

FACEBOOK USE, FACEBOOK ADDICTION, AND MENTAL HEALTH OF CHITTAGONG UNIVERSITY STUDENTS

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Abstract. In present days, negative outcomes related to Facebook get huge attention of the researchers. A large group of emerging and young adults are using Facebook. The present study was aimed to investigate the role of Facebook use and Facebook addiction on mental health. This study was conducted on a sample 209 students from Chittagong University who were selected through non-probability sampling design. Results showed that females were spent more time on Facebook than males. Significant correlations existed among Facebook use, Facebook addiction, and mental health. Conditional process analysis revealed that partial mediated relation among these variables. This mediated relation also moderated by gender. Facebook use and addiction both negatively predicted the mental health. In terms of Facebook addiction scores, higher group significantly differed from lower group in Facebook use and mental health.

Keywords: social networking sites, Facebook use, Facebook addiction, mental health

Introduction

In the era of information technology, there are many web based social platforms. Through these platforms, people are connected with others virtually. In these platforms, people share ideas, views, thinking, attitude, opinion, etc.

The Uses and Gratifications theory (Blumler & Katz, 1974), also called Needs and Gratifications theory, explains why we use certain social platform. These uses (exposure) and gratifications (benefits) of virtual social platform are determined by the needs of its members. Some motives, those are frequently found in using virtual social platform, are need to escape from personal problems, need for emotional release, maintaining personal relationship, personal identity, etc. These platforms are known as social networking site (i.e., Facebook, Twitter, Instagram, WhatsApp, Snapchat etc.).

Facebook is a popular virtual social platform. It is highest visited social networking website. On average 10 minutes 57 seconds are spent by the viewers of this site.¹⁾ Facebook reported, on their 3rd quarterly report of 2017, that 2.1 billion people are using Facebook. Among them, 1.4 billion people are active user.²⁾ Excessive use of Facebook leads to dependency on it. Recently, Facebook addiction is a growing matter of concern. Overly concerned about Facebook, having a strong motivation for logging onto Facebook so frequently which impacts on daily activities, real social life, interpersonal relations, psychological well-being, can be defined as Facebook addiction (Andreassen & Pallesen, 2014). A common symptom of Facebook addiction is a strong uncontrolled desire for being always online. This desire negatively affects other spheres of life. It is one type of internet addiction and behavior addiction also. As continuous use of Facebook lead to addiction, users' mental health is also matter of concern.

The World Health Organization, WHE (2004), defines mental health as a matter of well-being by which people understand their own capacity, can meet with the challenges of everyday life, can work adequately and contribute effectively to their society. It is indispensable part of the health and predictor of psychological well-being of a person. Young adults are the most active users of Social networking sites and predominantly are at risk of developing mental health issue at a high rate of concern (Strickland, 2014). In their study, Park et al. (2014) found Facebook was positively associated with acculturative stress of

college students. Lou et al. (2012) found that students who use Facebook intensively reported enhanced loneliness. Social networking sites usage also enhances the psycho-social problems like adjustment & self-esteem (Kalpidou et al., 2011). Facebook usage predicted major depressive disorders, bipolar-mania, dysthymi, narcissism etc. (Rosen et al., 2013).

Bangladesh Telecommunication Regulatory Commission, in their monthly reports on internet use,³⁾ reported that 86.87 million people are internet user in the end of May, 2018. From our personal observations, most of them use internet only for using Facebook. Among Social networking sites users, 91.93% are Facebook users in Bangladesh.⁴⁾ Most of the Facebook users are young adults. Most of them are college or university students. They are assets for the country's development. There is relative dearth of studies those tried to explore how and which direction Facebook use and addiction influence the mental health of Bangladeshi young, what would be the relation among these variables in Bangladesh context. So, the present study was designed to find out relationship among Facebook use, Facebook addiction, and mental health in Bangladesh context. Main objective of the present study was to explore the role of Facebook use and Facebook addiction on mental health of Chittagong university students. Objectives of the study were to find out: (i) gender differences in these variables; (ii) correlations among these variables; (iii) direction of influencing mental health by Facebook use and addiction; (iv) differences in Facebook use and mental health status between higher scorers and lower scorers on Facebook addiction test.

Method

Participants

The study sample comprised of 209 students of the Chittagong University who were selected purposively. Their age *mean* was 19.87 years (95% *CI* [19.66, 20.66]) with *standard deviation* 1.48 years. Respondents' distribution in

academic year, residence type, and family type by their gender is presented in Table 1.

Table 1. Respondents’ distribution in academic year, residence type, and family type by their gender

Faculty	Year		Residence		Family Type	
	1 st	2 nd	Resident	Non-resident	Single	Extended
Male	76 (36.4%)	18 (8.6%)	34 (16.4%)	60 (29%)	79 (38.4%)	14 (6.8%)
Female	86 (41.1%)	29 (13.9%)	23 (11.1%)	90 (43.5%)	99 (47.8%)	15 (7.2%)
Total	162 (77.5%)	47 (22.5%)	57 (27.5%)	150 (72.5%)	178 (86%)	29 (14%)

Measures

In the present study, the Bangla (Ahmed & Hossain, 2018) Bergen Facebook Addiction Scale, BFAS (Andreassen et al., 2012), and the Bangla (Ahmed et al., 2018) Mental Health Inventory – 18 (Veit & Ware, 1983) were used collect information about respondents’ Facebook addiction, and mental health. Along with these measures, respondents were asked a question about their per day average time spending on Facebook.

Bergen Facebook Addiction Scale (BFAS): The BFAS is a 6 items measure. Its 6 items reflect the six core elements of addiction i.e. salience, tolerance, relapse, mood modification, conflict, withdrawal. Respondents were required to express their opinion regarding Facebook addiction through using a 5-point Likert type scale (1 = very rarely to 5 = very often). Total score ranged from 6 to 30. Higher scores indicated higher level of addiction. The BFAS is a psychometrically sound measure that could be used in clinical settings also. The *Cronbach’s Alpha* of this measure in the original study was .83. *Item-total correlations* were ranged from .60 - .73 and test-retest reliability was .82 as reported by authors. This measure was highly correlated with the Addictive Tendencies Scale (Willson et al., 2010) and the Facebook Attitude Scale (Ellison et al.,

2007). The *Cronbach's Alpha* and split-half reliability through the *Spearman-Brown coefficient* of the BFAS were .919 and .934 respectively. The test-retest reliability of the Bangla BFAS was .879. The factor-loadings of this measure ranged from .818 to .861. The model fit indices ($\chi^2/df = 3.395$, $CFI = .97$, $GFI = .984$, $TLI = .97$, and $sRMR = .029$) of the Bangla BFAS indicated good fit of the factor structure of the scale.

The *Cronbach's Alpha* of the BFAS in the present study was .828 (95% CI [.789, .862]).

Mental Health Inventory-18 (MHI-18): The MHI-18 is the short version of Mental Health Inventory, MHI (Veit & Ware, 1983). The MHI was developed for the Rand Health Insurance Experiment. The 18-item version of the MHI is reasonably brief, reliable, and preserves the subscale structure. This inventory has two major components – psychological well-being and psychological distress. This measure has four subscales – Anxiety, Depression, Behavior Control, and Positive Affect. Each item was answered on a 6-point Likert type scale ranged from 1 (None of the time) to 6 (All of the time). Higher score indicates higher mental health. The *Cronbach's Alphas* were ranged from .81 to .94, stability coefficients ranged from .56 to .64, and inter-factor correlations ranged from -.70 to .93 as reported by authors. The *Cronbach's Alpha* of the Bangla MHI-18 was .886 (95% CI [.872, .899]), test-retest reliability .925 (95% CI [.866, .958]).

The *Cronbach's Alpha* of the MHI-18 in the present study was .911 (95% CI [.892, .928]).

Procedure

The measures mentioned above were administered on the study sample in classroom settings. Purposes and importance of the present study were explained to the respondents. They were assured about the usage and confidentiality of their responses. Then, written instructions were given to them along with the questionnaire. They were requested to read every item of the questionnaire

carefully and also instructed to express their opinion by putting tick (✓) mark on the appropriate response boxes those were best expression of their feelings. They were also instructed not to skip any item in the questionnaire. They were thanked for their cooperation in the study.

Results

The data were subjected to *independent sample t-test* to estimate the mean differences by their gender in Facebook use, Facebook addiction, and mental health. Results presented in Table 2.

Table 2. Mean differences in Facebook use (Use), Facebook addiction (FA), and mental health (MH) by respondent gender (Male =94, Female =115)

Variable	Male		Female		<i>t</i> (<i>df</i> =207)	95% confidence interval		<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		Lower	Upper	
Use	2.45	1.37	2.99	1.65	-2.56*	-.96	-.12	-.35
FA	15.10	4.51	14.33	5.83	1.04	-.68	2.21	.15
MH	69.77	14.36	69.66	16.13	.05	-4.11	4.32	.007

**p*<.05

Table 2 shows significant gender differences in Facebook use (*t-value* = -2.56, *p*<.05, *d* = -.35, 95% *CI* [-.96, -.12]) where Facebook was more used by female respondents. Non-significant gender differences existed in Facebook addiction and mental health.

Collected data were subjected to ‘*Pearson product moment correlation coefficient*’ to estimate the correlations among Facebook use, Facebook addiction, and mental health. Results are presented in Table 3.

Table 3 shows that Facebook use significantly correlated with Facebook addiction (*r* = .245, *p* < .01, 95% *CI* [.112, .367]), and mental health (*r* = -.230, *p* < .01, 95% *CI* [-.354, -.089]). Table 3 also shows that Facebook addiction significantly correlated with mental health (*r* = -.295, *p* < .01, 95% *CI* [-.431, -.155]).

Table 3. Correlation coefficients among Facebook use, Facebook addiction, and mental health

Variables	Facebook Use	Facebook Addiction
Facebook Addiction	.245** (.112, .3670)	
Mental Health	-.230** (-.354, -.089)	-.295** (-.431, -.155)

** $p < .01$, values in the parentheses are 95% confidence interval

As significant gender differences in Facebook use, and correlations among variables, the collected data were analyzed to estimate the mediation and moderation effect through process (Hayes, 2013). Results are presented through Table 4.

Table 4. Coefficients of conditional process analysis

Antecedent	Consequent							
	Facebook Addiction (M)				Mental Health (Y)			
	B	SE	LLCI	ULCI	B	SE	LLCI	ULCI
USE (X)	.834*	.23	.30	1.29	-2.88*	.83	-4.52	-1.25
FA (M)					-.76*	.20	-1.15	-.37
Gender (V)					-9.25*	4.12	-	-1.12
X*V						17.38		
Constant	12.38	.07	10.95	13.81	-3.41*	1.36	-6.09	-.74
	$R^2 = .060$, $F(1, 207) = 13.21$, $p < .001$, $f^2 = .06$				$R^2 = .14$, $F(4, 204) = 8.33$, $p < .001$, $f^2 = .16$			

* $p < .05$, X = independent variable, M = mediator variable, V = moderator variable, Y = dependent variable, B = unstandardized Beta, LLCI = lower limit of 95% confidence interval, ULCI = upper limit of 95% confidence interval

Table 4 shows information about moderation mediation relation among Facebook use, Facebook addiction, mental health, and gender. Facebook use, Facebook addiction, and gender explained total 14% variance of the mental health ($R^2 = .14$, $p < .001$, $f^2 = .16$). Table also shows that Facebook use positively predicted Facebook addiction ($B = .834$, $SE = .23$, $p < .05$, 95% CI of B [.30, 1.29]). Facebook use ($B = -2.88$, $SE = .83$, $p < .05$, 95% CI of B [-4.52, -1.25]), and Facebook addiction ($B = -.76$, $SE = .20$, $p < .05$, 95% CI of B [-1.15, -.37]) negatively predicted mental health. Table 4 also shows significant interaction effect ($B = -$

3.41, $SE=1.36$, $p<.05$, 95% CI of B [-6.09, -.74]. For better understanding, results of the moderated mediation analysis presented in Fig. 1.

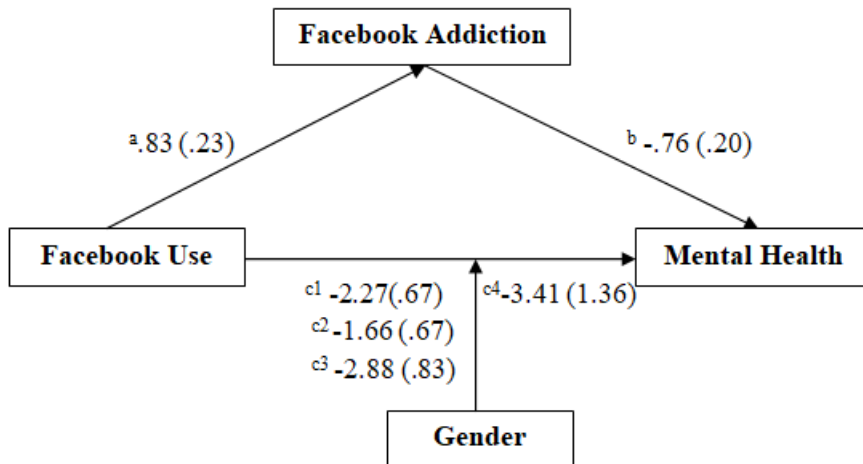


Figure 1. Moderated mediation effect of Facebook use, Facebook addiction, and gender on mental health

In Fig. 1^a represents the effect of Facebook use on Facebook addiction, ^b represents the effect of Facebook addiction on mental health, ^{c1-3} represents the direct effect of Facebook use in different phase of the model (^{c1} represents the direct effect when Facebook use was the only predictor in the model, ^{c2} represents the direct effect when Facebook use and Facebook addiction were predictors, and ^{c3} represents the direct effect when Facebook use, Facebook addiction, and gender were predictors), and ^{c4} represents the interaction effect of Facebook use and mental health.

The Facebook addiction scores were divided into 4 quartiles basis of percentile to estimate mean differences between 1st quartile (lower Facebook addiction score) and 4th quartile (higher Facebook addiction score) in Facebook use and mental health. Results are presented in Table 5.

Table 5. Mean differences in Facebook use and mental health between 1st and 4th quartile of Facebook addiction scores (1st quartile = 61, 4th quartile = 71)

Variable	1 st quartile		4 th quartile		<i>t</i> (<i>df</i> =130)	95% confidence interval		<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		Lower	Upper	
Use	2.28	1.49	3.30	1.58	-3.77**	-1.54	-.48	-.66
MH	77.08	15.69	64.82	14.05	4.74**	7.14	17.39	.83

***p*<.01

Table 5 shows significant mean differences between 1st quartile and 4th quartile of Facebook addiction test scorers in Facebook use (*t-value* = -3.77, *p*<.01, *d*= -.66, 95% *CI* [-1.54, -.48]) and mental health (*t-value* = 4.74, *p*<.01, *d*= .83, 95% *CI* [17.39, .83]).

Discussion

The present study was aimed to find out relations among Facebook use, Facebook addiction, and mental health in Bangladesh context. The study conducted on a sample of 209 university students who were selected purposively. Table 2 showed significant gender difference in Facebook use. Hargittai (2007) also suggested gender differences in percentage of Social Networking Sites users and women are more likely to use the virtual social platforms. Kuss & Griffiths (2011) suggested that men are at lower risk than women for developing addiction. Table 3 showed significant correlation among Facebook use, addiction and mental health of respondents. Facebook use positively correlated with Facebook addiction and negatively correlated with mental health. Facebook addiction negatively correlated with mental health. Table 4 and Fig. 1 suggested that Facebook use and addiction both negatively predicted mental health. Facebook use positively predicted dependency on Facebook. Table 5 showed that low scorers in Facebook addiction test significantly differ from high scorers in Facebook use and mental health. Previous studies suggested that increased usage of social networking sites related to increased depression (Chou & Edge,

2012). More usage of virtual social platform negatively predicted life satisfaction (Chan, 2014). Grieve et al. (2013) suggested that connected through Facebook had effect on life satisfaction through lowering anxiety and depression. Valkenburg & Schouten (2006) found that frequency of usage of Social Networking Sites was indirectly affected the adolescents' social self-esteem and their well-being. Studies suggested Facebook addiction negatively affected the life satisfaction (Blachnio et al., 2016; Rana et al., 2016). One possible reason for negative relationship between Facebook use and mental health is that increasing amount of time spending on Facebook consumes time for other activities. It would be difficult for one to allocate sufficient time for daily activities, social relations etc. So, a conflict might be created of Facebook use and other activities for sufficient time. This time demand conflict may lead to negative life outcomes. The Distraction-Conflict theory also provides a possible explanation for explaining why increasing usage of Facebook causes for negative outcomes. This theory postulates that presence of distracters causes for conflict related to attention (Sanders et al., 1978). Attentional conflict leads to cognitive overload. This overload in turn can increase stress (Baron, 1986) that increases anxiety, depression etc. From the excessive use of Facebook, attentional conflict might be occurred among users. As results, excessive use leads to poor mental health. However, above describe possible explanations always demand extensive research for confirmation.

The present study was conducted to assess the present condition of Facebook use and addiction of Chittagong university students. This study had some limitations. Participants were not selected randomly. This was not conducted to identifying possible reasons for excessive use of Facebook and Facebook addiction. How Facebook use and addiction affected mental health would not clear enough. This study was not address why Facebook use and addiction affected mental health. We assumed some possible reasons. So, larger and extensive study will be needed for identifying possible reasons for excessive use of Facebook and why Facebook use had negatively related with mental health.

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NOTES

1. <https://www.alexa.com/topsites>
2. <https://newsroom.fb.com/news/2018/01/facebook-reports-fourth-quarter-and-full-year-2017-results/>
3. <http://www.btrc.gov.bd/telco/internet>
4. <http://gs.statcounter.com/social-media-stats/all/bangladesh>

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