

Burden of internet addiction, social anxiety and social phobia among University students, India

Abhishek Jaiswal¹, Shubham Manchanda², Vaishali Gautam¹, Akhil D. Goel³,
Jitender Aneja⁴, Pankaja R. Raghav⁵

¹Senior Resident, ³Assistant Professor, ⁵Professor and Head, Department of Community Medicine and Family Medicine, All India Institute of Medical Sciences, ²M.B.B.S. Student, All India Institute of Medical Sciences, ⁴Assistant Professor, Department of Psychiatry, All India Institute of Medical Sciences, Jodhpur, Rajasthan, India

ABSTRACT

Background: Social anxiety disorder (SAD) is a common mental health disorder affecting adolescents often associated with comorbidities like depression, suicide ideation and substance abuse. The objective of this study was to estimate the prevalence of social anxiety in adolescents and to explore its correlation with internet usage. **Methods:** An exploratory cross-sectional study was conducted among 307 undergraduate students to screen for social anxiety and social phobia using a validated instrument, social interaction anxiety scale (SIAS). Young's internet addiction scale was used for measuring internet addiction. Respondents were categorised according to the scores obtained and later compared with their internet addiction behaviours. **Results:** Internet addiction was seen in 93.8% of respondents. The prevalence of SAD was estimated to be 15.3%. Internet addiction was positively correlated with social anxiety score (Pearson correlation = 0.994, $P < 0.001$). **Conclusion:** More than 90% of participants had internet addiction, the majority had mild-moderate internet addiction. Social anxiety was present in more than one-third of the participants. SAD was found to be associated with internet addiction.

Keywords: Anxiety, problematic internet use, social phobia

Introduction

According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) social anxiety is fear or anxiety in social situations, particularly where an individual is exposed to scrutiny or has a possibility of negative evaluation by others. An individual, when exposed to such situation, in most of the cases, will avoid or undergo intense anxiety. This psychological condition has a negative impact on the individual and inhibits

them to actively engage in their social surroundings and affect interpersonal relations.

Social anxiety disorder (SAD) is a disabling mental health disorder prevalence of which in the general population is 12–16%.^[1,2] Studies have shown that individuals affected with social anxiety often have comorbidities like depression, suicide ideation and substance abuse.^[3–6] Further, SAD also results in loss of productivity (direct and indirect costs) and affects the quality of life.^[3,7,8] Thus, SAD is a disease of increasing public health importance.

In the current scenario, India has the second-highest number of internet users (maximum in China) and every year the number continues to increase exponentially. It is estimated

Address for correspondence: Dr. Akhil D Goel,
Department of Community Medicine and Family Medicine,
2nd Floor, All India Institute of Medical Sciences, Basni Industrial
Area, MIA, 2nd Phase, Basni, Jodhpur - 342 005, Rajasthan, India.
E-mail: doc.akhilgoel@gmail.com

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that by 2021 internet users would increase to 635.8 million.^[9] This rapid growth in a number of internet users has prompted researchers to study the adverse effects of internet use especially among youth. Although internet addiction is not yet a standard diagnosis according to DSM-5, excessive internet use has been identified as a public health concern by WHO. Few studies have been conducted in India to estimate the prevalence of internet addiction which has ranged from 11.8–58.8%.^[10-12] Furthermore, various mental health comorbidities have also been observed among individuals with internet addiction like insomnia, depression, low self-esteem, anxiety disorders and personality trait disorders.^[13-19]

In the Indian setting, the prevalence of SAD is understudied, further, to the best of our knowledge its correlation with internet addiction has not been explored. Keeping this background in mind present study was conducted with the aim of estimating the burden of SAD among the undergraduate students along with exploring any correlation between social anxiety and internet addiction among urban adolescents.

Methods

This cross-sectional study was conducted in University colleges in Jodhpur district of Rajasthan among students aged 18 years and above.

Inclusion criteria: Students aged 18 years and above, presently enrolled in a professional or non-professional degree program.

Exclusion criteria

Inability to comprehend the English language, as the questionnaire was in English.

Sample size

Considering the prevalence of social anxiety as 7.8% the sample size required was calculated to be 307 at a precision of 3% and a 95% confidence interval.^[20]

Recruitment of study participants

University colleges were selected randomly. Eligible candidates were selected using random sampling to achieve the required sample size. Volunteers of the student bodies were identified for enrolment of the eligible students. After taking valid informed consent from participants along with their email id., students were sent a self-administered questionnaire via email.

Study tool

To assess generalised SAD, the social interaction anxiety scale (SIAS) developed by Mattick and Clarke, 1998 was used.^[21] To ascertain internet addiction Young's internet addiction test (IAT) was used.^[22] SIAS is a 20-item instrument rated on a 5-point Likert-type scale ranging from 0 (i.e. not at all characteristic of me) to 4 (i.e. extremely characteristic of me). In

previous studies, internal consistency (Cronbach's alpha) of SIAS ranged from 0.88 to 0.93 and its test-retest reliability was 0.92.^[21] Total score so obtained was evaluated as follows: a score of more than 34; social phobia probable (i.e. the situation of irrational social fear avoidance and impairment) and a score of more than 43; social anxiety probable (i.e. generalised social fear across numerous social situations with avoidance and impairment)

Young's IAT is also a 20-item questionnaire based upon a five-point Likert scale of the frequency of usage with one representing rare use and five representing always. It is used as a screening tool for the presence of various degrees of internet addiction. Internal consistency using Cronbach's alpha has been reported as 0.889.^[23] It has been validated in various countries including in Indian population. The total score so obtained was evaluated as follows: 0–30 as no internet addiction, 31–49 as mild internet addiction, 50–79 as moderate internet addiction and 80–100 severe impairment. The presence of moderate or severe internet addiction was identified as having internet addiction.

Statistical analysis

Data collected was exported into excel and analysed in STATA 12 (StataCorp. 2011. Stata Statistical Software: Release 12. College Station, TX: StataCorp LP). Categorical data were compared using the Chi-square test, and quantitative data were compared using the student's 't' test. Categorical data were described using counts and percentages. Quantitative data were described using mean \pm SD. Correlation measured using Pearson's r.

Ethical consideration

Ethical clearance for performing this study was obtained from the Institutional Ethics Committee, AIIMS, Jodhpur, Rajasthan (AIIMS/IEC/2017/321, dated 20.11.2017). All the eligible participants were informed about the purpose of the study and were assured regarding the confidentiality of the information obtained. Written informed consent was taken from the eligible participants.

Results

A total of 307 undergraduate students from university colleges (three medical colleges and two engineering colleges) were selected for the study. The mean age of the respondents was 19.9 ± 2.0 years. Gender distribution was almost equal. SIAS scores ranged from 0 to 71 with a mean score of 28.01 ± 14.5 . It was estimated that 31.3% (96) students had social phobia (SIAS score >34) and 15.3% (47) had social anxiety (SIAS score >43)

IAT scores ranged from 20 to 90 with a mean score of 50.3 ± 13.1 . The majority of the study population had moderate internet addiction 148 (48.2%) followed by mild internet addiction 130 (42.3%) and no internet addiction reported by 19 (6.2%). Severe internet addiction was seen among ten (3.3%) participants.

Social phobia was present in 58.1% of the participants with moderate internet addiction compared to none in internet addiction and mild internet addiction group. Social anxiety was present in 25% of the participants with moderate internet addiction compared to none in internet addiction and mild internet addiction group. Social phobia and social anxiety were present in all the participants with severe internet addiction [Table 1].

There was an increasing trend of SIAS scores with increasing grades of internet addiction group, and the difference among the group with respect to SIAS scores was significant (Kruskal-Wallis test, P value = 0.0001) [Table 2]. Figure 1 is the violin-plot showing the distribution of SIAS scores with respect to IAT scores.

There was a positive correlation between internet addiction score and social anxiety scale (Pearson correlation = 0.994, $P < 0.001$), that is, those respondents who have higher scores for internet addiction were also likely to have higher scores for social anxiety [Figure 2]. The R^2 value was estimated to be 0.987 indicating that 98.7% of the variation in social anxiety score could be accounted for by the variation in internet addiction scores (predictors). The association was found to be statistically significant. Age was also significantly associated with social anxiety and phobia, with higher age being protective for social anxiety and phobia [Table 3].

Discussion

This study takes its origin from the self-regulation hypothesis and compensation hypothesis according to which socially anxious individuals may use the internet to cope up with the fear of social interactions as it offers a virtual platform for interaction.^[24,25] A total of 307 students from university colleges were included. We found the burden of social anxiety and that of social phobia to be 15.3% and 31.3%. A positive correlation was also observed between internet addiction and SAD.

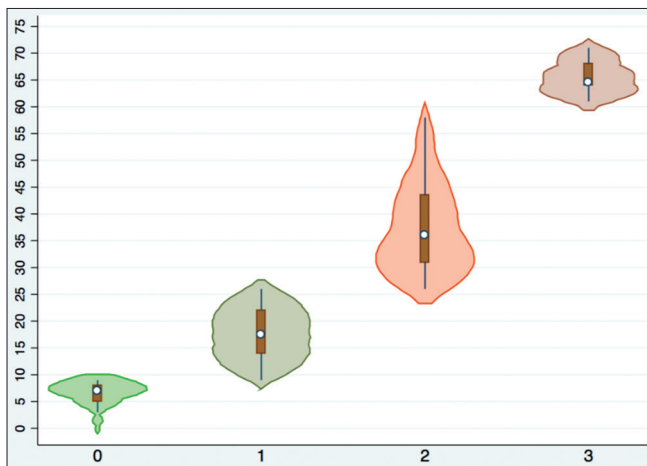


Figure 1: Violin-plot showing distribution of social interaction anxiety scale scores with respect to internet addiction test (IAT) score categories ($n = 307$)

Various tools have been used to estimate social anxiety. In India, using SIAS among urban university students social anxiety was estimated to be 5.9% and 7.8%.^[20,26] Singh *et al.* reported the prevalence of social anxiety and social phobia among postgraduate students using the SIAS tool as 21% and 22% respectively.^[27] Among rural adolescents of Southern India (2013) using the screen for child anxiety related emotional disorders (SCARED) followed by confirmation of diagnosis using a schedule for affective disorders and schizophrenia for school-age children/present and lifetime version (K-SADS-PL) established that prevalence of SAD and that of generalised anxiety disorder was 2.2% and 6.6%, respectively.^[28] In another study, to screen high school adolescents of Ahmedabad (2004) using social phobia inventory (SPIN) it was found that 12.8% of respondents had SAD.^[29] Further, using the Liebowitz Social Anxiety Scale (LSAS) among children and adolescents in an urban public school of Delhi (2009) the burden of social phobia was estimated to be 10.3% which was more frequent among females.^[30] In a study (2016) conducted among the adolescent's school-going children of northeastern states of India using the LSAS and SPIN, it was found that the prevalence of social anxiety was 30.7% and that of social phobia was 38.3%.^[31]

The prevalence of SAD among other countries has varied widely. A study conducted by incoming Chinese university students (2015) to estimate the prevalence of social anxiety symptoms using SPIN showed that 23.7% had SAD.^[32] Internationally, SAD was found to be at 8.5% in Nigeria,^[33] 11.8% in Brazil^[34] and 23.7% in China.^[32] Reta *et al.* reported the prevalence of SAD as 32.8% in Ethiopia, using SPIN.^[35]

The prevalence of SAD found in our study is comparable to some of the previous international studies as well as some of the Indian studies. The variance could be explained by the method of assessment as most of the studies (including the index study) have utilised self-report questionnaires rather than structured clinical interviews.

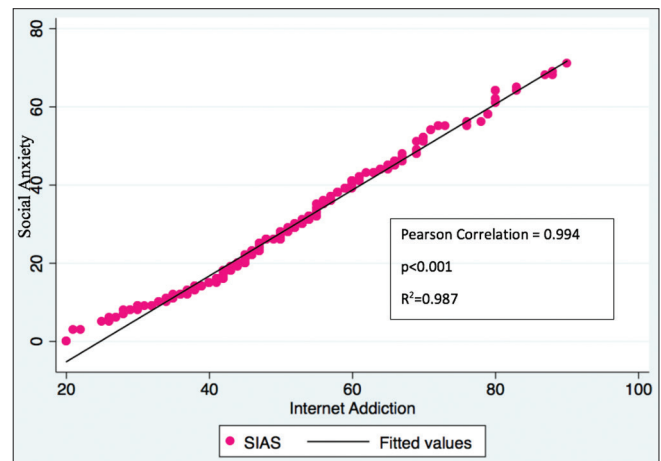


Figure 2: Correlation between social anxiety and internet addiction ($n = 307$)

Table 1: Distribution of social anxiety with respect to IAT score groups (n=307)

IAT class	Remark	Social anxiety		Social phobia	
		Absent n (%)	Present n (%)	Absent n (%)	Present n (%)
0	No internet addiction	19 (100%)	0 (0%)	19 (100%)	0 (0%)
1	Mild internet addiction	130 (100%)	0 (0%)	130 (100%)	0 (0%)
2	Moderate internet addiction	111 (75.0%)	37 (25.0%)	62 (41.9%)	86 (58.1%)
3	Severe internet addiction	0 (0%)	10 (100%)	0 (0%)	10 (100%)

IAT: Internet Addiction Test

Table 2: Distribution of SIAS scores with respect to IAT score groups (n=307)

IAT class	Remark	SIAS scores mean (S.D.)	SIAS scores median (IQR)
0	No internet addiction	6.05 (2.80)	7 (5-8)
1	Mild internet addiction	17.62 (4.84)	17.5 (14-22)
2	Moderate internet addiction	37.55 (8.28)	36 (31-43.5)
3	Severe internet addiction	65.6 (3.24)	64.5 (64-68)

Kruskal-Wallis test (P -value =0.0001); NP trend (P -value <0.001). SIAS: social interaction anxiety scale**Table 3: Linear regression model with social anxiety as dependent variable and age and internet addiction as independent (n=307)**

Variable	Beta coefficient	C.I.	P
Internet addiction score	1.098	1.083 to 1.112	<0.001
Age	-0.096	-0.188 to -0.005	0.04

In the present study prevalence of internet addiction was mild in 42.3%, moderate in 48.2 and severe in 3.3%. This is similar to the prevalence reported in other studies in India. Grover *et al.* reported the prevalence of internet addiction among resident doctors of a tertiary care hospital of North India as mild in 54% and moderate in 8.2%.^[36] None had severe addiction. The prevalence of internet addiction was mild in 65.4%, moderate in 13.5% and severe in 1.9% in a study done by Saikia *et al.*^[37] Singh *et al.* reported the prevalence of internet addiction as mild in 62.9%, moderate in 13% and severe in 1%.^[38] Kumar *et al.* reported the prevalence of internet addiction among 11th/12th students as mild in 23.9%, moderate in 30.3% and severe in 1.4%.^[39]

Similar to the present study, a positive correlation was observed between social anxiety and internet addiction in a study conducted among university students of China and Israel also among secondary school adolescent populations in Turkey.^[32,40,41] Vadher *et al.* also reported a positive correlation between social anxiety (SPIN) and internet addiction ($r = 0.411$, $P < 0.0001$), in school going children in India.^[42] Saika *et al.* also reported a significant association between internet addiction and anxiety (depression anxiety stress scale 21) ($P < 0.0001$).^[37] Literature search has also shown that higher recreational use of the internet was associated with poor academic performance, loneliness and staying up late.^[43] This highlights the need for building a

strategy for screening and management of an individual with SADs.

Globally as well in India, mental health disorders are largely underdiagnosed. Furthermore, in the current scenario internet addiction is becoming a growing public health concern where on one spectrum lies necessary use (professional use) and on the excessive use that leads to various comorbidities as stated earlier. Cognitive behavioural therapy (CBT) has been suggested as a primary line of management of both SAD and internet addiction.^[44,45] A recent advance has also suggested the role of the internet as a vital platform for screening and treatment intervention for both SAD and internet addiction.^[46] This emphasises the role of the internet for the management of mental health disorders like SAD and also of internet Addiction. Therefore, where excessive use of the internet can result in harmful health condition it can also be used for beneficial purposes if used in a guided manner.

Limitations: To maintain the anonymity of the respondents, individual identifiers were not included in the questionnaire, however, in order to decrease the under-reporting/non-response rate, the investigator sent a reminder mail to the respondent whose response was not obtained. Moreover, the study was performed only in the university students who had internet access which also limits the generalisability of the results.

Conclusions and Recommendations

Our study shows a high prevalence of social anxiety (16.9%) and social phobia 31.4% among college students. Internet addiction was present in more than half of the participants. Also, internet addiction was associated with social anxiety and social phobia. This signifies the need to promote awareness about internet addiction, social phobia with and SADs in the community which will require utilisation of primary health care systems to sensitise the grassroots-level health workers and primary care physicians in India. Also, primary care physicians and grassroots-level workers should be trained to screen youths for increased usage of the internet wherever they present with psychological conditions like social anxiety and social phobias. We need to develop public health interventions to promote the healthy use of the internet among youths.

Moreover, our study has public health policy implications for both SAD and internet addiction where these conditions should be identified as mental health disorders of increasing public health importance.

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Nil.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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