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The Effect of Internet Addiction on the Sleep Pattern and Quality of Life Among Medical Students

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ABSTRACT

Introduction: Medical students are at an increased risk of internet addiction and its effect on their sleep pattern and quality of life.

Objective: To assess the prevalence of internet addiction in medical students and its association with their sleep quality and quality of life.

Methods: A cross-sectional study was done in a tertiary level care institute Maharishi Markhandeshwar University, Mullana. A total of 592 students of various disciplines were enrolled they were provided questionnaire including Internet Addiction Test(IAT), Physical sleep Quality Index (PSQI) and Quality of Life-10 (QoL-10). The data was collected and statistical analysis was done on SPSS v21.0.

Result: Prevalence of internet addiction was 13.5% and 1.5% for moderate and severe addiction respectively. From this study, the severity of internet addiction was significantly associated with poor sleep as well as decreased quality of life (P<0.05).

Conclusion: The prevalence of Internet Addiction and its effect on the Sleep Quality and Quality of life of medical students were found to be significant. Programs for creating awareness about Internet addiction and its effects on sleep and quality of life are needed to be done in colleges and universities which was a prime limitation of this study.

Key Words: Internet Addiction (IA), Quality of Life (QoL), Sleep Quality, Prevalence, Medical Students, Screen Time, Somatic Symptoms

INTRODUCTION

The Internet has become one of the most pivotal elements in the life of people nowadays. It is used for a variety of purposes, like communication, education and entertainment. Despite its various advantages, the dark side of internet overuse has been emerging slowly but progressively[1], 54.4% of the world's population has internet access.[2] A multinational meta-analysis showed that 6% of the population worldwide has internet addiction; it also gave the first rank to the Middle East with 11% and the lowest rank to Northern and Western Europe with 3%.[3]

Internet Addiction (IA) is now considered as a new type of addiction and mental disorder just like already established addictions such as gambling and alcoholism.[4] IA is an impulse control problem and characterized by the inability to inhibit/decrease inter, net use, which consequently leads to the adverse effect on an individual's life.[5] Increased use of internet use has been associated with depression[6] significant mood changes, poor quality of sleep, deteriorated health outcomes like obesity and poor self-esteem.[7] IA has been described as over-use or poorly controlled behaviour regarding internet access which leads to impairment or distress.[8] Increased internet use tends to disturb the quality of sleep, which leads to poor quality of life.[9]

Sleep is an essential requirement for humankind, which is important for good quality of life (QoL) and health for all ages. Multiple factors are associated with quality of sleep which includes social life, general health status and environmental factors.[10,11] Guideline's advocate 8.5 to 9.5 hours of sleep every night for age group 10-17 years old, and 7 to 9 hours of age above 18 years.[12] Sleep deprivation can have fatal out-

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comes like a reduced coping mechanism, increased risk of motor accidents and poor academic performance.[13]Literature has shown the influence of IA on disturbed sleep and insomnia, a high rate of insomnia was found among 3% heavy internet users.[14]

The literature further shows there has been a negative impact of internet misuses such as physical, behavioural, psychological and interpersonal problems and work issues.[15] It has also been observed that although internet use has increased a person's performance in regards to information and communication technologies, on the contrary, it has led to reduced self-capability, memory and confidence with increased dependency on internet.[16]

MATERIALS AND METHODS

This cross-sectional study was done in tertiary level care institute Maharishi Markhandeshwar Institute of Medical Sciences in Northern India to assess the prevalence of internet addiction and it's the association with quality of sleep and QoL among the medical students including bachelors, postgraduates, dental, nursing, and physiotherapy students. This study was conducted over one month between January and February 2020. A total of 592 subjects were included. The subjects were included if aged>18 years, either sex, using the internet since last year, well-versed with Hindi and English language, and agreed to participate in the study. Students who had been using the internet for less than one year and those who unwilling to participate in the study were excluded.

The consent for participation was obtained after explaining the research purpose, design, and voluntary nature of participation. Ethical clearance was taken from institutional ethical committee vide Project no.- 121E dated 14/12/19.

Internet Addiction Test of Young (IAT)

Internet use was assessed by the Internet Addiction Test of Young (IAT), a 20-item 5-point Likert Scale that measures the severity of self-reported habitual use of the internet. The total internet addiction score is the sum of 20 items ranging between 20 and 100. The severity of addiction was classified into 3 categories 20-49, 50-79 and 80-100 scores as normal, moderate and severe respectively.

Pittsburg Sleep Quality Index (PSQI)

Pittsburg Sleep Quality Index (PSQI)was used to assess sleep quality and quantity with verified levels of reliability, consistency and validity. It contains 19 items generating 7 components that evaluate sleep duration, disturbance, latency, daytime dysfunction due to sleepiness, sleep efficiency, overall sleep quality and sleep medication use. The score ranges from 0-3 for each component. A global score resulting from the summation of all components ranges from 0-21. Students with score >5 were categorized as good sleepers and those with a score <5 are categorized as bad sleepers.

Quality of Life-10 (QoL-10)

Qol-10 is a "global life status". It is used to measure the physical and mental health of the subjects. It's a self-administering scale, which about 10 minutes to administer and analyze per patient. This scale has 10 questions which help the participant to report their quality of life. It's a five-point Likert scale with total score ranges between 1-5, after calculating the score using the formula below:

QoL was calculated as below:

Health (Q1+Q2): 2 + QoL [(Q10) + (Q3+Q4+Q5):3):2] + Ability [(Q6+Q7+Q8+Q9):4)]Interpretation: 1 is great, 2 is normal, 3 is bad on QoL 1 and very bad on QoL 5 and QoL 10, 4 is very bad for QoL1 and deadly for QoL5 and QoL10, 5 is dying for QoL1 and you cannot survive for very long with this low rating for QoL 5 and QoL10.

Data analysis

The data were recorded into a Microsoft® excel workbook and exported into SPSS software. Data were presented as frequency, percentage, median, and interquartile range (IQR) [Q1, Q3]. Categorical variables were compared using the Chi-square test. Quantitative variables were compared using the Kruskal-Wallis test followed by pairwise comparison. P-value <0.05 was considered significant. Statistical analysis was performed using SPSS v21.0 (IBM, USA).

RESULTS

Sociodemographic characteristics

Table 1 shows socio-demographic information of the participants. Based on p-value there is no significant difference in the above table. Out of 592 respondents, 226 (38.17) were males and 366 (61.82%) were females. Of which 324 (54.73%) were from the age group 16-20 years and 324 (54.73%) were from the age group 21-25 years. Most of the respondents were unmarried (96.45%), belonging to high socioeconomic status (31.93%). Most of the participants were graduates 532 (89.86%) from MBBSstream 240 (40.54%) followed by 186 (31.42%) from the nursing stream. By religion, Hinduism was followed by 471 (79.56%) respondents. Most of them belonged to the urban settings 400 (67.57%) and the rest 192 (32.43%) were from rural areas.

Screen time and Somatic effect with internet addiction among respondents

Figure 1 shows that 187(31.59%) of the participants spend 2-4 hours on screen, and 104 (17.57%) spend more than 6

hours on screen time. Of the respondents, 266 (44.93%) suffered from headache followed by 114 (19.26%) respondents who suffered from back pain. Neck pain and pain in the eye was seen in 106 (17.91%) respondents each. Figure 2 shows that 80(13.51%) of respondents had moderate internet addiction whereas 09 (1.52%) of the respondents had severe internet addictions, remaining 503 (84.97%) were normal.

Incidence

Our study observed that 80(13.51%) of respondents had moderate internet addiction whereas 09 (1.52%) of the respondents had severe internet addictions, remaining 503(84.97%) were normal (Figure 3).

Association between PSQI and Internet addiction

The severity of internet addiction was significantly associated with higher PSQI score (bad sleepers) (P<0.0001) (Table 2).

Association between QoL and Internet addiction

Our study observed that the median score of health domain, QoL, and ability decreased with the severity of internet addiction (Table 3).

DISCUSSION

The present study was conducted to assess and correlate the prevalence of internet addiction and its effect on the sleep pattern and quality of life in medical students inMaharishi Markandeshwar Institute of Medical Sciences and Research (MMIMSR). In this study, it was found that there was a highly significant correlation between IA and the sleep quality and quality of life. This is similar to a study done in Saudi Arabia[17] in which 511 students were enrolled, sleep disturbance was seen in more than half of the study sample and this was significantly related to internet addiction. In their study sleep, problems and poor quality of sleep were related to high internet use. This finding is similar to that found in our study. But in their studies, other significant associations included smoking and caffeine consumption which were not included in our study.[16-18]

In our study, poor quality of life was present due to IA but its psychiatric association was not made. Our study was more concise and was directed towards the presence of IA and its direct correlation with QoL and sleep quality which was found to be positive and significant. A study was done in China[18] showed association between IA and QoL with suicidal ideation in adolescents. In this study, there was a correlation between IA and poor quality of life with the prevalence of suicidal ideation. The sample size involved 26,688 students from 29 different high schools. In their studies, parameters like smoking and alcohol were also included which could have also contributed to poor QoL and suicidal ideation along with IA.[19-22]

In this present study, students with IA had poor QoL and additionally poor sleep was also seen to present in IA similar to previous study in Iran.[19]. In their study, 174 medical students were enrolled over 3 years, and it was found that IA leads to lower QoL in medical students which further affected their physical, psychological and social domains. Academics of students with IA were also poorer this was found out through theGrade Point Average(GPA)score in addicts. These findings coincide with our findings.

The recent study[20] did a study in Hong Kong by on 273 young adults aged between 18-30 years which showed that IA led to poor QoL. This finding correlated with our study but their sample size was not well defined and was small for correct representation of the entire young adult population in Hong Kong. But the conclusions made about the adverse effect of IA on physical and psychological were cannot be neglected. This finding resonated with finding done in our study that IA did lead to poor QoL and sleep pattern.

The findings on the negative impact of IA on sleep and QoL of medical students in the present study is similar to a study done in China and India[21,22] in which 701 college students of age group 16 -25 years were enrolled and it was concluded that IA not only had a direct effect on the QoL of life but also indirect adverse effect through sleep deprivation. Thus, both the studies brought out the harmful effect of IA on QoL and sleep pattern on medical students.

There were some limitations to the study conducted. The data was collected from a small study area. All students could not be included in the study. All the branches of study were not represented adequately. Hence the results of this study cannot be generalized for the whole population and further studies should be done in this regard keeping in mind this area of research.

CONCLUSION

Despite the above-mentioned limitations, this study has provided some important information about the prevalence of internet addiction among medical students and its effect on their quality of life and pattern of sleep. The results indicate that there is a significant relationship between internet addiction and health, QoL, ability and quality of sleep which can lead to untoward consequences in students. It was found that students have poor control over their internet use which may indirectly effect on their work performance, difficulty in establishing concentration, low academic output, increased dependency and behavioural changes which overall

lead to poor quality of life and sleep. Hence, there should be measures in form of Internet Addiction awareness programs which should be conducted to make students aware of the prevalence of internet addiction and its effect on their sleep and QoL. Furthermore, strategies like keeping a check on-screen time through alarms, supervision of parent, friends or co-worker to increase awareness of the time spent on the phone are required for curbing excessive use of internet among students.

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Table 1: Socio-demographic characteristic of respondents

Character	Category	Total N (%) = 592
Gender	Male	226 (38.17)
	Female	366 (61.82%)
Age (Years)	16-20	324 (54.73%)
	21-25	324 (54.73%)
	26-30	6 (1.01%)

Table 1: *(Continued)*

Character	Category	Total N (%) = 592
Marital Status	Unmarried	576 (97.29%)
	Married	16 (2.70%)
Occupation	Post Graduates	25 (4.22%)
	MBBS	240 (40.54%)
	BDS	107 (18.07%)
	BPT/BSC	34 (5.74%)
	Nursing	186 (31.42%)
Education	Post Graduates	46 (7.77%)
	Graduation	532 (89.86%)
	Diploma	14 (2.36%)
Family Income	<6326	43 (7.26%)
	6327-18949	42 (7.09%)
	18953-31589	53 (8.95%)
	31591-47262	36 (6.08%)
	47266-63178	71 (11.99%)
	63182-126356	158 (26.69%)
	>1263660	189 (31.93%)
Religion	Hindu	471 (79.56%)
	Sikhism	78 (13.18%)
	Islam	32 (5.41%)
	Christian	11 (1.86%)
Locality	Rural	192 (32.43%)
	Urban	400 (67.57%)

Data expressed as frequency (percentage)

Table 2: Association between PSQI and Internet addiction

	Normal	Moderate	Severe	P-value
Good Sleepers	234	16	0	<0.0001
Bad Sleepers	269	64	9	
Total	503	80	9	

Data expressed as frequency

Table 3: Association between QoL and Internet addiction

	Normal	Moderate	Severe	P-value	Pairwise comparison
Health	4.0 [3.0, 6.0]	6.0 [4.0, 7.0]	9.0 [6.5, 10.0]	<0.0001	Normal vs. Moderate <0.0001 Normal vs. Severe <0.0001 Moderate vs. Severe=0.05
QoL	8.0 [6.0, 10.0]	10.0 [8.0, 13.0]	16.0 [14.5, 19.0]	<0.0001	Normal vs. Moderate <0.0001 Normal vs. Severe <0.0001 Moderate vs. Severe=0.011
Ability	8.0 [6.0, 10.0]	11.0 [8.0, 13.0]	16.0 [14.0, 17.0]	<0.0001	Normal vs. Moderate <0.0001 Normal vs. Severe <0.0001 Moderate vs. Severe=0.017

Data expressed as median [IQR]

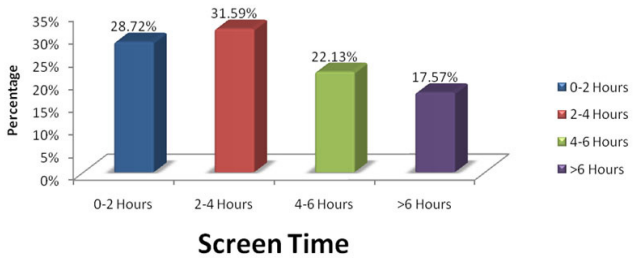

Figure 1: Perecentage distribution of screen time among respondents.

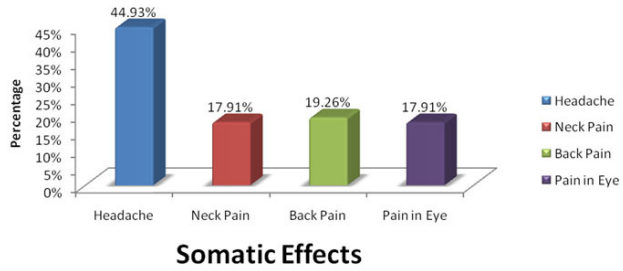

Figure 2: Perecentage distribution of internet addiction among respondents.

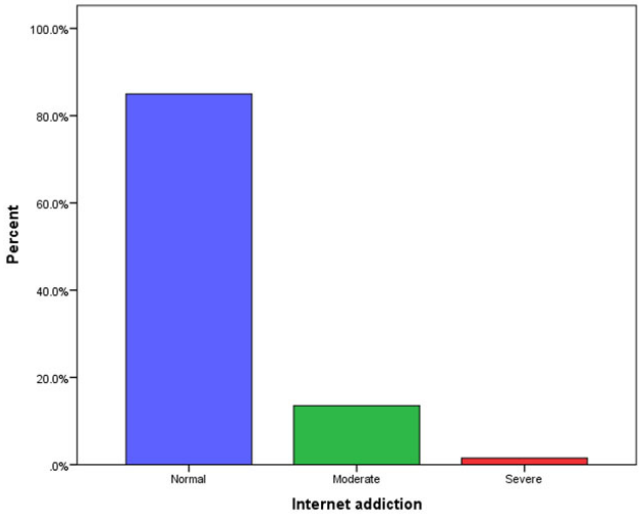

Figure 3: Incidence of internet addiction.