



DOES INTERNET ADDICTION CAUSE INSOMNIA AND LOW SELF-ESTEEM AMONG MEDICAL STUDENTS? A QUESTIONNAIRE-BASED STUDY.

Physiology

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ABSTRACT

Introduction: Excessive use of internet has led to internet addiction (IA) which is associated with many problems. The present study was conducted to find out potential IA among medical students and its relationship with Insomnia and Self Esteem.

Methodology: A study on 150 medical students was conducted in the Department of Physiology, R.G Kar Medical College, Kolkata for 6 months. Three validated questionnaires were used as study tools. Statistical analysis was done using SPSS software (version 20.0).

Results: The average YIAT score was 51.76 ± 16.96 . ISI score was higher and RSES score were lower in students with potential IA and there was a significant difference in Insomnia score value and RSES score value between IA groups. Significant correlations were found between IA and insomnia (p -value < 0.05).

Conclusions: Internet addiction is a potential risk factor for insomnia and low self-esteem among medical students.

KEYWORDS

Internet Addiction, Insomnia, Self Esteem, Medical Students

INTRODUCTION

The Internet has become one of our life's most important instruments for information, work opportunities, education, and entertainment, including social networking, and is gradually becoming a fundamental component of our daily lives. It has now emerged as a two-edged sword, which can be useful in the acquisition, updating and sharing of information on the one side and can lead to habituations, addiction and negative academic, mental, physical and social consequences on the other.¹⁻³ Over the last 25 years, use of internet and social media has increased tremendously, especially in younger age groups across the globe. Internet use is growing in India which is the 2nd highest country using the Internet trailing China, with over 500 million Internet users.⁴

The term "internet addiction" was proposed by Dr. Ivan Goldberg in 1995 for pathological compulsive internet use.⁵ It is generally defined as an uncontrollable desire for excessive use of the internet, devaluation of time spent without connecting to the internet, intense nervousness and aggression in the case of deprivation and progressive deterioration of social and family life.^{6,7} It has been suggested that excessive internet use could represent addictive behaviour with mental health complications.^{8,9} A high rate of personality disorders is found in individuals with IA¹⁰. Heavy internet use was also reported to be associated to mood disorders¹¹, poor sleep quality¹¹ low self-esteem¹².

Self-esteem is a person's overall self-evaluation or sense of self-worth, used to appraise one's traits and abilities. This evaluation is based on one's thoughts and also contains internalized social judgments¹³. Self-esteem can be positive or negative. People with low self-esteem often have problems in life.

Good sleep is necessary for optimal health¹⁴. It is one of the most important needs of human to revitalize energy and help physical appearance and well-being¹⁵. Students of medical sciences are at risk of sleep disorder due to the intrinsic work-related stress and pressure as well as night time activities when they are on night shifts. Now internet addiction is another factor that may cause poor quality of sleep and life.

In recent times, easy availability of internet primarily through smart phones has led to its exponential use especially among college students who are particularly vulnerable because of their unique personal, psychological, social, and academic requirements.^{16,17} IA could be a major concern in medical students aiming to develop into health professionals. The implications of this addiction as well as its association with sleep, and self-esteem can hinder their studies, impact their long-term career goals and have wide and detrimental consequences for society as a whole. Very few studies investigating the

association of IA with insomnia and self-esteem were done in the eastern region of India so far. On this background the present study was conducted.

AIMS AND OBJECTIVES

The objectives of this study were :

- 1) To assess potential IA in students at the Campus of R.G. Kar Medical College and Hospital, Kolkata, as well as socio-demographic factors associated with it;
- 2) To find out any relationships between potential IA, insomnia, and self-esteem in students.

MATERIALS AND METHODS:

The protocol of the study was approved by the ethics committee of R.G. Kar Medical College and Hospital before the commencement of the study. Informed written consent was obtained from all individuals participating in the study. Our study was a cross-sectional questionnaire-based study conducted in the Department of Physiology, R.G Kar Medical College, Kolkata, among Undergraduate medical students from March to August 2015 (6 months). Inclusion criteria were undergraduate Medical students of either sexes, aged between 17 and 25 years with history of using internet from past 1-year or more and willing to participate in the study were included in the study. Exclusion criteria were aged under 17 years and presence of a chronic disease. Students not using internet or using internet for less than 1 year and students not willing to give consent were excluded. A purposive sampling method was used for sampling. The subjects were explained about the objectives and background of the study and written informed consent was taken from them before the study. Total 150 students gave consent and participated in the study. Detailed history was taken and Personal data about age, gender and faculty was collected. Information about living alone or not, tobacco (cigarette or water pipe), and alcohol use was obtained. The questionnaires were given to the undergraduate medical students just after the completion of their lecture class. 10 minutes time was provided for completion of each of the questionnaires. Three validated and reliable questionnaires: The Young Internet Addiction Test (YIAT), the Insomnia Severity Index, and the Rosenberg Self Esteem Scale (RSES) were used. The Internet Addiction Test (IAT; Young, 1998)¹⁸ is a 20-item 5-point likert scale that measures the severity of self reported compulsive use of the internet. It is a 20-item self-report scale assessing a respondent's productivity at work, school, or home (3 questions), social behaviours (3 questions), emotional connection to and response from using the internet (7 questions), and general patterns of Internet use (7 questions). Total internet addiction scores are calculated, with possible scores for the sum of 20 items ranging from 20 to 100. According to

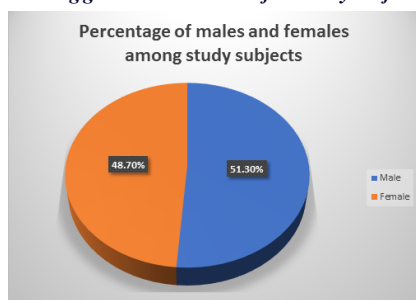
Young's criteria, total IAT scores 20-39 represent average users with complete control of their internet use, scores 40-69 represent over-users with frequent problems caused by their internet use, and scores 70-100 represent internet addicts with significant problems caused by their internet use. Young's IAT is the only available test whose psychometric properties have been tested by Widyan to and McMurran¹⁹. The Young Internet Addiction Test (YIAT) is validated among adolescents and adults and widely used.^{20,21}

The ISI is a 7-item self-report questionnaire assessing the nature, severity, and impact of insomnia. The evaluated domains are: severity of sleep onset, sleep maintenance, early morning awakening problems, sleep dissatisfaction, interference of sleep difficulties with daytime functioning, perception of sleep difficulties by others, and distress caused by the sleep difficulties. A 5-point Likert scale will be used to rate each item (0 to 4 where 0 indicates no problem and 4 corresponds to a very severe problem), yielding a total score ranging from 0 to 28. The total score will be interpreted as follows: absence of insomnia (0–7); sub-clinical or mild insomnia (8–14); moderate insomnia (15–21); and severe insomnia (22–28). Furthermore, clinically significant insomnia will be detected when the total score is >14 .^{22,23} The Rosenberg Self Esteem Scale (RSES)^{24,25} is commonly used and its internal consistency and reliability were confirmed in many previous studies. It comprises 10 statements. Participants rate the extent to which they agree with each statement on a four-point Likert scale, (0) strongly disagree to (3) strongly agree for items 1, 2, 4, 6 and 7 and opposite rating for items 3, 5, 8, 9 and 10. A total score is obtained by summing all responses and may range from 0 to 30, with higher scores indicating higher self-esteem.²⁶ Score between 15–25 are considered average. The statistical analysis was carried out using SPSS software (version 20.0) using appropriate tests.

RESULTS

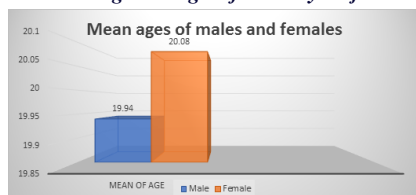
In our study The study subjects were grouped according to Young's criteria^{5,18} on the basis of severity of internet usage. Here group 1 represents the average users (total IAT scores between 20 to 39) with complete control of their internet use, group 2 represents over-users (IAT scores within 40 to 69) with frequent problems caused by their internet use, and group 3 represents internet addicts (IAT scores between 70-100) with significant problems caused by their internet use.

Pie chart: showing gender distribution of the study subjects



The pie chart shows that among 150 study subjects 48.7% (n=73) were females and 51.3% (n=77) were males.

Bar diagram-1 showing mean ages of the study subjects



The bar diagram shows mean ages of the study subjects. The mean age of the male subjects was 19.94 ± 1.080 and the mean age of female subjects were 20.08 ± 1.331 which showed no significant difference.

Table 1: showing comparison of the means of YIAT score value, RSES score value and ISI score value between males and females.

Score Value	Sex	N (N=150)	Mean±SD	Std. Error Of Mean	P-Value
YIAT Score	M	77	55.38±17.958	2.047	0.007
Value	F	73	47.95±15.050	1.761	

RSES Score	M	77	17.49±4.996	0.569	0.825
Value	F	73	17.32±4.867	0.570	
ISI Score	M	77	10.38±7.581	0.864	0.827
Value	F	73	10.64±7.336	0.859	

P-VALUE <0.05 IS CONSIDERED AS SIGNIFICANT.

YIAT-Young's internet addiction test, RSES- Rosenberg's self-esteem scale, ISI-Insomnia severity index.

Table 1 shows that there is significant difference (p-value=0.007) in the means of YIAT score value between males (55.38 ± 17.958) and females (47.95 ± 15.050).

No significant difference was found between the means of RSES score values among males (17.49 ± 4.996) and females (17.32 ± 4.867). Similarly, there was also no significant difference in the means of ISI score values between males (10.38 ± 7.581) and females (10.64 ± 7.336).

Table 2: comparison of severity of internet addiction among males and females.

			Severity Of Internet Addiction			Total
			Group 1	Group 2	Group 3	
Sex	F	Count	27	38	8	73
		% Within IAS GR	60.0%	50.0%	27.6%	48.7%
		% OF Total	18.0%	25.3%	5.3%	48.7%
	M	Count	18	38	21	77
		% Within IAS GR	40.0%	50.0%	72.4%	51.3%
		% OF Total	12.0%	25.3%	14.0%	51.3%
Total	Count	45	76	29	150	
	% OF Total	30.0%	50.7%	19.3%	100.0%	
P Value		<0.05				

IAS GR=Internet addiction score group

Table 2 describes and compares the percentage distribution of different groups of internet addiction among males and females. Grouping of the study subjects was done according to Young's criteria on the basis of severity of internet addiction. Here group 1 represents the average users (total IAT scores between 20 to 39) with complete control of their internet use, group 2 represents over-users (IAT scores within 40 to 69) with frequent problems caused by their internet use, and group 3 represents internet addicts (IAT scores between 70-100) with significant problems caused by their internet use.

Our study showed that, among 150 study subjects, 73 (48.7%) were females and 77 (51.3%) were males. Among the total subjects 30% (n=45) were average internet users, 50.7% (n=76) were over users and 19.3% (n=29) were internet addicts as per the Young's criteria.

Our study also showed that males had higher preponderance of addiction as 72.4% (n=21) of the internet addicts were males and 27.6% (n=8) were females.

However, males and females were equally affected in terms of over usage of internet. Statistically significant association between the gender and severity of internet addiction was noted (p value=0.023).

Table 3 showing comparison of severity of insomnia among males and females

			Severity Of Insomnia				Total
			Group 1	Group 2	Group 3	Group 4	
Sex	F	Count	30	19	17	7	73
		% Within Sex	41.1%	26.0%	23.3%	9.6%	100.0%
		% Within INSOM GR	50.0%	44.2%	50.0%	53.8%	48.7%
		% Of Total	20.0%	12.7%	11.3%	4.7%	48.7%
	M	Count	30	24	17	6	77
		% Within Sex	39.0%	31.2%	22.1%	7.8%	100.0%
		% Within INSOM GR	50.0%	55.8%	50.0%	46.2%	51.3%
		% Of Total	20.0%	16.0%	11.3%	4.0%	51.3%

Total	Count	60	43	34	13	150
	% Within Sex	40.0%	28.7%	22.7%	8.7%	100.0%
	% Within INSOM GR	100.0%	100.0%	100.0%	100.0%	100.0%
	% OF Total	40.0%	28.7%	22.7%	8.7%	100.0%
P Value	0.907					

The study subjects were grouped on the basis of their total score of Insomnia Severity Index as follows: group 1 represents absence of insomnia (0–7); group 2 represents sub-clinical or mild insomnia (8–14); group 3 represents moderate insomnia (15–21); and group 4 represents severe insomnia (22–28). Furthermore, clinically significant insomnia was detected when the total score is >14.

Our study showed (table 3) among 150 total subjects, 40% (n=60) had no insomnia. Mild insomnia was seen in 28.7% (n=43) of the subjects. Total 34 subjects i.e. 22.7% of the total population had moderate insomnia and 8.7% (n=13) of the study subjects showed severe insomnia.

We found 16% of the study population suffering from moderate to severe insomnia were females and 15.30% of the study population suffering from moderate to severe insomnia were males. No statistically significant correlation (p value=0.907) was observed between the gender of the subjects and severity of insomnia in them.

Table 4: comparison between internet addiction severity groups with ISI score value.

with ISI score value.							
Dependent Variable		Internet Addiction Severity Group	N	Mean ± SD	Inter Group Comparison		Significance
ISI Score Value	Tukey HSD	Group 1	45	7.69±6.291	1	2	.009
						3	.065
		Group 2	76	11.76±6.985	2	1	.009
						3	.993
		Group 3	29	11.59±9.128	3	1	.065
						2	.993
Total			150	10.51±7.439			

Table-4 showed that average ISI score was 7.69±6.291 for normal internet users versus over users (11.76±6.985) and internet addicts (11.59±9.128). Group 2 internet users (over users) showed significant association with insomnia score value compared to group 1 internet users (average users) (p value 0.009).

Table 5: comparison of RSES Score value between the internet addiction groups

Dependent Variable	Severity Of Internet Addiction	N	Mean±SD	Std. Error	95% Confidence Interval For Mean		P Value
					Lower Bound	Upper Bound	
RSES Score Value	Group 1	45	18.93±4.929	.735	17.45	20.41	0.043
	Group 2	76	16.80±4.373	.502	15.80	17.80	
	Group 3	29	16.62±5.827	1.082	14.40	18.84	
	Total	150	17.41±4.918	.402	16.61	18.20	

Table 5 shows the association between internet user groups with RSES score value. The average RSES Score value was 18.93±4.929 for normal internet users, 16.80±4.373 for over users of internet and 16.62±5.827 for internet addicts.

There was a significant difference in RSES score value between three groups of internet users (p value 0.043)

DISCUSSION

In our study we evaluated the percentage distribution of different groups of internet addiction among males and females. Among the total subjects 30% (n=45) were average internet users, 50.7% (n=76) were over users and 19.3% (n=29) were internet addicts as per the Young's criteria^{5,18}. Purreza A et al²⁷ reported in their study that 74.1% of students were moderately addicted to the internet, 23.9% were highly, and 2% severely internet addicted. Their study supports our findings.

Our study also showed that males had higher susceptibility of internet

addiction (YIAT score value above 70) as 72.4% (n=21) of the internet addicts were males and 27.6% (n=8) were females. However, males and females were equally affected in terms of over usage of internet. Statistically significant association between the gender and severity of internet addiction was noted (p value=0.023). Similar results were observed in a study by Younes F et al²⁸ which revealed significant difference in IA between males and females (p-value = 0.003), with a higher prevalence in males (23.6% versus 13.9%). Another study by Sachin R Gedam et al²⁹ observed that male gender was one of the important predictors of internet addiction among college students. Our findings agree with previously reported many studies which involved young adults³⁰⁻³². Though some studies reported that IA prevalence was higher in males^{28,29} others did not find difference between genders²⁹.

We observed that (table 3) among 150 total subjects, 40% (n=60) had no insomnia. Mild insomnia was noted in 28.7% (n=43) of the subjects. Total 34 subjects i.e. 22.7% of the total population had moderate insomnia and 8.7% (n=13) of the study subjects showed severe insomnia. This finding is consistent with other studies³³⁻³⁵.

In our study we found that the average ISI score was 7.69±6.291 for normal internet users versus over users (11.76±6.985) and internet addicts (11.59±9.128). We observed that Group 1 internet users (average users) showed significant association with insomnia score value compared to group 2 (over users) internet users (p value 0.009). (table 4). In a previous study by Younes F et al²⁸ significant correlations were found between potential IA and insomnia. Sleep problems are usually considered negative outcomes or complications of internet addiction³⁶, but reverse causation is also possible since sleep problems predicted a longer time spent on social networking sites among young university students³⁷. In a systematic review of the literature, addictive gaming was found to be associated to poorer sleep quality and problematic internet use was associated with subjective insomnia and poor sleep quality³⁸.

In many investigations concerning Internet addiction, researchers tried to understand what kind of psychological qualities people demonstrate when they are overly involved with the Internet. To date, one of the important psychological variables that has been studied and are reported to be correlated with Internet addiction is self-esteem³⁹⁻⁴².

In our study (table 1) no significant statistical difference was found between the means of RSES score values among males (17.49±4.996) and females (17.32±4.867). By comparing the RSES score values between Internet addiction groups we found average RSES Score value was 18.93±4.929 for normal internet users, 16.80±4.373 for over internet users and 16.62±5.827 for possible internet addicts (table 5). As for self-esteem, a significant correlation (p value = 0.043) by ANOVA was found between YIAT groups and RSES scores with higher self-esteem being associated to normal internet users and lower self-esteem was found to be associated with over users and internet addicts. Our study is corroborated by various studies⁴³⁻⁴⁵. As per study by Seabra L et al⁴⁶ internet addiction and self-esteem were significantly and negatively correlated, which suggested that subjects with a low self-esteem present higher levels of Internet addiction, and vice versa. However, there is also research showing that self-esteem is not an important predictor of Internet addiction⁴⁷. Moreover, self-esteem can play a moderating role in the relationship between the intensity of Facebook use and well-being. People with lower self-esteem gain more from their use of Facebook in terms of bridging social capital than people with higher self-esteem^{48,49}. Seabra et al⁴⁶ suggested that it is not the Internet addiction itself but the negative emotions (i.e. sadness, irritability, distress, disguise and deceptive behaviour) experienced by users suffering from Internet addiction that is damaging self-esteem. Greenberg et al⁵⁰ proposed that low self-esteem could lead some individuals to seek temporary relief from problems of life through activities that would allow them to escape reality. Bianchi and Phillips et al⁴⁹ suggested that people with low self-esteem have a tendency to seek reassurance online. Thus, it is possible that self-esteem could be one of these adverse consequences. Another possible explanation for these results is related to the idea that online people develop a self-identity that is an enhanced vision of themselves. Nonetheless, this argument still needs further testing; therefore, we also recommend that further studies examine the evaluation of one's self and self-esteem, giving a special attention to how subjects present themselves online and offline. Moreover, it may also be important for further research in therapeutic settings, to investigate if boosting Internet addicts' self-esteem, will influence therapy outcomes in a positive way.

Therefore, this study has replicated the results from previously reported studies that have examined the role of self-esteem in relation to Internet addiction.

CONCLUSION:

In our study we observed that males had higher internet addiction (72.4%) compared to female. We also observed that over users of internet had significant association with insomnia compared to average users ($p = 0.009$). In our study we found that self esteem score was higher in normal internet users and lower in over internet users and internet addicts. These findings suggest that there is a negative relation between self-esteem and Internet addiction.

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