Internet Addiction and Sleep Quality Among Medical Students of Delhi: A New Age Epidemic

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ABSTRACT

Background: Recently there is an explosive growth of internet usage among youth worldwide. Internet addiction is defined as psychological dependence on the Internet leading to inability to control one's use of the Internet.

Objective: To study the prevalence of internet addiction and quality of sleep among medical students of Delhi and to find out the factors associated with internet addiction.

Methods: A cross-sectional study, using stratified random sampling method was conducted among undergraduate students of VMMC & Safdarjung hospital Delhi. Young's internet addiction test and Pittsburgh sleep quality index was administered.

Results: Mean age of study participant was 20.3 ± 2.3 SD years. Internet addiction was found in more than half of the study participant. Poor sleep quality was also found in more than half (57.2%) of them. On analysing internet addiction with associated factors, it was observed that gender, monthly data usage, source of internet use, phone use while eating, ever notice by teacher in class while using phone, monthly expenditure and quality of sleep were statistically significantly (p < .001) associated.

Conclusion: This study implies that internet addiction was high among medical student. More than half of the study participants was suffering from poor sleep quality.

Keywords: Internet addiction, Sleep quality, medical students, Cross-sectional, Delhi

INTRODUCTION

Over the last two decades, Internet use has become one of the most important tools of information, education, job opportunities, entertainment including social media gaming and networking. Internet use has grown exponentially worldwide to more than 2.5 billion active users[1-2] with the majority being adolescents and young people.[3] It is estimated that in India, about 18 per 100 of the general population are active Internet users and most are young adults[4]. According to various studies in world, internet addiction can af-fect occupational and academic goals leading to psychological distress[5-8]. Globally, the prevalence of internet addiction ranged from 1.6% to 18%[9] and it is more common in young age groups. World health organization has not included internet addiction in the list mental disorders but gaming disorder is present in international classification of Diseases (ICD11).

Internet addiction is defined as psychological dependence on the Internet leading to inability to control one's use of the Internet. It can have marked harmful implications in social, familial and individual

domains of person's life[10]. Poor quality of sleep is closely associated with mobile phone use, especially among those individuals who use their phone before going to sleep. Many of the young students in medical college have come out of their home for the first time and take their decision independently. This makes them vulnerable to various bad habits also and internet addiction is one of them in today's technology dependent World. A substantial focus is recently being given to internet addiction and quality of sleep, and studies are underway in developed countries to establish their association with various socio-demographic risk factors leading to development of Internet addiction. However, in India, there is paucity of literature regarding this issue. Therefore, this study was planned to find out the prevalence, pattern and associated factors of Internet addiction among medical students of Delhi.

MATERIALS AND METHODS

Study area and population: Vardhman Mahavir Medical College and Safdarjung Hospital is a prominent medical institution in India under the Ministry of Health and Family Welfare and is well known for its quality of health services to all strata of society. This cross-sectional study was conducted by the Department of Community Medicine, Vardhman Mahavir Medical College and Safdarjung Hospital, among undergraduate medical students. Inclusion criteria were undergraduate medical students of 1st, 3rd, 5th, 7th and 9th semester and those who were using smartphone for minimum 6 months. Students who were absent on the day of study and those who did not give consent were excluded from the study. The data collection was done over a period of 20 days in Feb-march 2018.

Sample size: According to a study conducted by Farah Younes et al[11], the prevalence of internet addiction was 16.8%. Using the formula 4pq/L2, sample size of 250 was obtained at 95% confidence and 5% absolute error, including 10% non-response.

Sampling Method: Stratified Random Sampling: According to the list from the academic section of the college, the total number of currently enrolled undergraduate medical students was 750 in five semesters. The five semesters were 1st, 3rd, 5th, 7th and 9th and each semester had strength of 150 students. The sample size of 250 was covered in these five semesters by stratified random sampling technique. A sample of 50 students was covered from each semester. List of students according to university roll number of each semester was taken from the academic section. Random number tables were used in selecting participants from each semester.

Data Collection Tools: A semi-structured self-administered questionnaire containing various socio-demographic variables along with Young's 20-Item internet addiction test Pittsburgh sleep quality index (PSQI) were distributed to the students.

Young's 20-Item Internet Addiction Test

This test has been used globally for evaluation of Internet addiction, and its validity and internal consistency reliability have been well documented. This 20-item questionnaire is answered on a 5-point Likert scale, which evaluates the degree to which Internet use affects a person's social life, sleep, academic activity, interpersonal relationships, and emotions. The test's 20 questions are answered using a severity rating of 1 (rarely) to 5 (always), and the total score is calculated by adding all of the individual question scores. The total score represents the level of addiction and provides information about the ill effects of Internet addiction in different domains of life.

Score Interpretation

Score <43 = no addiction Score ≥43 = internet addicted (out of 100)

80–100: Internet usage is causing significant problems in the user's life. The user should evaluate the impact of the Internet on life and address the problems directly caused by Internet usage (severe addiction).

50–79: The user is experiencing occasional or frequent problems because of the Internet (moderate addiction).

43–49: The user may surf the Internet a bit too long at times but has control over usage (mild addiction).[12]

Pittsburgh sleep quality index (PSQI):

Students' sleep quality was assessed using Pittsburgh Sleep Quality Index (PSQI). PSQI is a 19-item tool that evaluates sleep quality. It investigates the attitude towards sleep quality in the last one month. It has seven component scores including subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. Each item is scored on a 0–3 Likert scale. The total score is calculated, ranging from 0 to 21. Higher score denotes a lower quality sleep. The total score above 5 indicates a significant sleep disorder, which had sensitivity of 89.6% and specificity of 86.5%. PSQI is validated for use in developing countries.[13]

Statistical Analysis: The data was exported into Microsoft Office Excel spread sheet and analysis was done using SPSS version 21. Descriptive analysis was done by calculating proportions, means and standard deviation. Data was presented as tables and appropriate diagrams. Association between qualitative variables was assessed using chi square/fisher's exact test.

Ethics: Permission was obtained from the administrative authorities and approval was sought from the institutional ethics committee. Voluntary informed consent was taken from all participants after explaining the purpose of the study. The data was kept confidential and used for study purpose only.

RESULTS

The mean age of the study participants was 20.3 ± 2.3 SD years (Range 17-27). More than half (60.0%) of study participants belonged to age group 17-20 years. Among the study participants, males (62.4%) were more as compared to (37.6%) females. Majority (96.4%) of the study participants belonged to upper class while only (3.6%) belonged to upper middle class. About two third (67.0%) of participants were committed or in a relationship.

Among the study participants, more than half (55.2%) of them were using both Wi-Fi and mobile data as a source for internet. When participants were asked about the purpose for which they use internet, most common responses were social networking, watch online videos and academic purposes. About one fourth (70.0%) of participants were using internet for zero to four hours only in a day. About one fourth (24.0 %) of them were using more than twenty GB of data per month. Nearly half (54%) had got 60-70 percentage of marks in last exam while majority (69.6%) of them had more than seventy-five percentage of attendance. Two fifth (39.6%) of participants felt eye strain while using phone. About half (47.6%) of them were using mobile phone only.

Table 1. Distribution of study participant according to socio-demographic characteristics and Internet Addiction (N=250)

Variables	Internet Addiction		Total	p value
	Present (%)	Absent (%)		
Gender				
Male	92 (58.9)	64 (41.0)	156 (100)	0.002
Female	37 (39.3)	57 (60.6)	94 (100)	
Age				
17-20years	72 (48)	78 (52)	150 (100)	0.28
21-24years	54 (56.2)	42 (43.8)	96 (100)	
>24years	3 (75)	1 (25)	4 (100)	
*Socioeconomic status				
Upper middle class	2 (22.3)	7 (77.7)	9 (100)	0.72
Upper class	78 (32.4)	163 (67.6)	241 (100)	
Relationship status				
Committed	51(30.1)	118(69.9)	169 (100)	0.38
Single	29(35.9)	52(64.1)	81 (100)	
Monthly data usage (GB)				
0-5	38 (32.5)	79 (67.5)	117 (100)	**0.008**
6-10	21 (41.2)	30 (58.8)	51 (100)	
11-15	7 (50)	7 (50)	14 (100)	
16-20	5 (62.5)	3 (37.5)	8 (100)	
>20	58 (96.7)	2 (3.3)	60 (100)	
Academic performance				
<60%	26 (54.1)	22(45.9)	48 (100)	0.75
60-70%	71(52.5)	64(47.5)	135 (100)	
>70%	32(47.6)	35(52.4)	67 (100)	
Source of internet use				
Mobile data	31 (43.7)	40 (56.3)	71 (100)	**0.007**
Wi-Fi	12 (35)	23 (65)	35 (100)	
Both	86 (59.8)	58 (40.2)	144 (100)	
Class attendance				
<75%	39 (51.4)	37 (48.6)	76 (100)	0.95
≥75%	90 (51.7)	84 (48.3)	174 (100)	
Phone usage while eating				
Yes	61(43.9)	78(56.1)	139 (100)	**0.001**
No	19(17.2)	92(82.8)	111 (100)	
Eye strain				
Yes	52 (52.5)	47 (47.5)	99 (100)	0.81
No	77 (51)	74 (49)	151 (100)	
Ever been noticed by teacher using mobile phone in class				
Yes	69(38)	113(62)	182 (100)	**0.001**
No	11(16.2)	57(83.8)	68 (100)	
Monthly expenditure on internet (INR)				
0-300	51 (43.3)	67 (56.7)	118 (100)	**0.048**
301-600	42 (56)	33 (44)	75 (100)	
601-900	19 (57.6)	14 (42.4)	33 (100)	
>900	17 (70.9)	7 (29.1)	24 (100)	
**Sleep quality				
Good	44 (41.1)	63 (58.8)	107 (100)	**0.004**
Poor	85 (59.4)	58 (40.5)	143 (100)	

*Kuppuswamy scale; **Pittsburgh sleep quality index

Nearly half (47.2%) of them were spending 0 to 300 Rs on internet while only (9.6%) were spending more than 900 Rs. About one fourth (27.2%) were noticed by teacher in the classroom while using phone. More than half (55.6%) of participants said that they use phone while eating.

Among the study participants, more than half (52.0%) of them had internet addiction based on Young's Internet Addiction Test. Among those who had internet addiction, nearly half (48. %) of them had mild internet addiction while one fifth (20.1%) had internet addiction of severe category. More than half (57.2%) had poor sleep quality based on Pittsburgh Sleep Quality Index. About two third (66.2%) of study participants had some form of sleep disturbances. Among this lack of freshness after sleep was seen in one fourth (24.6%) of them followed by difficulty initiating sleep (17.9%), difficulty maintaining sleep (12.7%), and early morning awakening (11%), respectively. The mean duration of total night time sleep was significantly lower in participants with moderate and severe internet addiction compared to those with no and mild internet addiction.

On analysing internet addiction with associated factors, it was observed that gender, monthly data usage, source of internet use, phone use while eating, ever notice by teacher in class while using phone, monthly expenditure and quality of sleep were statistically significantly (p < .001) associated. Factors like age, socioeconomic and relationship status, academic performance in last exam, class attendance, eye strain had no statistically significant association with internet addiction among the study participants.

DISCUSSION

In the present study, more than half of study participants, (52.0%) had internet addiction based on Young's Internet Addiction Test. Among those who had internet addiction, nearly half (48%) of them had mild internet addiction while one fifth (20.1%) had internet addiction of severe category. In a similar study[15] conducted in Jabalpur by Sharma et al, internet addiction was present in about two fifth (42.7%) of students. The internet addiction test scoring by Sharma et al revealed that about one third (35.0%) had mild internet addiction while only (7.4%) and (0.3%) had moderate and severe Internet addiction respectively. In an another similar study[16] among medical students in an urban area of Western Maharashtra, it was found that more than half (58.87%) of the medical students had internet addiction while about half (51.4%) of students were mildly addicted and only (7.45%) of them were moderately addicted to the internet. These discrepancies in prevalence of internet addiction can be explained by the differences in methods used for the diagnosis of internet addiction and availability of internet in study area and also the affordability by the students. In the present study the purpose for which partici-

pants used internet, most common responses were social networking (95.2%), watch online videos (94%) and academic purposes (89.2%). In a similar study[16] conducted by Nath K et al among medical students in northeast India, most accessed content was social networking (67.0%), followed by academic content (13.3%), downloadable media (9.6%), social media (8.5%). In our study, nearly half (47.2%) of the students were spending 0 to 300 Rs on internet and about half (47.6%) of them were using mobile phone only. Similar results were reported in a study[17] conducted by Nath K et al among medical students in northeast India in which majority of students were using mobile phone and about two fifth (41.5%) of them were spending 200–400 rupees/month on the Internet. In our study about one fourth (70.0%) of participants were using internet for zero to four hours only in a day. In a similar study[18] conducted in Tanzania the median time (IQR) spent on the internet on a typical day was 5 hours.

In the present study, internet addiction was increasing along with the age of study participants which is comparable to results in a study[19] by Murali Krishna V et al in Telangana among medical students, where addiction was more in third year (72%) and final year students (64%) as compared to first year (42.5%) and second year students (56%.). This can be due to the reason that students use internet as a coping mechanism for adjustment problems in early transition years, and this persists in later age to develop in internet addiction. Internet addiction was significantly (p<0.05) more in males as compared to females in the present study. In a similar study conducted by Bhushan et al[16] where a greater number of males (72.95%) were addicted to internet as compared to females (48.13%). This gender difference can be explained by a reason that males are more interested in online activities such as gaming, surfing which can lead to internet addiction. In the present study students who were spending more on internet were more addicted to internet. Similar finding was found in a study[19] conducted by Chaudhari, et al, in which more monthly expenditure on the internet and more time spent daily on the internet were significantly associated with internet addiction. In the present study internet addiction was more in students who were using mobile (43.7%) as compared to those using Wi-Fi (35%) and was maximum in those using both (59.8%) mobile phone and Wi-Fi. These results were similar to a study[20] conducted by Chaudhari, et al were using mobile for internet access was more associated with internet addiction.

In the present study, internet addiction was significantly higher in study participants with poor sleep quality. In a similar study[21] conducted in Government Medical College, Bhavnagar, Gujarat by Nagori et al, there was a significant association found between internet addiction and sleep quality, suggestive of poor quality of sleep-in problematic internet users. In an another study[22] conducted among Chinese medical students, it was found that about one

third (30.1%) of participants had low sleep quality and internet addiction was found to be associated with low sleep quality. In this study, the mean duration of total night time sleep was significantly lower in participants with moderate and severe internet addiction compared to those with no and mild internet addiction. Similar results of lower mean duration of sleep in moderated and severe addiction was found in a study[23] conducted by LK Singh et al which was a web-based survey.

Our study has some strength which makes it more reliable including informed verbal consent at the time of data collection, pilot tested questionnaire and fair representation from each semester with high response rate. First limitation is that the result of our study, cannot be generalized to entire population of undergraduate medical students across India. Since the study used a self-reported questionnaire, hence under-reporting or over-reporting may be present is another limitation.

CONCLUSION

The present study shows that internet addiction among medical student was high and more than half of the study participants were suffering from poor sleep quality. Factors like male gender, more monthly data usage, both mobile data and Wi-Fi as source of internet use, phone use while eating, ever notice by teacher in class while using phone, more monthly expenditure and poor quality of sleep were statistically significantly ($p < .001$) associated with higher prevalence of internet addiction. So, there is need to increase awareness regarding the internet addiction and its associated risk factors, among young students as it will improve general health and academic performance of students. There is also a need of comprehensive program at national level to increase awareness among students regarding internet addiction.

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