

Study of Internet Addiction & Daytime Sleepiness in Medical students & Other Students of Gujarat, India.**Dr. K. J. Tanna*, Dr. Jitendra Tanna****

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KEY WORDS : Internet addiction; Daytime Sleepiness; Students; Young adults; Sleep**ABSTRACT**

Context : Internet has been a boon in modern human history by the benefits it gives to the people, enriching their lives. But It has turned out to be a bane for an equal number of people because it is addictive. Internet addiction is linked with sleep deprivation and consequently day time sleepiness.

Aim : Current study was undertaken to assess the presence of internet overuse and addiction & its effects on sleep in general & daytime particularly. And to compare it between medical students and other students.

Setting - The study was at various graduate colleges within the city of (city name masked for blinding). Total 316 under-graduate students enrolled in the study using random sampling method from 5 educational institutes.

Method : Participants were administered a self-administered questionnaire containing sociodemographic details, Young's internet addiction test (IAT) and Epworth sleepiness scale (ESS). Statistical analysis –Data was collected, tabulated & analyzed using Microsoft Excel worksheet and GraphPad version 3.0. For deriving relation between Internet addiction & daytime sleepiness, Spearman Correlation coefficient was used.

Results : We found that both groups had significant Internet addiction & it was significantly associated with excessive daytime sleepiness. 52% of medical students and 51% of other students were problematic internet users. We also noted that results between both medical student & other student group were almost similar.

Conclusion : The number of problematic internet users is high & leading to daytime sleepiness in both the groups equally, so steps must be taken to reduce the Internet overuse.

Key-message : Internet addiction is clearly present in both groups and it is having significant effect on their sleep as shown by increase in day-time sleepiness. This has to be addressed at the level of educational institutes.

INTRODUCTION

The Internet has been a revolutionary invention empowering thousands of people across the countries. In India, Internet is reaching far corners of the country including the rural areas. Internet usage in the country has exceeded half a billion people for the first time, pegged at 566 million (More than 50% of the population) & India's internet users expected to register double-digit growth to reach 627 million in 2019, driven by rapid internet growth in rural areas.^[1] Internet has offered so many advantages to the population. But it has been equally devastating for many people because of its addictive nature. Year by Year the companies are spending Billions of rupees in revenue to get a person hooked on to his Mobile/Laptop screen. And teenagers and college students are usually the easiest targets. In Britain, teenagers now spend about an

average of 18 hours a week on their phones, much of it using social media.^[2] Kids have 10 times the amount of screen time they did in 2011, and spend an average of six hours and 40 minutes using technology, according to Common Sense Media.^[3] 25% of Indians are heavy internet user.^[4] In China, 17.2 % of adolescent are problematic internet users & of them, 40% were having sleep disturbances.^[5] In South Korea, excessive daytime drowsiness was 5.2 times higher in Internet addicts.^[6] It is apparent that all over world Internet addiction numbers are going to rise and so its detrimental effects also rising. Because of the habit of using phones late in night typically in bed too, Heavy internet users usually report sleep disturbances at night. Because it works as a stimulus to the brain and also the blue light emitted from the devices adds to the sleep disturbances. This sleep "deficit" will

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probably reflect in Daytime sleepiness. Kaur et al, a high proportion (45%) of EDTS was observed, and the problem was significantly greater in participants from professional courses.^[7] Many studies have been done on the effects of internet addiction on sleep with proven deleterious effects of internet on sleep. However, if this effects on sleep have any relation to daytime sleepiness and therefore on daytime productivity is a less researched area.

So, we undertook this study to determine the presence of Internet Addiction and assess their Sleep disturbances in general and Daytime sleepiness in particular for College going students aged 18-25 in Under-graduate colleges in (city name masked for blinding) City. We also intended to compare Internet addiction and its effect of daytime sleepiness between medical students and other students.

MATERIAL & METHOD

The current study was undertaken at 5 major under-graduate Colleges in (city name masked for blinding) City, Gujarat, India. Students were requested to participate in study during their breaks in small groups randomly.

Study population – Undergraduate students of 5 selected colleges.

Sampling method – Simple Random sampling

Sample size – 300

Inclusion criteria –

1. Student of selected colleges.
2. Age 18 to 25 years.
3. Regular access and use of Internet.

Exclusion criteria –

1. Insomnia due to reasons other than Internet use.
2. Taking any form of treatment containing sedatives.
3. Taking alcohol or any substance on regular basis.

A pre-designed self-administered questionnaire was given to the participants. Questionnaire was in English; all selected institutes were teaching in English medium. They were given enough time to understand the questions and ask any questions arising out of the questionnaire. This questionnaire consisted of three part. Part-1 basic demographic details of the participant, Part-2 Young's Internet Addiction Test 20 question questionnaire and Part-3 about night time sleep and Epworth Sleepiness Scale.

For the Internet Addiction we used Young's Internet Addiction Test, which is 20 items scale which measures severity of compulsive use of internet for adults & adolescents. Very well suited for self-administration, takes

only 5 to 10 mins. Scoring - 20 questions to be answered on 5-point Likert scale (1 = rarely, 2 = occasionally, 3 = frequently, 4 = often, and 5 = always); total scores ranging from 20 to 100. That was interpreted as – 0-30- Normal Internet Use, 31-49 – Mild Internet addiction, 50-79 – Moderate Internet addiction & >80 – severe internet addiction.

IAT also measures Saliency, Excessive Use, Neglect Work, Anticipation, Lack of Control, Neglect Social Life. However, in current study, we have taken into consideration only Total score. IAT demonstrates good psychometric properties and fits extremely well with our data. The present study provides empirical evidence that the IAT is a valid and reliable instrument for measuring IA.^[8]

For Daytime sleepiness, we used Epworth Sleepiness Scale, which is 8 item self-administered scale that measures average sleep propensity in daily life (ASP), or their 'daytime sleepiness'. Respondents are asked to rate all questions in range of 0 to 3, 0 = would never doze, 1 = slight chance of dozing, 2 = moderate chance of dozing 3 = high chance of dozing. Total score 0 to 24. This was interpreted as 0-5 Lower Normal Daytime Sleepiness, 6-10 Higher Normal Daytime Sleepiness, 11-12 Mild Excessive Daytime Sleepiness, 13-15 Moderate Excessive Daytime Sleepiness, 16-24 Severe Excessive Daytime Sleepiness. For our easy interpretation and statistical analysis, we took 0-10 as Normal Daytime sleepiness and 11 to 24 as Excessive Daytime Sleepiness.

Internal consistency & External criterion validity has been extensively proved. Psychometric properties of ESS was tested in Indian university students, results suggest that the ESS has good internal consistency and test-retest reliability for a university population of poor sleepers in India.^[9]

Statistical analysis - Final responses were tabulated & analyzed using Microsoft Excel worksheet & GraphPad version 3.0. For comparing the groups demographics like age and sex, mean age was used and Man-Whitney U-test was applied to check if the groups were comparable or not. For determining relationship between Internet addiction & Daytime sleepiness, Spearman correlation co-efficient was used. For other parameters, Average, Percentage and descriptive analysis was used. For all statistical tests P-value <0.005 was considered significant.

Ethical Consideration : As this was observational study, no serious ethical considerations were present,

however the participation in the study was solely voluntary and after informed consent only. Permission for study obtained from Institutional Ethics committee of reputed Medical College with letter no. IEC/27/2019, dated : 11/11/2019. This IEC is registered with Reg. no. ECR/1199/Inst/GJ/2019.

RESULTS

Total 316 students filled up the questionnaire of which 204 were Medical student and 112 were Other students. These observations were analyzed and tabulated.

Mean age of group was 20 years for medical student group & and 21 years for other student groups. 58% medical students were males, 53% of other students were females. The groups were comparable in their demographic pattern as the difference of mean was low and was not statistically significant (Man-Whitney u-test P-value > 0.05).

Mean IAT (Internet Addiction Test) score was 34.68 & 34.16 for medical students and other students group

respectively. 48% medical students & 49% other students were Normal Internet users, 33% of medical students & 32% other students had Mild Internet addiction, 17% medical students and 18% other students had Moderate internet addiction and 2% medical students & 1% other students had Severe Internet addiction.

Mean ESS (Epworth Sleepiness Scale) score was 7.76 & 7.43 for medical students and other students respectively. Difference between medical students and other students group for their IAT score & ESS score was low and was not statistically significant. (Man-Whitney u-test P-value > 0.05), meaning that amongst the group the values of IAT score & ESS Score were almost equal.

Relationship between IAT & ESS Score was established by Spearman correlation co-efficient r. Relation between IAT Score and ESS Score was highly significant when counted for all 316 participants & also for 204 medical students and 112 other students separately. (P-value < 0.001). Meaning that with increase in IAT score, ESS

Table 1 : Comparison between Medical students & Other students

Stream	Medical students(n=204)	Other students(n=112)	t/x2/u	P-value
Mean Age	20.26	21.25	10139	0.0975
Male %	58	53	-----	-----
IAT Score, Mean	34.68	34.16	11222	0.7954
ESS Score, Mean	7.76	7.43	10932	0.5264
Duration of sleep at night, mean hours	7.17	6.93	10161	0.1179

Table 2 : Comparison between Groups with Normal & Excessive daytime sleepiness

	Medical students			Other students		
	Avg IAT score	Spearman r	P-value	Avg IAT score	Spearman r	P-value
Normal daytime sleepiness	32	0.3832	<0.001	32	0.4741	<0.001
Excessive daytime sleepiness	44	0.2428	0.8657	43	0.1031	0.053

Table 3 : Time spent most on Screen

Where time is spent most	Medical students (%)	Other students
Watching movies, shows, series	87 (43%)	55 (27%)
Social Media	85 (42%)	52 (25%)
YouTube, Tiktok	47 (23%)	28 (14%)
Online Gaming	32 (16%)	28 (14%)
Studies	18 (9%)	34 (17%)
Others	6 (3%)	5 (2%)

score also likely to be increased. So, people with problematic use of internet have higher daytime sleepiness.

Medical students and other students were subdivided in group with normal daytime sleepiness i.e., ESS Score ≤ 10 , and Excessive daytime sleepiness i.e., ESS score > 10 . Average IAT Score was 32 for both medical student & other student group's normal day time sleepiness sub group, that was statistically significant. (P-value < 0.001). Average IAT score was 44 for Excessive daytime sleepiness subgroup of medical student group, which was not statistically significant. (P-value = 0.8657). Excessive day time sleepiness subgroup of other student group average IAT score was 43, which was statistically weakly significant. (P-value 0.053).

Average duration of sleep was 7.17 hours & 6.93 hours in medical students & other students group respectively. Relation between duration of sleep and IAT score was not statistically significant (P-value 0.2806 & 0.0766 for medical student and other student group respectively), meaning that with increase in score of IAT, it does not necessarily mean that duration of sleep is reduced. Difficulty falling asleep and lack of freshness after sleep were major issues reported by those who had sleep disturbances and low duration of sleep.

Regarding time spent screen, students spent most of their time on watching movies, shows & series online & social media, which is almost similar in both the groups.

DISCUSSION

In our study, 52% of medical students and 51% of other students were problematic internet users with mean IAT Score of groups being 35 & 34 in medical students and other students respectively. In our study, both medical student & other student group findings were almost the same. In Maie K et al, Poor sleep quality was found in 54.4% of the participants, whereas Internet addiction was found to be mild in 42.3 %, moderate in 29.9%, and severe in 1.8%.^[10] In Singh LK et al, 1%, 13% severe & moderate internet addiction respectively and the mean IAT score was found to be 32. In Banerjee – 85% of medical students were mild, moderate & severely addicted to internet.^[11] In Bhandari et al, 36, 36, 21 % students had poor sleep quality, internet addiction & depression respectively.^[12] In Lee M et al, among students with internet addiction (17.2%), 51.7% were also identified as insomniacs.^[13] This difference in various studies may be due to sampling size and also the time of the study, as the internet is becoming easily available and relatively cheaper than earlier times, the number of internet addiction also rises.

Relation between IAT & ESS scores was statistically highly significant, meaning that with an increase in IAT score, ESS scores also increases. So, Problematic internet use is associated with excessive daytime sleepiness. This is in accordance with many of the previous study like Singh LK et al, where they noted that excessive daytime sleepiness had moderate-to-severe internet addiction, even after controlling for the confounding effects of age and gender.^[14] And in Nidhi Nagori et al, Participants with poor quality of sleep were having high IAT scores & Severity of poor sleep quality is positively correlated with internet addiction.^[15] Kootesh et al, there is a significant relationship between sleep quality & internet addiction. Internet addiction leads to insomnia, dissatisfaction with sleep & poor sleep quality. [16] In Lin PH et al worse quality sleep noted in moderate & severe Internet addiction.^[17] In Jahan SM et al, moderate and severe internet addiction are 75% and 95% less likely to have good sleep quality.^[18]

In our study, the average duration of sleep was 7.17 hours & 6.93 hours in medical students & other student group respectively, which had no significant relation with IAT score. In Singh LK et al, mean duration of total nighttime sleep (5.61 ± 1.17) is significantly lower in participants with moderate and severe internet addiction (6.98 ± 1.12) compared to those with no and mild internet addiction.^[14] & also in Shimizu T et al, it was found that heavy internet use is associated with reduced sleep duration & sleep quality.^[19] In our study the relation between sleep duration and internet use was not found statistically significant, this may be because already the average duration of sleep is higher in our study. And also when people recall their sleep duration it is generally a complete number like 7 hours, 8 hours, but in actuality, sleep is not in complete number, so because of this subjectivity maybe this relation was not found significant.

In our study, students spent most of their time watching movies, shows & series online & social media, which is almost similar in both the groups. It was noted that those spending the most time on movies and games online have poor sleep quality reflecting in day time sleepiness. In Chaudhari B et al, students spent most of their time in social media followed by watching videos & porn.^[20] Kim SY et al found that less sleep was significantly associated when internet was used for leisure, but not when internet use was for study.^[21] This study in particular being that of a population-based survey focusing on the effects of internet on daytime sleepiness based on the type of internet use can be considered a significant finding.

In our study, Average IAT & ESS scores were higher in males compared to females, which was statistically significant on man-Whitney u-test. This is in accordance with Younes F et al, who also found a higher prevalence of Internet addiction in males.^[22] This again maybe because males are more prone to addictive behaviors like online gaming, watching porn and videos.

CONCLUSION

Significant proportion of students, both medical students & other students have problematic internet use and it is also associated with daytime sleepiness. The findings of both the medical student & other student group were almost similar & comparable. So, it is safe to conclude that internet addiction and its deleterious effects are common in both groups.

LIMITATIONS

The sample size was the limitation, would like to do this study in a larger sample size with different streams of students involved in the survey. Also being a subjective survey, there is also a significant chance of recall bias.

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