Internet Use among Students and Its Association with Depression and Insomnia: A Cross Sectional Study

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Abstract—Internet is an integral part of modern life. However excessive internet use has become a growing concern especially in youth who tend to become internet addict over a period of time. This addiction may also lead to psychological consequences .present study explores the pattern and prevalence of internet addiction and its association with depression and insomnia in such users. In this cross sectional study conducted on students through various questionnaires. Internet addiction test, Patient heath questionnaire-9, and Insomnia severity index were used to assess severity of internet use, depression, and insomnia respectively. This study observed 61.7% average users, 35.7% over users and 2.7% of internet addicts. Internet use was more common in males than females. Education (67.8%) was most common purpose of use. Mobile phone (84.67%) was most common mode of internet use. Out of total internet users 22.7% were smokers and 24.7% were alcoholics. Severity of internet use was not found to be associated neither with smoking nor with alcoholism. Association of internet addiction and overuse was established with depression and insomnia in this study. It can be concluded that internet addiction has been a significant concern in young age group. Depression and insomnia is associated with internet addiction and overuse.

Keywords: Internet use, Internet Addiction, Depression, Insomnia.

I. INTRODUCTION

In the past few years internet has become an integral part of our life. It has enabled us to access all desired information.

However, over a period of time people have begun overusing it and sometimes becoming internet addict leading to many neurological, psychological and various other problems. India had about 205 million internet users in 2012, and it will become a second leading internet users after China in coming time.[1] Internet addiction, was the term coined by Dr Ivan Goldberg in 1995, for pathological compulsive internet use.[2] Excessive internet use was linked to pathological gambling by Young[3], who used DSM-IV criteria to develop Internet Addiction Test. The prevalence of internet addiction has been found to be in the range of 1.6% to 1.8% in various populations.[4,5] General population survey shows prevalence of 0.3% to 0.7%[6] with addicts spending average 38.5 hour per week on a computer as compared to the non-addict which averaged 4.9 hour/week. Goel D[7], reported 24.8% as possible addicts and 0.7% as addicts in his study of internet addiction among Indian adolescents.

Overuse of Internet has been related to many psychological problems including anxiety, depression and insomnia.[8-10] The present study was planned to investigate the pattern and the prevalence of internet usage in students and its relationship with insomnia and depression.

II.   METHODOLOGY

This cross-sectional survey included 398 subjects of both sexes using internet for past 1 year. The study participants were selected by purposive sampling. Approval was taken from concern authorities. The participants were informed about the nature and purpose of study before including them written informed consent was taken from them.

Information was collected by giving them a questionnaire performa containing details of demographics, educational qualifications and status, purpose of using internet, time of day when internet was use and average duration per day etc.

Tools—internet addiction, depression and insomnia were assessed on Internet Addiction Test (IAT)[3], Patient Health Questionnaire (PHQ-9)[11] and Insomnia Severity Index (ISI).[13]

Internet Addiction Test (IAT)[3]: The Internet Addiction Test (IAT; Young 1998)[3] is a 20 – item 5 point likert scale measuring the severity of self reported compulsive use of internet. The total internet addiction scores are calculated with the possible scores for the sum of 20 ranging from 20 to 100. The scale showed good internal consistency with an alpha coefficient of 0.93.[7] According to the Young's criteria, the total IAT scores of 20-39 represent average user and these ones are complete control on their internet use. The score of 40-69 represents over users having frequent problem on using internet and the score of 70-100 representing internet addicts with significant problems caused by their internet use.

Patient Health Questionnaire (PHQ-9)[11]: It is a self reported version of PRIME -MD11, accessing the presence of major depressive disorder using Diagnostic and Statistical Manual, fourth edition (DSM-IV) criteria. There is a good agreement reported between the PHQ diagnosis and those of independent psychiatry health professionals (for the diagnosis of any one or more PHQ disorder, kappa = 65; overall accuracy, 85%; sensitivity, 75%; specificity 90%).[11,12] In this study, hindi version of PHQ-9 was used. It is a reliable tool for the diagnosis of depression in Indian population. For the diagnosis of depression, it is defined that clinical significant depression as PHQ-9 score of 8-9 as minor depression, PHQ-9 score of 10 or more as moderate depression and a score of 15 or more and one of the two cardinal symptoms (either depressed mood or anhedonia) as major depression. In this study, a PHQ-9 score of 10 or more is taken as depression.

Insomnia Severity Index (ISI)[13]: ISI[13] is a commonly used disease specific measure to assess self-perceived insomnia severity. The ISI has 7 items describing insomnia related health impairment. Each item is rated on a 5 point likert scale with scores ranging from 0 to 4 indicating none, mild, moderate, severe and very severe. The total ISI score is calculated by summing the scores from 7 items, from a range of 0 to 28. The psychometric properties of the ISI have been evaluated in the earlier studies and have been reported to have sound measurement quality of measuring insomnia severity index which has a reliability of 0.91 and a corrected item correlation of 0.56-0.87.[14] In this study hindi version of ISI was used[15] Clinical significant insomnia was detected when ISI score was > 14.[16]

Statistical Analysis: The data collected was entered into Microsoft excel 2010 worksheet in the form of mater chart and analysed as per aims and objectives of the study. The data on sample characteristics was represented in the form of table and categorical variables were tabulated using frequencies and percentages. Chi square test was used to find out association of internet use with various factors including insomnia and depression.
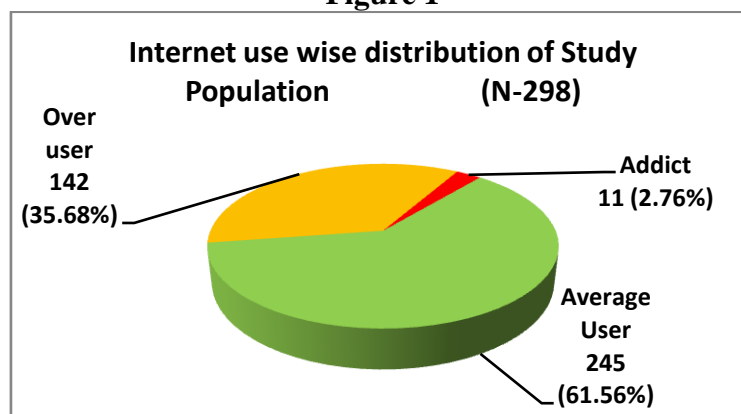
III. RESULTS

Out of total 398 subjects, 77.7% were male and 22.3 were female. Most of them (77.9%) were Undergraduates with only 22.1% post graduates. Out of 398 subjects. 90 (22.11%) had the habit of smoking and 98 (24.62%) had the habit of taking alcohol. (Table 1)

TABLE 1
SOCIO-DEMOGRAPHIC DISTRIBUTION OF STUDY POPULATION (N=398)

S. No.	Socio-demographic Variables		Number	Percentage
1	Sex	Male	309	77.64
		Female	89	22.36
2	Education	UG	310	77.89
		Pg	88	22.11
3	Substance abuse	Smoking	90	22.61
		Alcohol	98	24.62

Among 398 subjects, 61.7% were average users, 35.7% were over users and 2.7% were internet addicts. (Figure 1)

Figure 1

Internet use wise distribution of Study Population (N-298)

Over user 142 (35.68%)

Addict 11 (2.76%)

Average User 245 (61.56%)

Among them 67.8 % used internet for education, while 48.5 % and 61% of students used internet for entertainment and social networking respectively. Mobile phone was most common mode of internet use (84.67%) followed by desktop (28.1%), Laptop (26.7%) and tablet (7.5%). (Table 2)

TABLE 2
DISTRIBUTION OF STUDY POPULATION AS PER VARIOUS STUDY VARIABLES (N=398)

S. No.	Study Variables		*Number	Percentage
1	Use for	Education	270	67.83
		Entertainment	193	48.49
		Social network	243	61.05
		Business	52	13.06
2	Mode	Mobile phone	337	84.67
		Desktop	112	28.14
		Laptop	106	26.63
		Tablets	30	7.53
		Any other	4	1
3	Time Slot for Internet use	Morning	67	16.83
		Afternoon	168	42.21
		Evening	200	50.25
		Night	183	45.97
4	Duration of Internet Use	<2 hrs	275	69.09
		>2 hrs	123	30.90

***Multiple response**

Most users preferred evening (50.3%) and night (46%) time for internet use, 42.2% used internet in afternoon and only 16.9% used it in morning. Most of the users spent less than 2 hrs (69.1%) on internet while 30.9% spent more than 2 hrs per day on internet. (Table 2)

Out of total students 22.7% were smokers and 24.7% were alcoholics. Among smokers, 38.9% were internet over-users and 2.9% were internet addicts.43% of alcoholics were over-users while 2% were addicts. (Table 3)

TABLE 3
ASSOCIATION OF INTERNET USE WITH SUBSTANCE ABUSE (N=398)

Substance variables	abuse	Average user (N=245)	Over User (N=142)	Addicts (N=11)	Total (N=398)	P Value LS
Smoking	**Yes**	53(58.89)	35(38.89)	2(2.22)	90(100.00)	0.745 NS
	No	192(62.38)	107(34.74)	9(2.92)	308(100.00)	
Alcoholism	**Yes**	54(55.10)	42(42.86)	2(2.04)	98(100.00)	0.223 NS
	No	191(63.67)	100(33.33)	9(3.00)	300(100.00)	

Among those students who scored ≥ 10 on PHQ-9, 5.6% were addicts and 53.3% were over-users while in students with PHQ ≤10 only 1.9% were addicts and 30.5% over-users. This difference in distribution of Internet addicts as per PHQ status was found statistically significant. So Internet use was found to associate with depression. Likewise in subjects who had insomnia, 2.5% were addicts and 44.8% were over-users, while in subjects without insomnia, 2.9% were addicts and 29.9% were over-users. This difference in distribution of Internet addicts as per Insomnia status was found statistically significant. So Internet use was found to associate with presence of insomnia. (Table 4)

TABLE 4
ASSOCIATION OF INTERNET USE WITH PHQ AND INSOMNIA (N=398)

Substance variables	abuse	Average user (N=245)	Over User (N=142)	Addicts (N=11)	Total (N=398)	P Value LS
PHQ	**<10**	208(67.5%)	94(30.5%)	6(1.9%)	308(100%)	<0.001 S
	>10	37(41.1%)	48(53.3%)	5(5.6%)	90(100%)	
Insomnia	**Yes**	81(52.6%)	69(44.8%)	4(2.5%)	154(100%)	0.010 S
	No	164(67.2%)	73(29.9%)	7(2.9%)	244(100%)	

IV. DISCUSSION

A number of studies have been performed to know about the prevalence of internet addiction in various groups. The present study was planned to know the prevalence of internet addiction in students and its association with insomnia and depression.

This study shows 2.76% of internet addicts in study population. Wide variations of internet addiction 1.6 to 1.8% among adolescents have been reported.[4] Prevalence of problematic internet use in adolescents in Europe was reported ranging from 1.2% to 1.8%.[5] Yang et al[17] has reported prevalence of internet addiction as high as 13.8% in 170 adolescents in Taiwan. An Indian study of adolescents reported the prevalence of possible addicts (over users) and addicts as 24.8% and 0.7% respectively.[7]

The present study shows, that the boys were more addicted to internet than girls. Similar observations were made in several studies in the past.[18,19] Since boys are considered to have more liberty than girls in our society and given more freedom, they use and have access to internet more than girls. There are studies to show that boys play online games more than the girls.[20] The male gender has more access to addictive substances and use it more frequently than the girls. In this study 22.61% internet users were

smokers and 24.62% reported alcohol consumption. Studies done in past have shown a possible association of internet addiction with alcohol and smoking.[21,22] Sung J et al[23] in his study of adolescents established a positive association of internet addiction with smoking and alcohol. Studies have also suggested that, adolescents with internet addiction may have personalities vulnerable to any other addiction and hence are at increased risk of substance abuse.[24] In a review of a research on internet addiction, people at a risk of internet addiction spent more time online.[25] ln this study time spent on internet use was also positively correlated with internet addiction. In another study, done by Kuss D J[20], daily use of internet and increased time online was directly related to internet addiction. This study also found a significant association of internet addiction and insomnia Similar results were found in study by Bhandari PM et al.[26] Association of depression was established with internet addiction and overuse in this study. High correlation amongst Indian adolescents between Internet addiction and depression has also been mentioned in studies done in past[7]. The psychological problems, mainly depression are having independent relationship with internet addiction. A depressive person uses internet more and it is also true vice versa i.e. internet addict may become more depressive. The negative thoughts of an internet addict flare up, when he isn't using internet and that, it is temporarily replaced by positive vibes by using internet. The association between internet addiction, insomnia and depression were done in a study which showed internet addiction and sleep quality independently mediated 16.5% and 30.9% indirect effect of each other on depression.[26]

V.   CONCLUSION

Internet addiction and overuse is a growing concern in youth. There are several parameters like gender, smoking and alcohol which have been associated with the Internet addiction and overuse. There is also a significant association of Internet addiction and over use with insomnia and depression.

CONFLICT OF INTEREST

None declared till now.

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