Original article

Predictive psychiatric disorders among problematic internet users in school going adolescents in Dhaka city

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Summary

Human civilizations affected by internet in an all-encompassing manner. However, the uses of internet have created new set of challenges. Adolescents have been identified as a vulnerable group to be affected. But Internet is a reality that we just cannot ignore; neither can we ignore the effects of its excessive use. So, it was necessary to identify the effects of problematic internet use among the adolescents which the researchers tried to do. This was a cross sectional study, conducted from May 2019 to September 2020 in a renowned school in Dhaka where 305 students of 13 to 17 years of either sex were included conveniently. A questionnaire containing socio-demographic variables, internet addiction test (IAT) and strengths and difficulties questionnaires were applied. The result showed that, 37.7% of the participants were problematic internet users. Behaviors such as emotional, conduct, hyperactivity, peer problems and pro-social were significantly associated ($p<0.0001$) with problematic internet use. Problematic internet users (PIU) also had a great deal of difficulties that upset those, a great interfere with home life, friendship, class room learning and leisure activities. Research findings suggest that school going adolescents are in risk of psychiatric disorders due to problematic internet use and often kept undetected. So, researchers' recommends country wide screening program to address this issue.

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Introduction

Human civilizations have progressed through history by invention and innovation of science and technologies, by creation of art, literature, culture and by development of society, states and ideologies. Except for the mastering of fire, no other inventions have affected our lives in such an unprecedented all encompassing manner like internets have. Internet have given us access to world of knowledge, rekindled relationship with long lost friends and provided opportunity for economic growth and development. However, the uses of internet have created new set of problems and challenges. There is growing concern worldwide regarding influence of social media, manipulation of information and addictive use of internet. Adolescents have been identified as one of the most vulnerable groups to be affected.[1]

Access to and uses of internet have jumped exponentially over the past years. International telecommunication union (ITU) is the United Nations' specialized agency for information communication technologies (ICT). ITU is also the official source for global ICT statistics. ITU estimates that 53.6% of world population is online at the end of 2019, whereas Bangladesh telecommunication regulatory commission (BTRC) estimates in their July report that 106.4 million Bangladeshi have accessed internet over preceding three months, up from 98 million in September 2019.[2] Our everyday life is now intertwined with multiple services through internet. With onset of corona virus disease 19 (COVID 19) pandemic in 2020, uses of internet have sky rocketed, just like the spread of virus itself.[3]

In 1996, the concept of internet addiction disorder emerged for the first time as a satire by Dr. Ivan Goldberg. He compared the condition as an analogue to substance dependence, as based on criteria in the diagnostic and statistical manual for mental disorders version IV (DSM-IV).[4] However it was Dr. Kimberly Young who established the term Internet Addiction; first through elaborate case report and then by definitive research article titled, "Internet addiction: Emergence of a new clinical disorder,"

published in 1998, having been cited a phenomenal 5842 times as on October 22, 2019.[5] Various terms have been used to name the condition, including compulsive computer use, internet dependency, pathological internet use (PIU), problematic internet use (PIU), virtual addiction, internet addiction disorder (IAD).[6-11]

With these new perspectives, researchers had been investigating internet addiction extensively. As young population more easily adopts new technologies, focus has been on the young adult and adolescents more intensely. Worldwide, rates of problematic internet use and/or internet addiction (IA)among adolescents had been reported between 0.8% in Italy, and 13.8% in South Korea, accessed via the Internet Addiction Test (IAT), between 1.4% in Finnish girls and 26.7% of adolescents in Hong Kong.[12-15] In a recent study from India, Nitun Kumar and his colleagues had reported prevalence rates of 1.41% that was identified as excessive internet users, while 30.28% and 23.94% were classified as moderate and mild internet users among college students.[16] A recent epidemiological study conducted in six Asian countries revealed the prevalence of PIU as follows: Philippines (51%), Japan (48%), China (19%), Hong Kong (35%), South Korea (14%), and Malaysia (37.5%).[17]

Prevalence rates found in Bangladesh follows similar trends and variations to those found in both Asian countries and those worldwide.[18] With increasing internet penetration in Bangladesh, 63.95% were categorize as minimal user, 34.30% were categorize as moderate user, 1.74% were categorize as excessive user among university students.[19] Excessive internet use is associated with attention-deficit/hyperactivity disorder, anxiety disorders, depressive symptoms, low self-esteem, shyness.[5,6,20,21] A study conducted among five universities of Bangladesh found 29.7% male and 32.5% female students were found to be psychologically distressed. Severe psychological depression was reported among 44.7% male and 41.6% female students.[18]

It is evident from currently available evidences that internet use, if uncontrolled, may lead to both psychological and physiological problem. Past researchers advised to conduct studies to further evaluate internet addiction and in different age groups. Yet, no studies in Bangladesh so far have looked into the association between internet use and psychiatric disorders among adolescents. This study might provide the baseline data about prevalence of problematic internet use and its association with the predictive psychiatric disorders which might help to protect future generation from the ill effects of problematic internet use by making a comprehensive plan including policy supports, awareness and intervention programs.

Materials and methods

It was a cross sectional study, conducted from May 2019 to September 2020 in a renowned school in Dhaka where 305 students of 13 to 17 years of either sex were included conveniently. The aim, objectives, methodology and impact of the study were discussed in detail and how to response the questions were informed. Due to COVID-19 pandemic situation, data collection was done through online interview by goggle form after taking consent. A survey link was generated and then circulated through message to the guardians' phone/ e-mail after communicating and explaining the research tools of the study. A questionnaire containing socio-demographic variables, Bangla version of internet addiction test and self-reported Bangla version of strengths and difficulties questionnaire (SDQ) were applied. The data was checked and rechecked for omission, inconsistencies and improbabilities after collecting them. Then they were edited, coded and entered into the computer. Data analysis was performed by statistical package for social sciences (SPSS) version 21.

Results

The results showed that, among 305 participants, 62.3% were normal internet user (NIU). The rest 37.7% were problematic internet user (PIU), of which, 21.6% were moderate users and 16.1% were excessive users. Mean internet addiction test (IAT) score was 40.17±17.67 (Table 1).

Among the students of PIU, the highest was from class X and the lowest from class VII (Figure 1). Abnormal activities of

Table 1: Distribution of study population according to IAT scoring (n=305)

IAT category	Frequency (%)	Mean±SD	Range
Normal user (score 18-35)	190 (62.3%)	28.40±2.44	21-33
Problematic user (score -36-90)	115 (37.7%)	61.05±12.35	39-83
Moderate user (Score 36-62)	66 (21.6%)	51.82±6.75	39-62
Excessive user (Score 63-90)	49 (16.1%)	73.49±5.02	65-83
Total	305 (100%)	40.71±17.67	21-83

emotional symptoms, conduct problems, hyperactivity, peer problem, pro-social behavior and total difficulty score (TDS) was observed in 13.2%, 6.6%, 12.5%, 1.6%, 6.6% and 10.5% respectively (Figure 2).

Out of the 49 excessive internet users, 31 (63.3%) students had emotional, 17 (34.7%) students had conduct, 29 (59.2%) had hyperactivity, 5 (10.2%) had peer problems and 20 (40.8%) had high score on pro-social. Abnormal Behaviors such as emotional, conduct, hyperactivity, peer problems and pro-social were significantly associated with excessive internet use ($p<0.0001$) (Table 2). Comparison of TDS to NIU and PIU group also found to be statistically highly significant ($p<0.0001$). Mean TDS score was statistically very high in PIU group (23.7±4.15 versus 13.73±3.39) (Table 3). Impact score categories among PIU was 13.8% who had a great deal of difficulties that upset them, about 5% had great interfere with home life, 12.5% had great interfere with friendship, 28.8% had interfere with classroom learning and 11.3% had great interfere with leisure activities (Table 4).

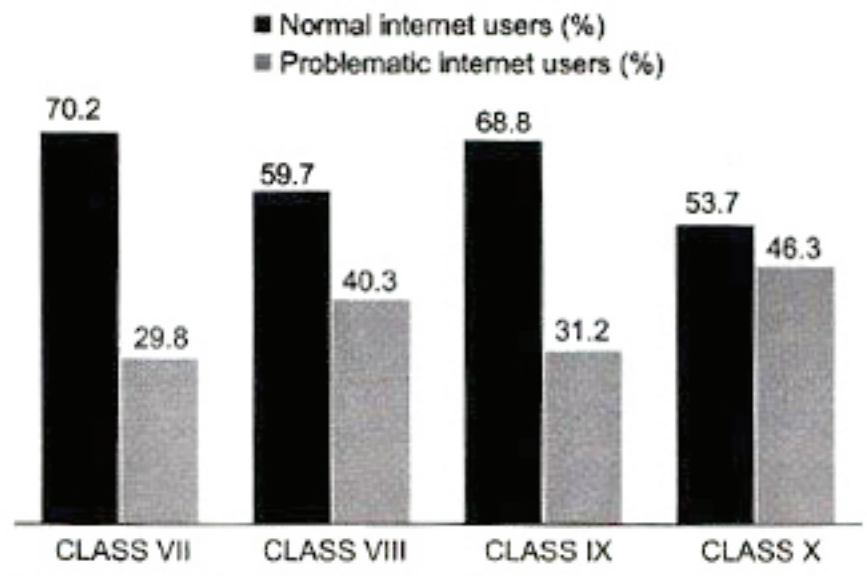

Figure 1: Distribution of NIU and PIU according to academic class (n=305)

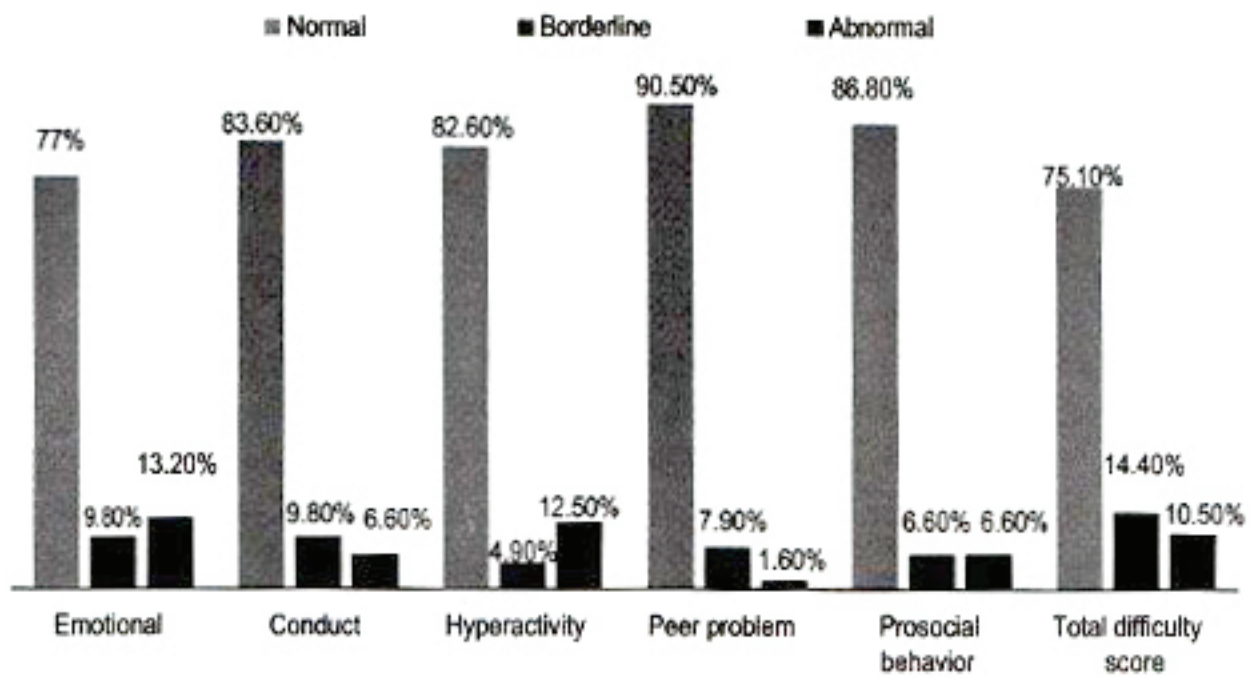

Figure 2: Different categories of predictive psychiatric disorder among study population (n=305)

Table 2: Domains of SDQ and IAT with percentage of internet use and p values (n=305)

SDQ categories		IAT categories			p value
		Minimal user	Moderate user	Excessive user	
Emotional	Normal	187 (98.4%)	45 (68.2%)	3 (6.1%)	<0.0001
	Borderline	3 (1.6%)	12 (18.2%)	15 (30.6%)	
	Abnormal	0	9 (13.6%)	31 (63.3%)	
Conduct	Normal	184 (96.8%)	48 (72.7%)	23 (46.9%)	<0.0001
	Borderline	6 (3.2%)	15 (22.7%)	9 (18.4%)	
	Abnormal	0	3 (4.5%)	17 (34.7%)	
Hyperactivity	Normal	187 (98.4%)	51 (77.3%)	14 (28.6%)	<0.0001
	Borderline	0	9 (13.6%)	6 (12.2%)	
	Abnormal	3 (1.6%)	6 (9.1%)	29 (59.2%)	
Peer problem	Normal	184 (96.8%)	60 (90.9%)	32 (65.3%)	<0.0001
	Borderline	6 (3.2%)	6 (9.1%)	12 (24.5%)	
	Abnormal	0	0	5 (10.2%)	
Prosocial	Normal	187 (98.4%)	57 (86.4%)	21 (42.9%)	<0.0001
	Borderline	3 (1.6%)	9 (13.6%)	8 (16.3%)	
	Abnormal	0	0	20 (40.8%)	

p value measured by chi-square test

Table 3: Comparison of TDS with NIU and PIU group (n=305)

Total difficulty score (TDS)	NIU (n=190)	PIU (n=115)	p value
Normal	187 (98.4%)	42 (36.5%)	
Borderline	3 (1.6%)	41 (35.7%)	<0.0001
Abnormal	0	32 (27.8%)	
TDS score (mean±SD)	5.0±3.07	17.14±4.84	

Table 4: Impact score of PIU participants in study population (n=305)

Impact	Not at all (%)	Only a little (%)	Quite a lot (%)	A great deal(%)
Difficulties upset or distress me	10	8.8	67.5	13.8
Interfere with home life	2.5	26.3	66.3	5
Interfere with friendship	20	16.3	51.3	12.5
Interfere with classroom learning	6.3	37.5	27.5	28.8
Interfere with leisure activities	7.5	18.8	62.5	11.3

Discussion

Internet use in adolescent has been increasing day by day. With the increased use of the internet, problematic internet use has become a public health concern, and has been associated with symptoms of addiction. In the present study, 37.7% study populations were reported to be problematic internet users and 16.1% had severe problematic internet use (PIU). A previous Bangladeshi study found 31% which was less than the present study. However, the present study and the previous study used different assessment tools (IAT and Orman's internet addiction survey respectively) and in different samples and social contexts.[22] Another study in Dhaka found 24.0% participants having PIU among whom 2.6% had excessive or severe.[23] The PIU rate in the present study appears to be higher than in studies conducted elsewhere such as 7.9% among Japanese adolescent, 12.2% Chinese high school students, 16.7% Indian adolescents, 24% among Bangladeshi graduates.[24] This difference may be due to the of present lockdown condition for COVID-19 pandemic. A recent study in China during COVID-19 situation found 33.37% PIU which is almost similar to this study's findings.[3] The school-going adolescents who are now confined to their home and had no playtime outside with their classmates or friends. So, the recreational and study related internet use has been increased in this situation. So understandably, rate of internet use has increased dramatically. In this study, problematic internet use was found highest in students of class X and lowest in class VII. Similar findings were found in Japanese survey done in 2016, where it was clearly showed that the prevalence of PIU increased with the advancement of school years. For example, the rate of PIU among all 7th grade students was 3.9% but increased to 9.2% among 12th grade students.[25]

Abnormal activities of emotional symptoms, conduct problems, hyperactivity, peer problem, pro-social behavior and total difficulty score (TDS) was observed in 13.1%, 6.6%, 12.5%, 1.6%, 6.6% and 10.5% respectively. Comparison of total difficulty score to NIU and PIU group also found to be statistically highly significant ($p<0.0001$). Mean TDS score was statistically very high in PIU group (23.7±4.15 vs. 13.73±3.39). Out of the 49 excessive internet users, 31 (63.3%) students had emotional, 17 (34.7%) students had conduct, 29 (59.2%) had hyperactivity, 5 (10.2%) had peer problems and 21 (42.9%) had high score on pro-social. Also, the impact score category showed that, great deal of interfere with home life, friendship, classroom learning and leisure activities was found in 5%, 12.5%, 28.8% and 11.3%. Thus, the study found that, excessive internet use had both negative impact on student lives, including emotional, conduct, hyperactivity and peer problems, as well as positive impact, such as pro-social behavior. One study conducted in secondary school students in Thailand reported that internet addiction had been associated with both positive and negative impacts, including improving relationships between friends and family as positive impact, and low academic achievement, health, personal relationships problems and social problems as negative impact.[26] Shahnaz and Karim suggest that, higher frequency of Internet use and time spent online per day can cause behavioral problems and make people defensive, annoying and even aggressive.[27]

Internet is a reality that we just cannot ignore; neither can we ignore the effects of excessive use of internet. To protect future generation from the ill effects of problematic internet use, a comprehensive plan should be formulated to tackle the situation, which should include policy supports, awareness and intervention programs. This study might provide the baseline data about prevalence of problematic internet use and its association with the psychiatric disorders. This study had some limitations. A multi-informant assessment could have provided more objective evaluation about actual pattern of internet use

and behavioral, emotional characteristics of subjects thus providing further insight in the issues. Moreover, it was a single center study; population was small and not generalized with inherent possibility of sample biasness.

Conclusion

This study implied that problematic internet users are quite frequent among the adolescents of Bangladesh and is associated with predictive psychological disorder. Internet is now basic necessity than luxury; its use will only increase day by day. So, managing its ill effects is essential. However, further research is warranted for a broader and more in-depth understanding of the link between PIU and predictive psychological disorder among school going children of Bangladesh.

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