) came from 1st-semester students. Table 1 shows the frequency distribution of different characteristics of the students.

Among the study cohort, we observed that only 8.4% of students were smoking, and 66% expensed five to ten thousand in a month (Table 1). The majority of the parents' incomes were around 30,000 taka monthly. Approximately half of the students spent 4–6 hours a day on the internet. In addition, 24.6% spent >6 hours a day on the internet (Table 1).

Among the internet users, 98.4% used social networking. Moreover, 35.3% of students spent 2–3 hours daily and 26.9% spent >3 hours a day on Facebook (Figure 1), among them, the highest use is seen in students from the 17–19 age range (Figure 2). Although the majority of them

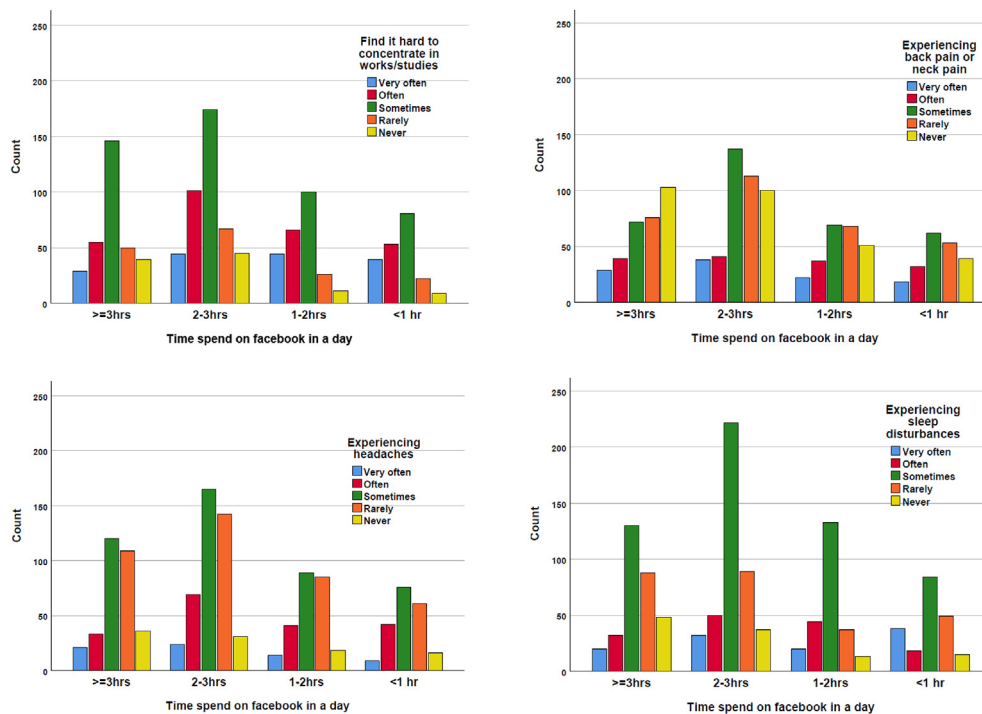


Figure 3. Distribution of Students according to their health characteristics and time spend on the Facebook in SAU and SUST.

reported irritability in moods, they stated that Facebook was greatly useful in communication and networking.

On the other hand, about 50% of students reported that Facebook consumed too much of their daily hours and even made them sleep late (around 12 to 2 am). Students (47.3%) reported that sometimes they would experience sleep disturbances attributable to spending time on Facebook. The majority (37.9%) of the students surveyed reported waking up by 8am and only 18.2% of the student woke up around 9 am or later. Only 6% of students said they were habitually physically active. Remarkably, 41% and 71% of those surveyed mentioned that Facebook caused health and vision problems, respectively (Table 1). They also reported occasional back pain or neck pain, sleep disturbances, and the association between time spent on Facebook in a day and reports of health-related issues were statistically significant (Table 2, Figure 3). We also observed there was a correlation between time spent on Facebook in a day and seeking medical help though the association was not deemed statistically significant ( $p = 0.112$ ). Besides that, excessive use of Facebook has been reported to have a negative impact on the concentration of daily works/studies ( $p < 0.001$ ) (Table 2). Similar results were also observed when we assessed the degree of the association between daily time spent on the internet and the students' health-related problems (data not shown).

In an extended study, along with the SUST and SAU, students from 11 other universities were included, albeit with limited characteristics. The association between their time spent on Facebook per day and demographic, health, and other characteristics are presented in Table 3. In this sensitivity analysis, we focused on all university data together, including limited study variables. We observed that the conclusion is in line with the SUST and SAU data. For example, occurrences of sleep disturbances, finding it hard to concentrate on works/studies are significantly ( $p < 0.001$ ) associated with the time spend on Facebook in a day (Table 3).

Table 4 shows the association between time spend on Facebook in a day and students demographic and health characteristics using multi-variable logistic regression. In this analysis, we selected a best using the

backward selection procedure. Here we found that variables such as wake up times, alternative option of recreation, reports of time being wasted on Facebook, Facebook causing health problems, Facebook interfering with moral development of teen and pre-teen, tendencies of relying on Facebook news, Facebook informing about rights and politics, Facebook giving misleading information, and finally undergraduate CGPA, significantly associated with time spent on Facebook in a day.

#### 4. Discussion

Social media has become an integral networking habit in our daily life's. Anything in excess is known to cause problems and usage of Social media is no exception to the rule. The current study revealed the important role of demographic factors in determining Facebook use pattern and its impact. The present study examined the socio-demographic, behavioral, and health-related factors most associated with the excessive use of Social media (Facebook) among university students in Bangladesh. This study included 1st semester and 7th semester students of SUST and SAU. We found that most (98.4%) of the students were using social media, which is higher than earlier findings by Roknuzzaman, where he conducted a survey on internet access in a public university of Bangladesh [23, 24]. The higher rate in our study might be observed due to inclusion of University students only and present increased ease of access and affordability of the internet. Around half of the students spent 4–6 hours on the internet in a day and 35.3% students spent 2–3 hours on Facebook in a day which is similar to the study of Faruq et. al. [25]. As of 2019, the average daily social media usage of internet users worldwide reported to 144 minutes per day which is also similar to our study [26]. Ulusu reported possible side effects and impact of social networking sites including addiction, poor use of time, and money [27]. In our study, half of the students thought that using Facebook is a waste of time, which is higher than the proportion of Comilla university students reporting the same in the past [28]. This higher rate may be due to more frequent and trendy use of Facebook and other social media in the current time.

**Table 3.** Association between Time spend on Facebook in a day and students demographic, health and other characteristics (all selected universities).

Variables		Time spend on Facebook in a day						p-value
		<1 hr		1–3 hr		>3 hr		
		Count	Column %	Count	Column %	Count	Column %	
Age (in years)	17–19	198	40.7	412	36.0	146	14.2	<0.001
	20–22	189	38.8	461	40.3	460	44.9	
	≥23	100	20.5	270	23.6	419	40.9	
Sex	Female	152	31.21	444	38.85	468	45.66	<0.001
	Male	335	68.79	699	61.15	557	54.34	
Education	BSc	459	94.25	1087	95.10	906	88.39	<0.001
	MSc	28	5.75	56	4.90	119	11.61	
Institute	AIUB	6	1.23	11	.96	94	9.17	<0.001
	DIU	17	3.49	28	2.45	28	2.73	
	DU	55	11.29	118	10.32	148	14.44	
	EWU	11	2.26	48	4.20	107	10.44	
	IUB	23	4.72	53	4.64	41	4.00	
	JNU	16	3.29	77	6.74	63	6.15	
	NSU	12	2.46	48	4.20	113	11.02	
	SAU	127	26.08	330	28.87	104	10.15	
	SEU	4	.82	40	3.50	70	6.83	
	SUB	1	.21	13	1.14	20	1.95	
	SUST	192	39.43	348	30.45	100	9.76	
	UAP	19	3.90	20	1.75	19	1.85	
UIU	4	.82	9	.79	118	11.51		
Sleeping time	<10 pm	13	2.67	7	.61	5	.49	<0.001
	10pm -12am	201	41.36	288	25.20	122	11.90	
	12am–2am	226	46.50	687	60.10	548	53.46	
	after 2 am	46	9.47	161	14.09	350	34.15	
Smoking status	yes	71	14.61	255	22.31	425	41.46	<0.001
	No	415	85.39	888	77.69	600	58.54	
Do you experience sleep disturbances?	Yes	64	13.17	188	16.46	223	21.76	<0.001
	No	422	86.83	954	83.54	802	78.24	
Is it hard to concentrate in works/studies?	Very often	44	9.03	116	10.15	121	11.80	<0.001
	Often	78	16.02	252	22.05	289	28.20	
	Sometime	211	43.33	480	41.99	424	41.37	
	rarely	99	20.33	220	19.25	152	14.83	
	Never	55	11.29	75	6.56	39	3.80	
How often do you get irritated on Facebook?	Very often	30	6.16	78	6.82	102	9.95	<0.001
	often	47	9.65	207	18.11	215	20.98	
	Sometimes	201	41.27	539	47.16	483	47.12	
	Rarely	134	27.52	202	17.67	142	13.85	
	Never	75	15.40	117	10.24	83	8.10	

In our study, we have found using Facebook has significant ( $p < 0.001$ ) negative impact on work or study. Previous studies reported that 22% students' study was hampered due to excessive use of Facebook and 44% mentioned moderate effect and 17% mentioned a huge impact on their concentration on academics. The health impact of excessive use of social media had not yet been studied in Bangladesh. We have found that about half of the students thought using social media made them sleep late and 47.3% experienced sleep disturbance. Many students (41%) reported they experienced health problems and they (71.2%) reported contradictory faced problems in vision, occasional headaches (37.1%), frequent headaches (15.4%), occasional back and neck pain (28%) and frequent back and neck pain (12.5%). For these health problems they sometimes (35.5%) frequently seek medical attention. This study is the first of its kind to bring to light such health associated problems of using excessive internet among university students. However, a study in India among internet addicted university, medical college, and Engineering university students revealed similar patterns of result, as many of them were reported to suffer from insomnia, anxiety, depression, and psychological distresses [29,30].

Currently, Bangladesh has 43 public universities and 103 private universities; in comparison, the sample size of this study was small. The sample of size from the all the universities included in this study was not equal. This was a cross-sectional study for a short period of time. Thus, although it can be speculated that the pattern of results will not vary, inclusion of more universities, a bigger sample size, categorization of the samples from each semester, longitudinal study throughout the country will portray the actual scenario of the degree of health impact of social media on students.

### 5. Recommendation

The student should use the internet only when they need. They should focus more on study and reduce time spent in social media. Students should engage more in physical exercise. If they have to stay on the internet for a long duration, they should take a break and engage in some free hand exercise. To overcome the sleeping disturbances student should stop use of the screen at least 1 hour before going to bed. As the university students are adult enough and generally most stay away from

**Table 4.** Association between Time spend on Facebook in a day and students demographic and health characteristics using multivariable logistic regression.

Variables		Estimate	SE	p-value	Odds Ratio
Experiencing back pain or neck pain	Very often <sup>R</sup>				
	Often	-0.45	0.31	0.14	0.64
	Sometimes	0.04	0.27	0.89	1.04
	Rarely	-0.16	0.28	0.57	0.86
	Never	0.24	0.29	0.41	1.27
Wake up time	6am <sup>R</sup>				
	7am	-0.77	0.28	0.01	0.47
	8am	-1.22	0.28	0.00	0.29
	9am	-1.25	0.32	0.00	0.29
	After 9am	-1.62	0.40	0.00	0.20
Sleeping time	Before 10 pm				
	10–12 pm	0.84	0.68	0.22	2.31
	12-2pm	0.43	0.69	0.53	1.54
	After 2pm	-0.45	0.71	0.52	0.64
Facebook making sleep late	Yes <sup>R</sup>				
	No	0.39	0.15	0.01	1.48
Alternative option of recreation	Yes <sup>R</sup>				
	No	0.49	0.16	0.00	1.62
Wasting time on Facebook	Yes <sup>R</sup>				
	No	0.71	0.15	0.00	2.02
Facebook causing health problems	Yes <sup>R</sup>				
	No	-0.53	0.15	0.00	0.59
Facebook interfering with moral development of teen and pre-teen	Yes <sup>R</sup>				
	No	-0.55	0.18	0.00	0.57
Rely on Facebook news	Yes <sup>R</sup>				
	No	0.40	0.16	0.01	1.48
Facebook makes you aware of rights and politics	Yes <sup>R</sup>				
	No	0.39	0.16	0.01	1.48
Facebook gives you misleading info	Yes <sup>R</sup>				
	No	0.33	0.17	0.05	1.39
Undergraduate CGPA		-0.43	0.18	0.02	0.65

Superscript R indicates "Reference category".

home, it also falls on the government to enforce proper use of internet by students. Awareness programs have to be undertaken to inform students of the negative impacts of excessive Facebook use.

## 6. Conclusions

The use of social media is most likely compulsory in the daily lives of a student. They use it for communication and recreation, but several negative effects can be shown with a positive outcome. Excessive use of social media leads to economic, physical, and psychological problems such as over-expenditure, eye problems, headaches, sleep disturbances, etc. The pattern of social media use and the impact of excessive online social networking of participants' physical health have been evaluated. In this study, we found the relationship between the use of social media and users' health, which is a bit shocking. Each user should monitor the time of use and practice control by limiting their use, keeping phones at a healthy distance from the eye and not using them very frequently.

## Declarations

### Author contribution statement

Mohammad Jakir Hosen: Conceived and designed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Shrabony Akter Eva, Ummay Fateema Lira, Asma Binte Hossain: Performed the experiments.

Mohammad Mahfujur Rahman, Md. Ibrahim: Performed the experiments; Wrote the paper.

Manik Chandra Shill: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.

Md. Jamal Uddin: Conceived and designed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

### Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

### Data availability statement

Data will be made available on request.

### Declaration of interests statement

The authors declare no conflict of interest.

### Additional information

Supplementary content related to this article has been published online at <https://doi.org/10.1016/j.heliyon.2021.e07271>.



## Acknowledgements

We would like to acknowledge Mr. Mohammad Rejaur Rahman, Assistant Professor, Dept. of Molecular Biology and Genetic Engineering, SAU, Sylhet and Nafisa Nawar, former undergraduate student of the Dept. of GEB, SUST for their kind support during conducting interview. We are also grateful to Tohura, who went through our manuscript and helped us to improve the quality of writing.

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