

Prevalence of Facebook addiction and its association with personality traits and psychological distress- a study from north east part of India

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ABSTRACT

Introduction: Networking sites have become a part and parcel of many youngsters' daily activity and it is observed that many of these youngsters are facing the risk of addiction to social networking sites (SNSs) which have been highlighted in several studies. It is observed in India that the use of Facebook is enormous, especially among the school and college students. However, little is known about the association of Facebook addiction with mental health issues and personality traits. **Methods:** This study therefore surveyed the level of Facebook addiction and its relationship with psychological distress and personality traits among college students in Shillong, Meghalaya. Purposive sampling was used to select 559 students from two colleges in Shillong, data was generated with Bergen Facebook Addiction Scale (BFAS), Depression Anxiety Stress Scale (DASS-21) and Ten Item Personality Inventory (TIPI). **Results:** The finding showed that the prevalence of Facebook Addiction was 5%, depression, anxiety and stress were significantly associated with Facebook addiction, addicted group had higher level of mental health issues than the non-addicted group and regression analysis showed that personality traits and DASS (depression, anxiety and stress) contributed significantly to the prediction of overall Facebook addiction score of college students ($F=10.258$, $P<.001$) accounting for 10 percent variance. **Conclusion:** The use of social networking site among college going students can impact the mental health of the users. The study therefore suggests that Facebook addiction is highly associated with mental health issues and hence further longitudinal studies are needed to investigate the impact of Facebook Addiction on mental health.

Keywords: Facebook Addiction, Personality Traits, Stress, Anxiety and Depression

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In recent years, social networking sites have gained remarkable popularity among college students particularly with the introduction of Facebook in 2004 which has revolutionized the social behaviours and networking practices of people especially that of the youngsters. In fact, these social networking sites (SNSs) have added greater dimension to the worldwide web (Alabi, 2013). SNSs are so popular and vital that some scholars called them as ‘virtual community’ denoting to the fact that they act as a system by allowing people to create individual public profiles, interact and share a connection with other people based on their shared interests (Boyd & Ellison, 2007; Kuss & Griffiths, 2011). With this potentiality that SNSs have, there has been drastic rise in the number of users within the last few years where some scholars referred SNSs to ‘global consumer phenomenon’ (Kuss & Griffiths, 2011). Similar to other SNSs and a little advance than the rest with regards to the features that it has, Facebook allows a user to create a profile, display personal information, upload pictures, access other users’ profiles, making friends online and interact with those friends through messages, video calling and other applications (Kalpidou, Costin, & Morris, 2011).

There is no doubt that Facebook acts as a social medium and has a great ability to mobilize the masses. However, the problem with Facebook or internet as a whole usually arises when one uses it in an excess that it interferes with a person’s important activities in life. This led to the interest of many scholars who started to focus on this issue of addiction. As highlighted by several studies, the prevalence of Facebook addiction is very diverse, it ranges from 1% to 47% globally (Alabi, 2013; BALCI & Gölcü, 2013; Moreau et al., 2015; Bahrainian et al., 2014; MPH, 2015; Tang et al., 2016; Jafarkarimi et al., 2016). Additionally, studies also highlighted the relationship of internet/SNS addiction with mental health problems. For instance, it was found that internet addiction is a predictor of stress, depression, anxiety, and loneliness (Ostovar et al., 2016). Similarly, those who are addicted to internet have higher level of anxiety, depression and stress than those who are not addicted (Younes et al., 2016). With respect to the association of personality traits with Facebook addiction, earlier studies have highlighted facts about this phenomenon but there is no uniformity in their findings. In one of the studies it was found that extensive use of Facebook by students with extraverted personalities leads to poor academic performance (Rouis, Limayem, & Salehi-Sangari, 2011). On the other hand, extraverted and unconscientious individuals reported higher levels of both SNS use and addictive tendencies while openness to experience, agreeableness and neuroticism did not have any impact on SNS use (Wilson, Fornasier & White, 2010).

In India, as highlighted by several studies, internet addiction or Facebook addiction is also prevalent. Studies demonstrated the fact that there is negative impact of internet/Facebook addiction such as envy, frustration, disturbed relationship as well as mental health issues that includes anxiety, depression, and stress (Goel, Subramanyam & Kamath, 2013; Masthi, Cadabam & Sonakshi, 2015; Mohanty et al., 2016). The prevalence of Facebook addiction is also varied in India which lies between the ranges of 5.1% to 18% Masthi, Cadabam & Sonakshi, 2015; Mohanty et al., 2016; Modi & Gandhi, 2014). Despite the growing evidence on the issue related to excessive use of internet, this addiction has not been formally accepted as a genuine addiction. Hence, whether SNSs or Facebook addiction is a genuine addiction or not, it is understood that excessive habitual interaction with SNSs may be psychologically, physiologically and socially harmful (Turel & Serenko, 2012). Thus, the present study tried to investigate the prevalence of Facebook addiction and its possible correlation with mental health problems.

METHODOLOGY

Objectives of the study

1. To assess the prevalence of Facebook addiction among college going students
2. To examine and compare the personality traits and psychological distress between the addicted and non-addicted group
3. To find out the relationship of excessive Facebook use with personality traits and psychological distress.

Participants

The participants were recruited from two colleges in Meghalaya, India, St. Anthony's College and St. Edmund's College. The two colleges consisted of students from all the North Eastern States of India and few other students from other parts of the country. Based on the feasibility, a sample of 559 participants who were willing to participate, had access to the internet and had Facebook account of one year and more were included in the study while others who did not fulfil the criteria were excluded. The participants were second year degree students from all the streams i.e. Arts, Science and Commerce as well as some other courses such as BBA, BCA and BSW. The minimum age of the participants was 17 and the maximum age was 22 and the mean age was 19.37. Majority of the participants reported being tribal (69.9%) while 23.1%, 5.2% and 1.8% belong to general, OBC and schedule caste category respectively. In the case of religion, 68% identified themselves as Christians, 22.7% as Hindus, 3.4% as Muslims and 5.9% as others. Majority of the participants were from upper middle-class family (43.1%) followed by upper class (26.7%) lower middle class (20%), upper lower class (8.1%) and lower class (1.3%).

Procedure

Purposive sampling was used for data collection where the researcher went to meet the students individually at their respective classes. Data was collected in the month of June, 2016 for duration of 20 days. Participants were explained about the purpose of the study, that it would be used only for research purpose and that no risk was involved. They were requested to sign the consent form considering their willingness to participate in the study otherwise they had the right not to participate. Following this, self-reported questionnaires were distributed to the participants.

Measures

1. **Socio demographic profile:** Semi-structured proforma that contain details of demographical information like gender, age, educational background, religion, family type etc. was prepared. Facebook use: Semi structured proforma was constructed by the researcher concerning how often the participants spent on Facebook, accumulation of online friends, reason for usage etc. Kuppuswamy's socio-economic scale (Gururaj, 2014) was used for evaluation of economic status.
2. **Bergen Facebook Addiction Scale:** The BFAS has six basic criteria where the participants were asked to give one of the following 5 responses to each item: (1) Very rarely, (2) Rarely, (3) Sometimes, (4) Often, and (5) Very often. Scoring "often" or "very often" on at least four of the six items may suggest the respondent is addicted to Facebook (Andreassen, Torsheim, Brunborg & Pallesen, 2012).
3. **Ten Item Personality Measure- TIPI:** The TIPI is a 10-item measure of the Big Five personality dimensions or Five-Factor Model. This measure has 2 items for each of the 5 dimensions – extraversion, agreeableness, conscientiousness, neuroticism and openness to experience. Each item is rated on a 7-point scale that

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ranges from 1 (disagree strongly) to 7 (agree strongly) (Gosling, Rentfrow & Swann Jr, 2003).

4. **Depression Anxiety Stress Scale-** (DASS 21) is a 21 item self-report questionnaire designed to measure the severity of a range of symptoms common to depression, anxiety and stress. The individual is required to indicate the presence of a symptom over the previous week. Each item is scored from 0 (did not apply to me at all over the last week) to 3 (applied to me very much or most of the time over the past week) (Lovibond & Lovibond, 1995).

Statistical analysis

Descriptive statistics such as Mean, standard deviation, frequency and percentage were used for socio-demographic and study variables. Pearson’s correlation coefficient was calculated to find the correlation among the variables of the study. Mann Witney was used to test the differences in the distribution of variables between the addicted and non-addicted. Regression analysis was also used to assess the strength of the relationship between Facebook addiction score and other variables and to know which variable significantly contribute to the overall score of Facebook addiction. Analysis of findings were done by using Statistical Package for Social Sciences (SPSS-20 version).

RESULTS

Descriptive analysis indicated that majority of the participants log on to their Facebook account everyday (39.9%) followed by those who log on twice or thrice in a week (27.4%). Majority (64.6%) used Facebook for the purpose of communicating and connecting with friends while 8.6 percent of the participants used for networking or meeting new people, a few of them used it for work related purposes (5.7%) and a good number of the participants (21.1%) used Facebook for other purposes.

With regards to Facebook friends, majority of the participants (33.6%) accumulated 501 to 1000 online friends followed by those who had 251 to 500 friends (28.6%). Majority of the participants (73.5%) were part of 10 or lesser number of Facebook groups. However, 3 percent of the participants belonged to more than 91 groups. In the domain of status update, 44 percent of the participants posted status update less than weekly, followed by 34.3 percent who never post at all and only 1.3 percent of the participants posted several times a day.

Table 1: Response of subjects to Bergen Facebook Addiction Scale (n=559)

Item	Frequency	Percent	
Thinking about Facebook	Very rarely	317	56.7
	Rarely	133	23.8
	Sometimes	80	14.3
	Often	13	2.3
	Very often	16	2.9
Urge to use Facebook	Very rarely	231	41.3
	Rarely	162	29.0
	Sometimes	116	20.8
	Often	30	5.4
	Very often	20	3.6

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Item		Frequency	Percent
Use Facebook to forget problems			
	Very rarely	279	49.9
	Rarely	105	18.8
	Sometimes	127	22.7
	Often	34	6.1
	Very often	14	2.5
Tried to cut Facebook use without success			
	Very rarely	211	37.7
	Rarely	129	23.1
	Sometimes	144	25.8
	Often	50	8.9
	Very often	25	4.5
Restless if prohibited from using Facebook			
	Very rarely	338	60.5
	Rarely	100	17.9
	Sometimes	71	12.7
	Often	30	5.4
	Very often	20	3.6
Negative impact of Facebook			
	Very rarely	305	54.6
	Rarely	109	19.5
	Sometimes	89	15.9
	Often	30	5.4
	Very often	26	4.7

Table (1) shows the item distribution of Bergen Facebook Addiction Scale. Item 1 of table (1) indicates that majority of the respondents (56.7%) very rarely thought about using Facebook while 14.3 percent sometimes had the tendency to think about Facebook use where as 2.3 percent and 2.9 percent thought about Facebook use often and very often respectively.

Item 2 indicates that majority of the respondents (41.3%) very rarely had the urge to use Facebook while 20.8 percent of them sometimes had the urge for using Facebook and few of the respondents 5.4 percent and 3.6 percent had the urge to use Facebook often and very often respectively.

Item 3 shows that majority of the respondents that constituted of 49.9 percent very rarely used Facebook to forget problems, while 22.7 percent sometimes used Facebook to forget problems and a number of them that constituted of 6.1 percent and 2.5 percent used Facebook to forget problems often and very often respectively.

Item 4 shows that majority of the respondents that constituted of 37.7 percent very rarely tried to cut down Facebook use without success, while 25.8 percent sometimes tried to cut down Facebook use without success and a number of respondents that constituted of 8.9 percent and 4.5 percent tried to cut down Facebook use without success often and very often respectively.

Item 5 indicates that majority of the respondents (60.5%) very rarely became restless when they were prohibited from using Facebook. 12.7 percent of them sometimes became restless

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when Facebook use was prohibited, 5.4 percent and 3.6 percent became restless often and very often respectively when they were prohibited from using Facebook.

Item 6 shows that majority of the respondents (54.6%) very rarely experienced negative impact of Facebook while 15.9 percent sometimes experienced negative impact of Facebook. A number of the respondents that consisted of 5.4 percent and 4.7 percent had experienced negative impact of Facebook often and very often respectively.

Table 2: Prevalence of Facebook Addiction based on BFAS

	Frequency	Percent
Addicted	28	5.0
Not addicted	531	95.0
Total	559	100.0

As indicated in table 2, the prevalence of Facebook Addiction was 5 percent while 95 percent of the respondents were not addicted to Facebook.

Table 3: Descriptive analysis of personality traits of the respondents (n=559)

	Minimum	Maximum	Mean	Std. Deviation
Extraversion	1.00	7.00	4.1055	1.42039
Agreeableness	1.00	7.00	4.8354	1.17764
Conscientiousness	1.00	7.00	4.6029	1.28147
Emotional stability	1.00	7.00	4.2871	1.30010
Openness to experience	1.00	7.00	5.0358	1.19758

As the table(3)indicated that overall, the respondents scored highest in the domain of Openness to Experience, thus, it is suggestive that the respondents were artistic, curious, imaginative, insightful, original and having wide interests.

Table 4: Group difference (addicted and non- addicted) on personality traits (TIPI)

Variables	Mean rank		Mann Witney U value	p value
	Addicted (N=28)	Non-addicted (N=531)		
Extraversion	327.95	277.47	6091.50	.105
Agreeableness	220.30	283.15	9,105.500	.043*
Conscientiousness	257.45	281.19	8,051.500	.445
Emotional stability	285.79	279.69	7,167.500	.844
Openness to experience	285.93	279.69	7,161.000	.841

*(The significance level is $p = .05$.)

Table 4 above indicated that the distribution of extraversion, conscientiousness, emotional stability and openness to experience was the same across categories of Facebook addiction. Hence, there were no differences in the distribution of these personality traits among both groups of addicted and non-addicted. However, the distribution of Agreeableness was significant at .043 ($p < .05$) where the mean rank of those addicted was 220.30 and those who were not addicted was 283.15. Hence, those who were addicted had less trait of agreeableness than those who were not addicted.

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Table 5: Group difference (addicted and non- addicted) on Depression Anxiety Stress Scale (DASS)

Variables	Mean rank		Mann Witney U value	p value
	Addicted (N=28)	Non-addicted (N=531)		
DASS	359.07	275.83	5220.000	.008*
Depression	353.96	276.10	5363.000	.013*
Anxiety	354.96	276.05	5335.000	.011*
Stress	343.12	276.67	5666.000	.033*

(The significance level is .05.)

Table (5) shows group difference (addicted and non- addicted) on Depression Anxiety Stress Scale (DASS). In the category of depression, the mean rank of the addicted group was 353.96 against the mean rank of the non-addicted which was 275.83. In the category of anxiety, the mean rank of the addicted group was 354.96 while those of the non-addicted were 276.05 and in the category of stress the mean rank of the addicted was 343.12 and the mean rank of the non-addicted was 276.67. Hence, these findings indicate that those who were addicted to Facebook had higher level of depression, anxiety and stress than the non-addicted group. Hence, it is suggestive that depression, anxiety and stress are associated with Facebook Addiction.

Table 6: Correlation between score of Bergen Facebook Addiction Scale (BFAS) and personality traits (TIPI), n=559

Variables	BFAS
Extraversion	.024
Agreeableness	-.114**
Conscientiousness	-.058
Emotional stability	-.034
Openness to experience	-.063

n=559; **. Correlation is significant at the $p < 0.01$ level

Table (6) shows the relationship between variables of Big Five Factors of personality traits and Bergen Facebook Addiction Scale. From the above table, it is seen that only the trait of agreeableness had a significant negative correlation with score of Facebook Addiction ($r = -.114$, $p < 0.01$). This finding implies that the higher was the score of Facebook addiction the lesser was the trait of agreeableness.

Table 7: Correlation between total score of Bergen Facebook Addiction Scale (BFAS) and Depression Anxiety Stress Scale (DASS) (N=559)

Variables	Total score of BFAS
Depression	.303**
Anxiety	.262**
Stress	.233**
Total score of DASS	.303**

** . Correlation is significant at the 0.01 level

The table (7) above signifies that there was significant positive correlation in the score of BFAS with depression ($r = .303$, $p < 0.01$), anxiety ($r = .262$, $p < 0.01$) and stress ($r = .233$,

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p<0.01). In the overall score, it also indicated that BFAS was significantly and positively correlated with the total score of DASS (r=.303, p<0.01). Thus the findings indicated that the more the score in Facebook addiction, the higher was the score of depression, anxiety and stress.

Table-8: Regression analysis summary of Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Openness to Experience, Self-esteem and DASS on score of BFAS (N=559)

R	R²	Adjusted	Standard
.317	.100	.091	4.44589

ANOVA table

	Df	SS	MS	F	Sig.
Regression	6	1216.564	202.761	10.258	.000
Residual	552	10910.803	19.766		

Variables in the equation

	B	Std. error	Beta	t	Sig.
Extraversion	.126	.136	.038	.926	.355
Agreeableness	-.301	.165	-.076	-1.827	.068
Conscientiousness	.025	.154	.007	.160	.873
Emotional stability	.143	.151	.040	.949	.343
Openness to experience	-.090	.166	-.023	-.542	.588
Total score of DASS	.145	.020	.300	7.130	.000
Constant	9.605	1.479		6.590	.000

Table (8) shows the regression summary which includes Extraversion, Agreeableness, Conscientiousness, Emotional stability, Openness to experience and DASS as variables which contributed significantly to the prediction of overall Facebook Addiction score of college students with 10.258, P<.001 accounting for 10 percent variance. The remaining 89.5 percent was attributed to variance not included in the study. Among all the variables, DASS strongly contributed to the variance on the overall score (Beta= .300, t= 7.130, P<.001).

DISCUSSION

The aim of the study was to assess the prevalence of Facebook addiction and to investigate the association of Facebook Addiction with mental health issues that includes depression, anxiety and stress as well as its relationship with personality traits. First, our result shows that the prevalence of Facebook Addiction among the college students in Shillong, Meghalaya was 5%. As it is elsewhere, few Indian studies also indicate the variation in the prevalence of Facebook Addiction such as 7.25% of Facebook Addiction was found in Bengaluru city (Masthi, Cadabam & Sonakshi, 2015) while in Gujarat the burden of Facebook addiction was 18% (Modi & Gandhi, 2014) and in Eastern India the addiction to Facebook was 7.2% among MBBS students, 8.5% among BDS students and 5.1% among nursing students (Mohanty et al., 2016). Secondly, consistent with previous literatures (Tang et al., 2016; Rouis, Limayem & Salehi-Sangari, 2011; Akin & Iskender, 2011; Pantic et al., 2012, Rosen et al., 2013; Giota & Kleftaras, 2013; Zaffar, Mahmood, Saleem & Zakaria, 2015), our study confirmed that those who were addicted to Facebook had higher level of

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depression (mean rank = 353.96), stress (mean rank = 343.12) and anxiety (mean rank = 354.96) than those who were not addicted to Facebook (mean rank of depression = 275.83, stress = 276.67 and anxiety = 276.05). Hence, it can be concluded that those who used Facebook excessively are more prone to mental health problems than those who are not addicted. Correlation analysis between Facebook addiction and depression ($r=.303$, $p<0.01$), anxiety ($r=.262$, $p<0.01$) and stress ($r=.233$, $p<0.01$) are also consistent with the previous studies which indicate that higher is the addiction the higher is the level of depression, anxiety and stress (Pantic et al., 2012, Rosen et al., 2013; Giota & Kleftras, 2013; Zaffar, Mahmood, Saleem & Zakaria, 2015; Azher et al., 2014; Vivekanandan, Aswini, & Parthasarathy, 2017). Thirdly, to check the relationship between variables of Big Five Factors of personality traits, Pearson correlation was applied. Our result revealed that only the trait of agreeableness had a significant negative correlation with score of Facebook Addiction ($r=-.114$, $p<0.01$). This finding implies that the higher was the score of Facebook addiction the lesser was the trait of agreeableness. Likewise, Mann Witney U test also revealed that only the trait of Agreeableness was significant ($p=.043$) for which the trait was lower in the addicted group (mean rank = 220.30) than in the non-addicted group (mean rank = 283.15). However, there is no consensus in the earlier findings as some scholars found that some traits were high in the addictive groups while some found differently. For instance, extraverted and unconscientious individuals reported higher levels of both SNS use and addictive tendencies while openness to experience, agreeableness and neuroticism did not have any impact on SNS use (Wilson, Fornasier & White, 2010).

Lastly, regression analysis revealed that as a group all the variables contributed significantly to the prediction of overall Facebook Addiction ($f=10.258$, $P<.001$) accounting for 10 percent variance and among all the variables, DASS strongly contributed to the variance on the overall score (Beta= .300, $t= 7.130$, $P<.001$). This finding is in line with several studies and one of these studies highlighted the contribution of personality traits in prediction of addictive behaviour of the participants' with $F(6,194) = 2.99$, $p < 0.05$, accounting for 8.5% of the variance (Wilson, Fornasier & White, 2010). 5.1%, 4.1% and 3.5% of variance in overall evaluation of Facebook Addiction were described by predictor variables of Extroversion, emotional stability and openness to experience respectively (Mahmood & Farooq, 2014). Emotional stability, extroversion, and loyalty are the best predictors of Internet addiction where as a group they predicted to 50% of the variance of Internet addiction ($R^2 = 0.50$, $F = 13.18$, $P < 0.01$) (Zamani, Abedini & Kheradmand, 2011). Logistic regression model test showed that depression, anxiety, stress and self-esteem were significantly associated with internet addiction (Rouis, Limayem & Salehi-Sangari, 2011). Addiction to internet can predict about 17% of depression variable, 20% of anxiety variable and 13% of stress variable (Seifi, Ayati & Fadaei, 2014). Self-inferiority and depression significantly predict Facebook addiction (Hong, Huang, Lin & Chiu, 2014).

LIMITATION OF THE STUDY

Though the sample size was large, there was no equal representation from all the classes and departments as it was done based on purposive sampling. Although purposive samples provide time advantages, they may be biased and may not represent the entire population. Moreover, the study neglected the first and third year students who may or may not be prone to Facebook addiction. The research study relied on self-reporting, based on the participants' perceptions for which they might not have accurately reported their behaviour. The study also failed to focus on the time or hour spent on Facebook which may highlight the students' excessive use of Facebook.

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The tool used for assessment of personality traits is inferior to other tools which broadly categorised the personality traits (e.g. Extraversion) based only on two dimensions which to some extent failed to strongly highlight the traits of the participants as accurate as it may. However, due to the large sample and limited time, higher level of tools would be difficult to administer as the items are more and it is time consuming. The study was purely quantitative, in-depth interview was not done for those who were identified as having Facebook addiction as this would highlight the emotional state and extent of problem related to Facebook use.

CONCLUSION

Information technology particularly social media added greater dimension to the international connectivity, however as it is seen in the present study, it comes along with its negative effect when it is misused or abused. The present study findings reveal that personality traits, depression, anxiety and stress are associated with facebook addiction. Additionally, the result clearly indicates that the higher the Facebook usage the more are the mental health issues. Overall, it appears that depression, anxiety and stress are the main predictors of facebook addiction. As it is observed that recently there has been an increasing number of facebook users worldwide, India too has witnessed the same trend where more than 142 million of its people used Facebook, and most being active users, hence it is important to continue to examine whether this ubiquitous social network is leading to negative or positive psychological health.

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Conflict of Interest

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