



Internet addiction and its correlates among high school students: A preliminary study from Ahmedabad, India



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ABSTRACT

Purpose: Internet addiction (IA) is an upcoming and less researched entity in psychiatry, especially in low and middle income countries. This is the first such effort to study IA amongst Indian school students of class 11th and 12th and to find its correlation with socio-educational characteristics, internet use patterns and psychological variables, namely depression, anxiety and stress.

Methods: Six hundred and twenty one students of six English medium schools of Ahmedabad participated, of which 552 (88.9%) who completed forms were analyzed. Young's Internet Addiction Test and 21 item Depression Anxiety and Stress Scale were used to measure IA and psychological variables respectively. Logistic regression analysis was applied to find the predictors of IA.

Results: Sixty-five (11.8%) students had IA; it was predicted by time spent online, usage of social networking sites and chat rooms, and also by presence of anxiety and stress. Age, gender and self-rated academic performance did not predict IA. There was a strong positive correlation between IA and depression, anxiety and stress.

Conclusions: IA may be a relevant clinical construct, and needs extensive research even in developing nations. All high school students suffering from depression, anxiety and stress must be screened for IA, and vice versa.

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1. Introduction

Advent of internet heralded an era of technological revolution and stealthily intricately enmeshed all facets of our lives. The present generation relies heavily on internet, and its usage is rapidly increasing even in the developing world. Statistics from a lower middle income country like India elucidate that approximately a hundred million people (8.5% of the population) access internet as of 2010 (<http://www.internetworldstats.com/asia/in.htm>). With the soaring reports of detrimental effects of inordinate use of internet, a debate was instigated on the budding phenomenon of internet addiction (IA). In 1998, for the first time, diagnostic criteria were proposed for this entity modeling them on the criteria of pathological gambling; the deleterious effects it has on occupational, academic, relationship and physical fronts were also emphasized (Young, 1998). Shapira et al. (2000) described IA as a maladaptive preoccupation with internet use impairing social, occupational and other areas of a person's functioning and not exclusively accounted for by mania/hypomania. Aboujaoude et al. (2006) also delineated four criteria sets for problematic internet

usage inferred from criteria of substance abuse, impulse control disorders and obsessive-compulsive disorder. Considering the unprecedented rise in this phenomenon worldwide, it becomes paramount to delineate this entity and that is probably why DSM 5 was at some point considering to propose 'Internet Use Disorder' as a diagnostic entity in its appendix under substance related disorders, section III for further research (<http://www.dsm5.org/ProposedRevisions/Pages/Substance-RelatedDisorders.aspx>).

A plethora of psychological literature links IA to personality traits of introversion, aggression, narcissism, neuroticism, sensation seeking and lack of self control (Kim et al., 2008; Mehroof and Griffiths, 2010; Xiuqin et al., 2010). Studies have also explored the nexus of IA and social phobia, depression, anxiety, substance abuse, self harm and ADHD (Carli et al., 2013; Fischer et al., 2012; Ko et al., 2012; Lee et al., 2008; Weinstein and Lejoyeux, 2010; Yen et al., 2007). Hitherto, most of the studies have been conducted in college students. However, school students owing to their constant yearning for companionship, struggle with autonomy and freedom issues and stress of exams and relationships are a more vulnerable yet ignored group for the study of IA. Moreover, there is scant data on the phenomenon from low and middle income countries.

The current research aimed to find the presence of IA in a sample of students at the 11th or 12th standard studying in English medium schools in Ahmedabad, India and to study its correlation

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with socio-educational characteristics, internet use patterns and psychological variables, namely depression, stress and anxiety.

2. Methods

The study protocol was reviewed and approved by the Institutional Review Board of Smt. NHL Municipal Medical College, Ahmedabad. A convenient sampling method was employed for selection of schools. All English medium schools located in the West Zone of Ahmedabad were approached. Of the total of 17 schools in the area, principals of six schools consented for the conduct of the study, and they were included. Respective principals and students of the 11th and 12th standard were explained the whole study and they signed the consent and assent forms respectively. However, consent was not obtained from the parents. Students were approached in their classrooms. Anonymity and confidentiality were stringently maintained.

Three questionnaires had to be filled in 20–30 minutes.

The first one pertained to the socio-educational variables of age, gender, standard (11th or 12th), and self-rated academic performance (excellent, good, average or poor). It also included internet use variables of place of access (home, cybercafés, others), internet use/day in hours, internet experience in months and types of frequent web activities to be chosen from chatting, cyber relations, cybersex, gaming, gambling, shopping, information searching, web surfing and social networking.

Young's Internet Addiction Test (IAT), a 5-point likert scale was used to gauge IA in the second questionnaire. This 20 item instrument encompasses the extent to which internet use affects a subject's thoughts, feelings, behaviors, sleep patterns and functioning, and its validity has been established (Widyanto and McMurran, 2004). The instrument showed very good internal consistency in our study (Cronbach's alpha = 0.903). Scores varied from 20 to 100 with 20–49 depicting an average online user who has complete control over his/her usage, 50–79 connoting a user having frequent problems due to internet usage and 80–100 signifying a user having a serious impact of internet on his life. The threshold used for defining IA in this study was a score of 50 and above. In a recent study on IA in Greek high school students, a score of 51 on IAT was proposed as the optimal cut-off point combining high sensitivity and specificity (Stavropoulos et al., 2013).

The twenty one item Depression Anxiety and Stress Scale (DASS 21) was used in the third questionnaire to assess depression, anxiety and stress (Lovibond and Lovibond, 1995a). DASS 21 is composed of three self report scales, with seven items each, with feelings of pessimism, hopelessness, worthlessness, and anhedonia measuring depression; signs of autonomic hyperactivity and subjective worries gauging anxiety and inability to relax; and low frustration threshold and loss of control items assessing stress. DASS Depression Scale correlates strongly with the Beck Depression Inventory and the DASS Anxiety Scale with the Beck Anxiety Inventory (Lovibond and Lovibond, 1995b). However, it is still a screening rather than a diagnostic instrument. Scores obtained are doubled to get the final score for each item. The cutoffs used were as follows – depression (score >13), anxiety (score >9), stress (score >18).

2.1. Statistical analysis

Descriptive statistics were used to describe the data, frequencies and percentages for categorical variables and mean values with standard deviations for continuous variables. The normality of distribution was tested by the Kolmogorov–Smirnov Test. Since the data was not normally distributed, non parametric tests were used. Mann Whitney test was used to assess continuous variables, while Chi Square test was applied for analysis of categorical data. Spearman correlation coefficient was applied to study correlation

between IA, depression, anxiety and stress scores. All variables found significant in bivariate analysis were then entered into the logistic regression model with IA as the dependent variable. The results of logistic regression are reported as adjusted odds ratios and 95% confidence intervals. These analyses were carried out via SPSS 20.0. Significance was set at $P < 0.05$ (two-tailed).

3. Results

3.1. Sample characteristics

A total of 621 students participated in our study. Of them 559 (90%) completed all three questionnaires. However, seven of them had no internet exposure yet and they were excluded. Therefore, 552 (88.9%) complete forms were analyzed. All the respondents accessed internet via home with only 18 (3.2%) students accessing via both home and cybercafés. Hence this aspect was not separately analyzed. Of the 552 respondents, 328 (59.4%) were males. Three hundred and eighty six (69.9%) subjects were of 15–16 years of age and 166 (30.1%) fell into the 17–18 years bracket. Three hundred (54.3%) students studied in the 12th standard and 252 (45.7%) in the 11th. One hundred seventy nine (32.4%) students reported their academic performance as excellent or good while 373 (67.6%) reported it as average or poor.

3.2. Prevalence of IA

Sixty five students (11.8%) had IA as measured on IAT. Amongst those addicted, 47 (72.3%) were males and 18 (27.7%) were females. Thirty eight (58.5%) were 15–16 years of age and 27 (41.5%) were 17–18 years of age. Twenty six (40%) students studied in the 11th standard and 39 (60%) in the 12th. Twenty three (35.4%) had excellent or good self rated academic performance and 42 (64.6%) had average or poor. Addicted students were spending a mean 2.5 hours (SD = 2.3) per day online and had an average 50.3 months (SD = 24.6) of internet exposure. Pattern of internet usage amongst those addicted was as follows – social networking (78.5%), chatting (55.4%), gaming (40%), information searching (35.4%), web surfing (24.6%), online shopping (20%), cyber relations (12.3%), online gambling (6.2%) and cybersex (1.5%).

3.3. IA and socio-educational variables

In bivariate analysis, IA was found to be associated with male gender and 17–18 years age group but not to the standard (11th or 12th) or academic performance (Table 1).

Table 1
Internet addiction (IA) and socio-educational variables.

Variables	IA present (N=65) n (%)	IA not present (N=487) n (%)	Significance χ^2 P value
Gender			
Male	47 (72.3)	281 (57.7)	$\chi^2 = 5.07$ $P = 0.02$
Female	18 (27.7)	206 (42.3)	
Age			
15–16	38 (58.5)	348 (71.5)	$\chi^2 = 4.61$ $P = 0.03$
17–18	27 (41.5)	139 (28.5)	
Standard			
11th	26 (40)	226 (46.4)	$\chi^2 = 1.11$ $P = 0.57$
12th	39 (60)	261 (53.6)	
Academic performance			
Excellent–good	23 (35.4)	156 (32.0)	$\chi^2 = 0.29$ $P = 0.60$
Average–poor	42 (64.6)	331 (68.0)	

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