Original Research Article

Study to assess internet usage patterns and prevalence of internet addiction among medical and engineering students of Bengaluru city

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ABSTRACT

Background: Internet has become today, one of the most powerful tools for everybody, playing major roles in the life of adolescents. In tandem with the splurge in access to the Internet globally, with the rise of new-generation gadgets, the risk of "internet addiction" is emerging as a significant behavioral addiction pandemic to be tackled worldwide.
Methods: A cross sectional study was carried out among 200 medical and engineering students, with 100 selected from each course. Data on internet usage patterns was collected by administering a semi-structured pre-tested questionnaire. Prevalence of internet addiction was estimated by using Young's internet addiction scale.
Results: The mean age of the participants was 18.85±0.197 years, among which 52% were females and 48% were males. While assessing internet usage patterns, it was found that the frequency of years of internet usage for 1-5 years was 80% (160) and that of internet use per day for 0-2 hours was 50.5% (101). Both these factors were significantly associated with internet addiction. Most common location of internet access was hostel, i.e. 51.5% (103). 93.5% (187) of students used Mobile phones and social media was found to be the main purpose for internet use which was 60% (120). Totally 67% (134) of medical and engineering students had internet addiction.
Conclusions: The present study highlights the vulnerability of professional college students for internet addiction. Large scale epidemiological studies should be undertaken to assess the real problem and thereby take appropriate steps to tackle the growing problem.

Keywords: Internet addiction, Professional college students, Internet usage pattern

INTRODUCTION

The term "addiction" has generally been associated with substance use. However, with internet access becoming widespread, problematic internet use is increasingly being reported. It has been suggested that excessive internet use could represent addictive behavior with mental health implications.[1-3]

In tandem with the splurge in access to the Internet globally, with the rise of new-generation gadgets, the risk of "internet addiction" is emerging as a significant behavioral addiction pandemic to be tackled worldwide.

The developing countries are not spared either due to extreme infiltration of technology even into the remotest corners.[4]

College students are especially vulnerable to this, because of, availability of time, unlimited access to the internet, the psychological and developmental characteristics of young adulthood, limited parental supervision and as a project to communication with peers and mentor. And also, internet offering a route of escape from exam stress, all of which make internet overuse a significant cause of concern for parents and faculty.[5,6]

Studies have shown that internet addiction is a worldwide phenomenon and its prevalence varied greatly from 03% to 38% depending on the population studied, methodology of the study, and diagnostic instrument used.[7]

Internet addiction commonly refers to an individual's inability to control his or her use of the Internet (including any online-related, compulsive behavior), which eventually causes one's marked distress and functional impairment in daily life. Internet addiction has also been found to be significantly associated with some psychiatric disorders such as alcohol abuse, attention deficit and hyperactivity, depression, and anxiety.[8]

Since the mid-90s the term "internet addiction" has been proposed and different opinions have been put forward as to whether problematic Internet use should be considered as a psychiatric disorder or a mental illness similar to other well established addictive disorders.[9] Young was the first to find that excessive use of the Internet for nonacademic and nonprofessional reasons was associated with unfavorable effects to academic and professional performance. Greenfield found that approximately 6% of those who use the internet appear to do so impulsively, frequently to point of grave harmful consequences.[10]

The studies in India have showed there is internet addiction among college students but the studies on internet addiction among medical and engineering students are scanty. This study is intended to conduct further research on these aspects.

METHODS

Study design and study setting

A cross sectional study was carried out among first year medical (MBBS) and engineering students studying in professional medical and engineering college respectively in Bengaluru. Ethical clearance was obtained from Institution Ethical Committee. A total number of 200 students, who were using internet since 1 year were included in the study by simple random sampling method, with 100 selected randomly from each of medical and engineering college. Students who gave informed consent were included in the study. Participants were assured that the information given by them would be anonymous and confidential to avoid reporting bias.

Study population

A pilot study was conducted on 20 students and necessary modifications were made before the start of the study based on pilot study.

All questionnaires were distributed to the participants in classroom settings at a predetermined time and were collected onsite after 30 min. The questionnaires were anonymous and self-administered.

Teachers left the classrooms during the 30-min period to avoid any bias, influence or hesitancy.

First, the students were stratified according to their year of academic course, i.e., 1st, 2nd, and 3^{rd}year, and then, the required numbers of participants were selected by simple random sampling method from each group so that each academic year will have equal representation in a study sample.

Sample size

Taking internet addiction as 50% among students of professional courses.

Using the formula,

$$N= \frac{Z^2 \times P\ (1-P)}{d^2}$$

Z=1.96; P=50%; 1-P=50%; d=relative error of 15% of p=7.5

On substituting in the above formula,

N= $(1.96)^2 \times 50 \times 50/(7.5)^2 = 177$

The calculated sample size comes out to be 177.

10% of the sample will be added for non-response rate. 177+17=194. Rounding it to 200 students.

100 medical students and 100 engineering students were selected for the study.

Study tools

A semi-structured, pretested questionnaire was developed and administered to the medical and engineering students.

The questionnaire consisted of:

- Socio-demographic details,
- Questions on pattern of internet usage and
- Young's internet addiction scale was used to assess the degree of internet addiction.[11]
- The rationale for choosing Young's diagnostic questionnaire for the study was that it is the first global psychometric measure and hence has been extensively and frequently used across many studies globally, is self-completed, has been validated on adult and adolescent populations, and has good internal consistency reliability as well as concurrent validity.

The scale reliability observed to be very consistent in the present study (Cronbach's alpha=0.820) showing excellent measure to determine the internet addiction.

RESULTS

A total of 200 questionnaires were collected for the study. The mean age of participants among the study population of 200 students was found to be 18.85±0.917 (Mean±standard deviation) years. Out of 200 students, 58 (58%) were males and 42 (42%) were females. Significant association was not found between male gender and presence of internet addiction (p=0.130) using Chi Square test. Majority of the students belonged to Hindu religion (88.5%) and majority belonged to upper class of socio-economic status (96.5%) as per revised BG Prasad socio-economic classification (Table 1).

While assessing internet usage patterns, it was found that the years of internet usage for 1-5 years was 80% (160), followed by 16% (32) of 6-10 years of internet usage as the study populations are in their early 20s. Years of internet use was found to be significantly associated with internet addiction using Fisher's exact test (p=0.004).

The internet use per day was more for 0-2 hour's i.e., 50.5% (101), followed by for 3-4 hours which was 31.5% (63). Very less proportion of students were using internet for more than 8 hours per day, i.e. 2% (04). This association with internet addiction was found to be statistically significant (p=0.035).

The most common location of internet access was hostel, i.e. 51.5% (103), followed by residence, i.e. 38% (76). Amongst common mode of internet access it was found that mobile internet was most commonly used, i.e. 61.5% (123), followed by Wi-Fi, i.e. 29.5% (59). Negligible proportions used data card and other modalities to access internet. Majority of students used mobile phones, i.e. 93.5% (187) to access internet. Other devices usage like laptops, desktops, etc. was almost negligible. Social media was found to be the main purpose for internet use, i.e. 60% (120). Remaining 40% of students used internet for other purposes like gaming, shopping, academic, etc.

Young's scale of internet addiction

Young's Internet Addiction Test (IAT) is a widely used 20- item instrument that has demonstrated good reliability, to screen for internet addiction.

Young Scale consists of 20 questionnaires and it is assessed based on the following grading.

0=Never; 1=Rarely; 2=Occasionally; 3=Frequently; 4=Often; 5=Always.

1) 20-49 points: Average online user, may surf the web a too bit long at times, but have control over the usage.
2) 50-79 points: Experiencing occasional or frequent problems because of internet impact on life.
3) 80-100 points: The internet usage is causing significant problems in life, should evaluate the impact on the internet on your life and address the problems directly caused by your internet usage.

The required modifications were made to the questionnaire before the start of the study.

Study duration: May- September 2017.

Statistical analysis

Data was entered in MS Excel, analysed using SPSS version 24.

Descriptive statistics (percentage, mean, standard deviation, range) were used to summarize baseline characteristics of the study subjects. Socio-demographic variables were denoted by frequency tables. The prevalence of Internet addiction was described in terms of percentage. An association between two categorical variables was analysed by using Chi-square test and Fisher`s exact test and $p < 0.05$ was considered to be statistically significant.

Table 1: Table depicting baseline socio-demographic data of study population and association between gender and internet addiction.

Variables		Frequency	Percentage	Chi-square	P value
Sex	Male	116	58	2.289	0.130*
	Female	84	42		
Religion	Hindu	177	88.5		
	Muslim	20	10		
	Christian	3	1.5		
Socio-economic status[†]	Upper class	193	96.5		
	Upper middle class	02	1		
	Middle class	02	1		
	Lower middle class	0	0		
	Lower class	03	1.5		
Mean age (years)±SD	18.85±0.917				

*Chi-square test to test association between gender and internet addiction; †According to revised BG Prasad socio-economic classification.

Table 2: Descriptive statistics of internet usage.

Questions on internet usage		Frequency (n=200)	Percentage (%)	Fisher's value	P value
Years of internet use (years)	1-5	160	80	23.317	0.004#
	6-10	32	16		
	11-15	08	04		
Internet use per day (hours)	0-2	101	50.5	26.837	0.035#
	3-4	63	31.5		
	5-6	21	10.5		
	7-8	11	5.5		
	>8	04	2		
Expenditure on internet per month (Rs.)	<300	128	64	21.780	0.007#
	300-600	57	28.5		
	>600	15	7.5		
Most common location of internet access	Residence	76	38	25.942	0.273#
	Cyber cafe	03	1.5		
	Library	04	02		
	Classroom	06	03		
	Computer lab	00	00		
	Hostel	103	51.5		
	Other public places	08	04		
Most common mode of internet access	Wi Fi	59	29.5	26.225	0.426#
	Broadband	05	2.5		
	Data card	13	6.5		
	Mobile internet	123	61.5		
Most used gadget for accessing internet	Desktop	04	02	73.215	0.414#
	Laptop	07	3.5		
	Tablet	02	01		
	Mobile phone	187	93.5		
Purpose of internet usage	Social media	120	60	27.781	0.991#
	Others (shopping, gaming, academic, etc.)	80	40		
Do you use the internet as a way of escaping from problems or relieving stress?	Yes	119	59.5	8.852	0.215#
	No	81	40.5		
Do you think that usage of internet has impaired your physical activities?	Yes	86	43	10.504	0.122#
	No	114	57		
Do you deactivate your social website account during exams?	Yes	65	32.5	14.329	0.293#
	No	135	67.5		

#Fisher's exact test to test association between internet usage patterns and internet addiction is significant.

Table 3: Overall analysis of level of internet addiction as per Young's internet addiction scale.

Young's scale	Frequency	Percentage (%)
Average online user	115	57.5
Experiencing occasional or frequent problems because of internet impact on life	18	09
Internet usage is causing significant problems in life	1	1.5
Total*	134	100

*66 students (33%) were normal users with no kind of addiction, whose values were found missing during analysis as total scoring was less than 20.

Strikingly many students, i.e. 59.5% (119) used internet to solve their problems and relieve stress. However, this was not found to be statistically significant with Internet addiction. Majority of the students, i.e. 67.5% (135) did not deactivate their online account during exams (Table 2).

66 students (33%) were normal users with no kind of addiction and remaining 67% of students were found to have Internet Addiction as per Young's scale. Amongst these 67% students, 57.5% (115) were found to be average online user who surfed the web for lengthy hours. The proportion of students who experienced occasional or frequent problems because of internet impact on life was found to be around 9% (18). Only 1.5% (1) of study population was facing significant problems in life because of internet usage (Table 3).

DISCUSSION

Among the study population of 200 students, the mean age of the participants was 18.85±0.197 years. Male constituted 52% of study population while female constituted 48% of the study population.

While assessing internet usage patterns, it was found that the years of internet usage for 1-5 years was 80% (160), followed by 16% (32) of 6-10 years of internet usage as the study population is in their early 20s. Years of internet use was found to be significantly associated with internet addiction using Fisher's exact test (p=0.004). A study by Krishnamurthy et al among college students in Bengaluru found that the patterns of Internet use are extremely varied, with the majority of students having been using computers for more than 5 years, using Internet for less than 5 h a day, which is similar to our study.[5]

The internet use per day was more for 0-2 hours i.e. 50.5% (101), followed by for 3-4 hours which was 31.5% (63). Very less proportion of students was using internet for more than 8 hours per day, i.e. 2% (04). This association with internet addiction was found to be statistically significant (p=0.035). A study by Sharma et al among professional college students in Jabalpur, Madhya Pradesh found that more than sixty percent of sample (65.7%) spending <2 hours per day on internet which is similar to our study.[12] Grover et al, in their study also found that more than half (56.73%) of the sample was using internet at least for 2h/day which is in line with our study.[13]

The most common location of internet access was hostel, i.e. 51.5% (103), followed by residence, i.e., 38% (76). Amongst common mode of internet access it was found that mobile internet was most commonly used, i.e. 61.5% (123), followed by Wi-Fi, i.e. 29.5% (59). Negligible proportions used data card and other modalities to access internet.

Majority of students used Mobile phones, i.e. 93.5% (187) to access internet. Other devices usage like laptops, desktops, etc. was almost negligible. The findings of the study show that majority of students these days have access to smartphones which has become the most preferred gadget for accessing internet. A study by Krishnamurthy et al among college students in Bengaluru also found that mobile phone is the most preferred gadget for Internet use.[5]

Social media was found to be the main purpose for internet use, i.e. 60% (120). Remaining 40% of students used internet for other purposes like gaming, shopping, academic, etc.

Strikingly many students, i.e. 59.5% (119) used internet to solve their problems and relieve stress. However, this was not found to be statistically significant with Internet addiction Majority of the students, i.e., 67.5% (135) did not deactivate their online account during exams. This is a worrying situation as this may affect their academic performance and activity.

Our study showed that 67% (134) of students had internet addiction. The prevalence of Internet addiction was 67%. 66 students (33%) were normal users with no kind of addiction. Amongst this 67% students, 57.5% (115) were found to be average online user who surfed the web for lengthy hours. The proportion of students who experienced occasional or frequent problems because of internet impact on life were found to be around 9% (18). Only 1.5% (1) of study population were facing significant problems in life because of internet usage.

Study by Kishore et al among college going students in Nanded city assessed internet addiction by using Young's scale and found that mild internet addiction was seen among 90 (31.36%) of study subjects and moderate internet addiction was in 99 (34.49%). None of study subject was having severe addiction.[14]

Study by Krishnamurthy et al found 37.6% and 8.2% of college students had mild and moderate internet addiction respectively. College students are highly vulnerable for internet addiction.[5] Study in Jabalpur, Madhya Pradesh, the internet addiction test scoring revealed 57.3% as normal users, 35.0% as mildly addicted to the Internet, 7.4% as moderately addicted, and 0.3% as severely addicted. Internet addiction is a growing problem among the students of professional courses.[12]

Study by Chathoth Mavila et al among medical (MBBS) students in Mangalore revealed prevalence of internet addiction in 18.8% of students.[15]

A study on internet addiction disorder among medical students in China reported a prevalence of 16.2%.[16] Naffise Mashaei et al observed the prevalence of internet addiction in students of Rafsanjan University of Medical Sciences, Iran, as 51.3% mild, 5.4% moderate and 0.9% severe, while 42.4% students were not addicted to the internet.[17]

Study by Choudhari et al among medical students in Maharashtra found internet addiction prevalence to be 58.87% which is very similar to our study. About 51.42% of the students were mildly addicted while 7.45% of the students were moderately addicted to the internet.[18]

The studies that have estimated the prevalence of Internet addiction have come up with varying results (0.9-38%) depending on the criteria used and the sample studied.[19,20]

In the present study, our findings show that internet addiction is present among majority of medical and engineering students and the level of internet addiction is high. Internet usage patterns among the medical and engineering students highlights that majority of the study population have been using internet for less than 2 hours per day and majority of them have been accessing internet for less than 5 years. The most common location of internet access is hostel and mobile phone is the most preferred gadget. The expenditure on internet use per month is less that Rs. 300. Social media is the main purpose for accessing internet. However, daily internet usage has not impaired the physical activity among these professional college students. Strikingly, our study showed that many students use internet to solve their problems and relieve stress which seems ironical. Further research is needed on this aspect. Majority do not deactivate their online account during exams, which possesses a worrisome picture on their academic performance.

The present study highlights the vulnerability of professional college students for internet addiction which seems to be rising at an alarming rate. Large scale epidemiological studies should be undertaken to assess the real problem and thereby take appropriate steps to tackle the growing problem.

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