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A cross-sectional study on assessment of prevalence of Internet addiction and its correlates among professional college students

Abstract

Background: There has been a growing social concern about the excessive use of Internet in recent times. The exponential growth of the Internet has caused a huge impact on interpersonal communication and behaviour. **Methods:** This cross-sectional study was designed to assess the prevalence and determinants of Internet addiction among professional college students. Study was conducted after obtaining approval from Institutional Ethics Committee and permission from the concerned colleges. Total participants were 934 students from four different colleges in Bagalkot city. Participants were given a specially designed proforma and Young's Internet Addiction Test (IAT), an instrument to categorise the subjects based on severity. **Results:** This study of college students had total 934 subjects with age groups between 15 and 30 years (mean±SD=20.10±1.86 years), with female and male population representing 55.2% and 44.8% respectively. The prevalence of severe Internet addiction was found to be 0.6%, and 18.8% having moderate addiction. Nearly, 47.4% of the subjects with moderate addiction were using Internet for more than ten hours per day. **Conclusion:** Internet addiction needs to be considered as a serious issue among college students. It is the need of the hour to create awareness of this entity to the vulnerable population.

Keywords: Students. Internet. Social Networking. Prevalence.

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Introduction

There has been an exponential growth in the Internet usage not only in India but also worldwide in the last decade. There are multiple reasons for the usage of Internet. It helps in seeking knowledge, facilitates research activities, for the ease of communication among people, for business transactions, for entertainment, pornography, gaming, social networking, and even gambling. The concern regarding the so-called Internet addiction is growing worldwide. Davis[1] considered addiction as a dependency on psychoactive substances, so he preferred the term "pathological Internet use" (PIU) instead of Internet addiction. But in 1995, Dr. Ivan Goldberg[2] proposed the term Internet addiction instead of pathological compulsive Internet use. As per Griffith,[3] any behaviour meeting the six "core components" of addiction, i.e. salience, conflict, mood modification, withdrawal, tolerance, and relapse is to be termed as behavioural addiction, and Internet addiction is also a part of this.

Young[4] developed the Internet Addiction Test based on the DSM-IV criteria. According to her, various types of Internet addiction are computer addiction, cyber sexual addiction, net compulsions, cyber relationship addiction, and information overload.[4] Many studies have been done for assessing the prevalence of Internet addiction. A study done by Greenfield[5] among the general population reported it to be about six per cent. Yet another one done among the college based population by Scherer[6] reported it to be 14%. As per the online surveys, prevalence of Internet addiction was four to ten per cent but the surveys in general population reported a prevalence of 0.3% to 0.7%.[7] An Indian study by Sharma *et al.*[8] says that prevalence of Internet addiction is around 5.58% which includes 3.96% in boys and 1.96% in girls. In outlook, if it is added, it is more likely to be classified as a desire control disorders not elsewhere classified rather than in the diagnostic criteria for substance dependence.[9]

Researchers have tried to find out the contributing factors associated with Internet addiction. It is proposed that some familial, personal, social characteristics along with some Internet-related factors are predicting Internet addiction. Male gender,[6,10] peer influence, initial course years, permanently logged in status, and using Internet for pornography, chatting, making new friends online, getting into online relationships,[11] time spent on Internet per day, mode of using Internet,[10] speed of Internet, and intensity

of information accessed online[12] were some of the factors found to be associated with Internet addiction.

A study by Chaudhari *et al*.[13] reported that males, students staying in private accommodation, lower age of the first Internet use, using mobile for Internet access, more monthly expenditure on the Internet, more time spent daily on the Internet, using Internet for social networking, watching videos online, and visiting websites containing sexually explicit material were found to be significantly associated with Internet addiction. Another study from Ahmedabad, found out that prevalence of Internet addiction being 11.8% and it was predicted by time spent online, usage of social networking sites, and chat rooms but not by age and gender.[14]

In India, use of Internet is huge, particularly in the young people. Thus, it was found essential to study pattern of Internet habit in young adults in Indian scenario, and its association with their mental and physical health. There are not enough epidemiological studies in large scale and there are no definite diagnostic criteria to establish Internet addiction. Earlier studies have been conducted in various parts of India. No study has been conducted in this area. Taking into consideration all these factors, it becomes an interesting avenue to explore the patterns, prevalence as well as the possible implications of Internet addiction among professional college students in Bagalkot city. With this background in mind, the present study was undertaken.

Aims and objectives

1. To find out the prevalence of Internet addiction among professional students in Bagalkot
2. To correlate socio-demographic details and patterns of Internet use with severity of Internet addiction.

Materials and methods

It was a cross-sectional study. Study was conducted in November 2015 till January 2016. Study group consisted of professional college students from Bagalkot. Colleges were selected after getting list of all the professional colleges through Internet search, based on random selection method by picking the chits. The sample size was calculated based on the previous prevalence studies done in India taking prevalence of 18.8% and for a 95% confidence level with allowable error of 15%. Sample size came out to be 750.

Inclusion criteria

1. Age between 15-30 years
2. Students in professional college
3. Those who have been using the Internet at least for a period of six months
4. Those who have given written informed consent.

Exclusion criteria

1. Subjects who refused to give written informed consent.

Procedure

List of all the professional colleges in Bagalkot were taken from Internet and randomly colleges were selected according to the need of sample size. Based on the proportion of students in each college, corresponding number (proportion) of students were selected from different colleges as compared to study sample size. The nature and the purpose of the study was explained briefly to the study population in the informed consent form, and then the study population was recruited according to inclusion-exclusion criteria based on computer generated lottery method of simple random sampling. We included all the participants who had given the written consent and those who have been using the Internet at least for a period of six months. Ethical clearance was obtained from the Institute's Ethics Committee (Human Studies). Written informed consent (English) was taken from all study subjects, before enrolment in the study.

Tools for assessment

The tools used in the study are as follows:

1. Semi-structured proforma: It contained socio-demographic details, marital status, purpose of the Internet use, gadgets used and place of access of Internet, time spent, frequency, presence of fake accounts, having problems with Internet use, etc.
2. Internet Addiction Test (IAT): The Internet Addiction Test (IAT)[15] is a 20-item five-point Likert scale that measures the severity of self-reported compulsive Internet usage. Total scores are calculated after adding the score on all twenty items so as to get the score which ranges from 20 to 100. The scale showed very good internal consistency, with an alpha coefficient of 0.93 in the present study. Young's IAT is a self-rated scale developed for screening and measuring level of Internet addiction, and has been used extensively for this purpose worldwide. It contains 20 questions related to Internet usage to be scored on Likert scale from one (rarely) to five (always). A total score of 20 to 49 points corresponds to an average online user (mild addiction). Subjects falling into this group have control over their Internet usage. Scores between 50 and 79 represent moderate addiction. These are the people experiencing occasional or frequent problems because of the Internet, having full impact on their life. Scores between 80 and 100 represents severe addiction. Their Internet usage is causing significant problems in their life. They should evaluate the impact of the Internet on their life and address the problems directly caused by their Internet usage. The validity and reliability of Young's IAT has been tested in many studies.[12,16] Its reliability in Indian population and college students has also been established by several studies.[10,11]

Statistical analysis

Datsa was collected and tabulated using Microsoft excel. Frequency and percentages are calculated for all quantitative measures. Statistical Package for Social Studies (SPSS) was used to process the data. Mean and standard deviation (SD) were calculated for qualitative measures. Chi-square test and Fisher's exact test were used to analyse categorical values and check the association between two variables. One-way analysis of variance (ANOVA) was used to analyse quantitative variables. p-value of <0.05 is considered as statistically significant.

Results

Of the total 941 students, seven students were excluded as they were not using Internet in the last six months. Then, total of 934 students were finally recruited for the study. Participants' age had range from 17 to 29 years. Mean age of the respondents was 20.10 (SD 1.86) years. Mean score of the Internet addiction was 38.60 (SD 13.09). Sociodemographic characteristics of the study population and pattern of Internet use are depicted in Tables 1 and 2 respectively. Prevalence of severe form of Internet addiction was 0.6% as depicted in Table 3.

With respect to the gender differences and Internet addiction, as depicted in Figure 1, more percentage of females have fallen in the group of severe and mild addiction compared to males. But the male subjects outnumber the females in moderate addiction as seen in Table 4. Twenty six participants (2.8%) reported that they had poor academic performance, 21 subjects (2.2%) said that they had to remain absent for the colleges, and 0.1% (n=one) discontinued studies due to the Internet addiction. Nearly ten subjects (1.1%) reported that they had significant family conflict, 6.4% (n=60) had family conflicts not more than significant whereas 92.5% (n=864) subjects reported that they did not have any family conflicts. Twenty one participants (2.2%) accepted of having fake Internet accounts and 6.9% (n=64) reported of having online relationships. Eighty three subjects (8.9%) had active relationship and 2.8% (26)

Table 1: Sociodemographic details

Variables	N=934 (%)
Gender	
Male	418 (44.8)
Female	516 (55.2)
Education	
Engineering	480 (51.4)
Medical	242 (25.9)
Dental	123 (13.2)
Nursing	89 (9.5)
Socioeconomic status (SES)	
Higher SES	732 (78.4)
Lower SES	202 (21.6)
Marital status	
Single	915 (98)
Married living with spouse	18 (1.9)
Divorced	1 (0.1)
Religion	
Hindu	816 (87.4)
Muslim	49 (5.2)
Christian	56 (6.0)
Others	13 (1.4)
Personal history	
High risk behaviour	7 (0.7)
Gambling	11 (1.2)

Table 2: Patterns of Internet use

Variables	N=934 (%)
Reason	
Media	502 (53.7)
Education	806 (86.3)
Business	114 (12.2)
Social network	574 (61.5)
Gaming	274 (29.3)
Shopping	453 (48.5)
Pornography	135 (14.5)
Others	140 (15)
Mode	
Desktop	166 (17.8)
Laptop	459 (49.1)
Mobile	748 (80.1)
Tablet	92 (9.9)
Money spent (in rupees)	
<100	255 (27.3)
100-500	324 (34.7)
501-1000	154 (16.5)
1001-2000	89 (9.5)
>2000	112 (12)
Place of use	
Home	844 (90.4)
Cybercafé	60 (6.4)
Office	81 (8.7)
Time of Internet access	
Morning	48 (5.1)
Afternoon	65 (7.0)
Evening	384 (41.1)
Night	437 (46.8)
Did not mention	2 (0.2)
Exposure to Internet access (years)	
<1	240 (25.7)
1-3	304 (32.5)
3-5	173 (18.5)
>5	217 (23.2)
Average duration of Internet use per day (in hours)	
<1	368 (39.4)
1-5	478 (51.2)
5-10	69 (7.4)
>10	19 (2.0)
Frequency of use	
Daily	629 (67.3)
3-4 days/week	176 (18.8)
1-2 days/week	94 (10.1)
1-3 days/month	19 (2.0)
<1/month	16 (1.7)

Table 3: Prevalence of Internet addiction; N=934

Type of prevalence	Internet addiction test (IAT) criteria	*n* (%)
Mild	Score 20-49	752 (80.6)
Moderate	Score 50-79	176 (18.8)
Severe	Score 80-100	6 (0.6)

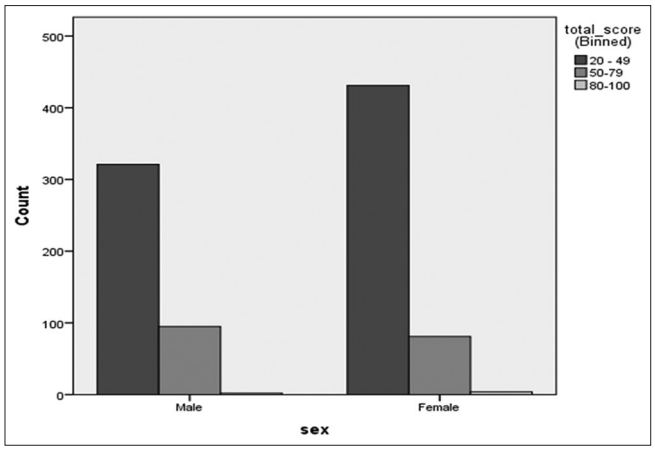

Figure 1: Gender and Internet addiction scores.

of the participants reported of having active relationship with fake identity. Twenty seven subjects (44.3%) with real life break-ups had moderate addiction [$\chi^2(2)=29.043$, $p<0.005$]. Five participants (71.4%) having high risk sexual behaviour had moderate Internet addiction [$\chi^2(2)=12.758$, $p<0.005$] whereas we found no such relationship with gambling [$\chi^2(2)=0.076$, $p=0.962$]. The average duration of use of Internet and the amount spent for using Internet was proportionately high in subjects with moderate and severe Internet addiction as shown in Table 5.

We performed the chi-square test for investigating the factors associated with Internet addiction. Male gender, use of Internet for academic purposes, average duration of use per day, money spent per month, having fake Internet account, having online relationships, number of online relationships, having real life relationship, active relation with fake identity, real life break-ups were potential influential factors ($p<0.05$), whereas age, educational status, marital status, socioeconomic status, type of gadgets used for Internet access (e.g. desktop, laptop, mobile phone) and place of Internet use (e.g. home, cybercafé, college), time of access, and frequency were not found to be significantly influential factors. A summary of the significant risk factors has been shown in Tables 4 and 5.

Discussion

There has been a significant variation in the reporting of prevalence of Internet addiction (0.3% to 38%).[17] Studies from the West have reported prevalence rates varying from 1.5 to 8.2%.[18] These variations might be because of the various scales used for assessing the Internet addiction as the cut off points differ accordingly for categorising the severity of addiction. We used Young's IAT as it has high internal consistency and validity, and Widyanto and McMurran[19] have tested the psychometric properties of this scale. Complexity establishing a rational picture for this disorder is often encountered by researchers and clinicians.[20]

Our study has involved large population of more than 900, and reported the prevalence of severe and moderate Internet addiction being 0.6% and 18.8% respectively. Our results are comparable with an Indian study done using Young's IAT in Jabalpur city which revealed the prevalence of severe and moderate addicts as 0.3% and 7.4% respectively.[21] Another Indian study by Krishnamurthy and Chetlapalli[11] reported prevalence of moderate addicts and mild addicts as nine per cent and 34% respectively. They did not report of any severe addicts' cases. A study done in South India reported 41.3% had mild addiction and 15.2% had moderate addiction.[10] Of the total, about 74.5% were moderate (average) users. Using Young's original criteria, 0.7% were found to be addicts.[22]

Our study says female participants are affected more than males in mild and severe addiction but in moderate addiction, males are affected more than females as seen in studies.[11,23] This shows a recent trend in the surge of Internet use and related problems in females too. This study reported that Internet addicts spend high amount of money (Rs.1000-2000 per month) and also spend more than ten hours per day which is corroborated by various other studies too.[11,13,24] The earlier studies which involved managers and presidents in a factory reported that workers with access to the Internet at their desks use a substantial amount of their working day engaging in unrelated work through Internet usage.[25]

Adolescent population is more susceptible to significant various psychological changes and personality developmental issues due to the underlying hormonal variations.[26] Also because of lack of parental supervision, they are more vulnerable to getting into online friendships, which later might lead into serious online relationships. This study conveys that many of the participants use Internet daily on an average duration of one to five hours, most commonly for academic purposes followed by social networking with commonest mode of use being mobile phones with maximum usage at homes, preferably during night hours. Numerous factors have been credited to this susceptibility of the students for Internet addiction. Students possess comparatively higher proportion of unstructured time when they can use Internet. Young students have more urge to use the latest electronic devices and technologies as well as the latest application accessible on Internet. Adolescents have less parental in charge of censoring of what students do in the online and these students have their own developmental desires. Among these important are developing a sense of identity and developing meaningful and intimate relationship.

Strengths and limitations

The major strength of our study is the large population which involves major professional colleges in Bagalkot. The response rate given by the participants was also very high. Our study included relationship issues, holding of fake accounts which showed significant finding. Limitations are the recall biases as in earlier studies.

Table 4: Association between sociodemographic variables and Internet addiction severity

Variables	Internet addiction severity			p-value
	Mild (20-49)	Moderate (50-79)	Severe (80-100)	
Age				
Mean±SD	20.11±1.888	20.07±1.788	19.67±0.616	0.825
Gender				
Male	321 (76.8%)	95 (22.7%)	2 (0.5%)	0.019*
Female	431 (83.5%)	81 (15.7%)	4 (0.8%)	
Socioeconomic status				
Upper	598 (81.7%)	128 (17.5%)	6 (0.8%)	0.072
Lower	154 (76.2%)	48 (23.8%)	0 (0.0%)	
Education				
Engineering	381 (79.4%)	95 (19.8%)	4 (0.8%)	0.885
Medical	199 (82.2%)	42 (17.4%)	1 (0.4%)	
Dental	102 (82.9%)	20 (16.3%)	1 (0.8%)	
Nursing	70 (78.7%)	19 (21.3%)	0 (0.0%)	
Marital status				
Single	736 (80.4%)	173 (18.9%)	6 (0.7%)	1.000
Married	15 (80.5%)	3 (16.7%)	0 (0.0%)	

*Significant at <0.05

Table 5: Association between variables of Internet use and severity of addiction

Variables	N (%)			Total	p-value
	Mild	Moderate	Severe		
Use of Internet for academics					
Yes	658 (70.4)	145 (15.5)	3 (0.3)	806 (86.3)	0.007*
No	94 (10.1)	31 (3.3)	3 (0.3)	128 (13.7)	
Average duration of use per day (in hours)					
<1	320 (34.3)	48 (5.1)	0 (0)	368 (39.4)	0.000*
1-5	379 (40.6)	96 (10.3)	3 (0.3)	478 (51.2)	
5-10	44 (4.7)	23 (2.5)	2 (0.2)	69 (7.4)	
>10	9 (1.0)	9 (1.0)	1 (0.1)	19 (2.0)	
Money spent per month (in rupees)					
0-100	214 (22.9)	41 (4.4)	0 (0)	255 (27.3)	0.039*
101-500	267 (28.6)	55 (5.9)	2 (0.2)	324 (34.7)	
501-1000	118 (12.6)	36 (3.9)	0 (0)	154 (16.5)	
1001-2000	71 (7.6)	16 (1.7)	2 (0.2)	89 (9.5)	
>2000	82 (8.8)	28 (3.0)	2 (0.2)	112 (12)	

*Significant at <0.05

Conclusion

Internet addiction is a wide concept. Though, it may still remain a matter of discussion whether to call Internet dependence a different disorder by itself or a behavioural problem less important to another disorder. At present, DSM-5 has not acknowledged criteria to diagnose or label Internet addiction. By studying the involvement of Internet usage and its effects on human activities, we can make interventions like setting limitations and detecting early caution signs of underlying psychopathology at the earliest.

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