To study association of sleep quality and internet addiction among medical students

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Abstract:

Background: More than 30% of people suffer from sleep disorders. Medical students are at great risk to develop sleep disruption due to various reasons. Because of betteraccessibility and affordability the number of internet users has increased rapidly with over 2 billion global users. Indian users contributed to about 354 million internet users in 2015. Adolescents and young adults including medical students are especially at increased risk for internet addiction.Our study was a preliminary step towards understanding the effect of internet addiction on sleep quality among medical college students.

Methods: The study was conducted on 500 medical students, belonging to either sex and from all Profsof MBBS who were randomly enrolled in the study from Government Medical College, Jammu. Internet addiction was assessed by using the Internet Addiction Test while assessment of sleep quality was done by Pittsburgh Sleep Quality Index (PSQI).The information obtained was analysed by using appropriate Statistical methods.

Results: 15.4% of our study group had problematic internet use (possible addicts/addicts) 37.4% of our study group were having PSQI score of ≥ 5 indicating poor sleep quality. There was poor sleep quality in moderate user or addicts than in normal on average user and this relationship was statistically significant in our study.

Conclusion: There should be measures in the form of internet addiction awareness programs in Medical Colleges, which should be conducted to make students aware of the prevalence of internet addiction and its effect on their sleep and quality of life. Initiatives must be taken in order to create opportunities for relaxation, recreation and other extra-curricular activities. It needs to be emphasized that students will have to be educated in safe and healthy practice for internet use.

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Introduction:

Sleep is usually the state of unconsciousness from which a subject can be aroused by appropriate sensory or other stimuli. It can also be defined as a normal, periodic, inhibition of the Reticular Activating System.[1] About one third of our life span is usually spent sleeping and a good sleep is necessary for optimal health and without enough sleep, both our body and mind become weak which can lead to changes in behaviour.[2] There are many benefits of good sleep which includes increased productivity at work, better coping skills, concentration and memory. Person having good eight hour sleep has better ability to make careful health decisions. [3]More than 30% of people suffer from sleep disorders. Sleepiness during day time leads to mistakes, accidents and tragedies. Risk of death in people who sleep more than 8.5 hours or less than 3.5 hours a day is 15% higher than in those who sleep 7 hours a day.[1]

Taking into consideration a demanding and exhausting study and duty hours, medical students are at great risk to develop sleep disruption. In addition to hectic clinical and academic hours a change in living style such as poor accommodation and being away from family puts them at a greater risk of reduction in sleeping time to have extra time to cope up in studies and workload. [4]There is a known relationship between sleep and mental health. Various studies done in different countries shows that academic performance of medical students and health status were significantly affected by sleep deprivation.[5]

Internet is no longer just used for educational and research purposes and because of accessibility and affordability the number of users has increased rapidly with over 2 billion global users. Indian users contributed to about 354 million internet users in 2015. Adolescents and young adults are especially at increased risk for internet addiction.[6] Internet addiction is defined as any online related compulsive behaviour which interferes with normal living and causes severe stress on family, friends, loved ones and one's work environment. Internet addiction has been called internet dependency and internet compulsivity.[7] Internet addiction is regarded as a kind of technological addiction, which is the result of the rapid development of science and technology. Based on how we use, it can be good or bad thing for human beings. [8]

In Asian countries, the prevalence of Internet addiction in adolescents was reported to be 13.8% in Taiwan, 10.7% in South Korea, ranging from 3.0% to 6.7% in Hong Kong and from 2.4% to 6.0% in China.[9]

Indian studies are still in their initial stages. In 2006 a mass study was done by I-Cube, which enrolled 65,000 individuals, it was seen in the study that 38% of individuals were heavy users (8.2 hours/week) mainly for the purpose of including e-mail and instant messaging (98%), job search (51%), banking (32%), bill payment (18%), stock trading (15%), and matrimonial search (15%). The age group which was showing highest frequency of internet addiction was young males. In a study in school going adolescents, authors have reported after interviewing 603 adolescents that the prevalence of internet addiction was noted to be 3.96% in boys and 1.62% of girls. Over 15% of the total sample showed overuse of internet but below internet addiction criteria. Stress scores were significantly correlated with the internet use patterns in both sexes. The main use of the internet in either sex was for social networking.[10]

MATERIAL & METHODS

The present study was conducted in the Postgraduate Department of Physiology, Government Medical College, Jammu. The study was approved by Institutional Ethical Committee of GMC Jammu.

The study was conducted on 500 medical students, belonging to either sex and from all Profsof MBBS who were randomly enrolled in the study from Government Medical College, Jammu. A written informed consent was taken from all eligible subjects.

INCLUSION CRITERIA:
- Healthy male and female students of GMC, Jammu whohad given consent for participation in the study.

EXCLUSION CRITERIA:
Such students were excluded from the study, who:
- Were on Psycho-tropics like antipsychotics, antidepressants and sedatives.
- Suffered from Psychiatric illness.
- Had history of any chronic disease
- Did not give consent for the study.

After detailed discussion regarding the purpose and methodology of the study, all eligible subjects were requested to participate in the study. All the subjects included in the study were interviewed by the investigators and relevant information regarding the details of demographics (age, gender, place of living etc.), designation, purpose of using the internet (education, entertainment, news, gaming, social networking etc.) if the internet was used for all purposes mentioned, then the purpose for which it was used more frequently was be taken into consideration, the place of usage of internet, the time of day when the internet is accessed the most (morning, afternoon, evening, or night hours) and the average duration of use per day was noted down in the Performa.

All the subjects were provided with a questionnaire to measure the internet addiction and sleep quality.

Assessment of Internet Addiction - Internet addiction was assessed by using the Internet Addiction Test **(IAT; Young, 1998)** which is a 20-item scale that measures the presence and severity of internet dependency among adults.

Assessment of Quality of Sleep - Assessment of sleep quality was done by Pittsburgh Sleep Quality Index (PSQI). It is a self-report instrument designed to evaluate sleep quality over the last month.

Statistical Analysis: The information obtained was compiled in the form of an excel sheet. Statistical analysis was performed by using SPSS statistical software, version 23 and graphs were prepared in XL windows. Descriptive statistics were calculated for summarizing quantitative variables (mean [± SD] or median (range). The significance of difference between quantitative variables was assessed by t-test. Pearson correlation was used to find the correlation between the internet addiction and sleep. For all statistical tests, a p value < 0.05 was taken to indicate a significant correlation among the variables.

Results:
Table 1, 2,3,4,5,6,7 and 8 shows the results of our study. Table 1 shows the distribution of study subjects according to the purpose of use of internet. It was observed from the table that most of the study subjects used internet for education purposes [45%] and social networking [37.8%] followed by entertainment [14.2%] and for other purposes like news and gaming [3.0%].

Table1. Distribution of study subjects according to purpose of internet usage.

Purpose	Frequency (N)	Percent %
Education	225	45%
Social Networking	189	37.8%
News/Gaming	15	3.0%
Entertainment	71	14.2%
Total	500	100.0%

Table 2. Distribution of study subjects according to time of usage of internet -

Time	Count	Percent (%)
Morning	6	1.2%
Afternoon	12	2.4%
Evening	166	33.2%
Night	316	63.2%
Total	500	100.0%

It was observed that most of the study subjects used internet during night hours (63.2%).Minimum number of study subjects used internet in the morning hours (6%).Table 2

Table 3. Distribution of subjects according to the average duration of use (In Hours) of use of internet

S.NO	Average duration of use (in hours)	Frequency (n)	Percentage (%)
1	1.00	54	10.8
2	2.00	229	45.8
3	3.00	130	26.0
4	4.00	51	10.2
5	5.00	22	4.4
6	6.00	13	2.6
7	7.00	1	0.2
Total		500	100.0

It was observed from the table 3 that average duration of internet use in most of the study subjects (45.8%) was 2 hours.

Table 4. showing frequency distribution of internet usage according to place of usage.

Place of usage	Frequency (N)	Column N %
Hostel	199	39.8%
Home	292	58.4%
Cyber café	1	0.2%
College	8	1.6%
Total	500	100.0%

It was observed from that most of the study subjects used internet at home (58.4%) and hostel (39.8%) and lesser number of subjects used internet in college (1.6%) and in cybercafé (0.2%).

Table 5. IAT Score distribution of study subjects.

IAT group	Pattern	Males (n=245)	Females (n=255)	Total (N=500)	%
<20	Less than Average	14	31.00	45	9%
20-49	Average user	190	188	378	75.60%
50-79	Moderate user/Possible addict	38	33	71	14.20%
80-100	Addict	3	3	6	1.20%

The table 5 shows the distribution of study subjects according to their IAT scores.
Number of study subjects having IAT score < 20 was 45 (9%).
Number of study subjects having IAT score 20-49 was 378 (75.60%).
Number of study subjects having IAT score 50-79 was 71 (14.20%).
Number of study subjects having IAT score 80-100 was 6 (1.20%).
Mean IAT score was 35.85±15.41

Table 6. PSQI Score distribution of study subjects.

PSQI group	Pattern	Males (n=245)	Females (n=255)	Total (N=500)	%
<5	Good quality sleep	154	159.00	313	62.6%
≥5	Poor quality sleep	91	96.00	187	37.4%

The study group was divided into two categories according to their sleep quality. Those having PSQI less than 5 (<5) are classified as good sleepers and those having PSQI equal to or more than 5(≥ 5) are classified as poor sleepers. Table 6

The number of study subjects with PSQI Score <5(Good quality sleep) was 313 (62.6%).
The number of study subjects with PSQI Score ≥5 (poor quality sleep) was 187 (37.4%).
The mean PSQI Score of the study subjects was 4.55 (±2.28).

Table 7. Association of Internet Addiction (based on IAT scores) with Sleep Quality (PSQI scores)

IAT group	N	PSQI Mean scores	Std. Deviation	*p*-value
<50	423	3.78	1.31	<0.0001
≥50	77	8.77	1.75	

The table 7 shows the association of internet addiction with sleep quality. The study subjects were categorized into two groups based on their IAT score: Non-addicted (IAT 50) and Addicted (≥50).
Non -addicts includes those who used internet less than average IAT score (<20) and those who were average users with IAT score between (20 -49).
Addicts include the study subjects who were moderate users or possible addicts with IAT score (50-79) and severe addicts with IAT score (80-100).
It was observed that study subjects with IAT score less than 50 had good quality of sleep with PSQI less than 5 (<5).
Study subjects with IAT score more than 50 had poor quality of sleep with PSQI equal to or more than 5 (≥5).
A significant association was found between the internet addiction and sleep quality among the study subjects with (p-value <0.0001) which is statistically significant.

Table 8. Association of Sleep Quality (PSQI scores) with Internet use (IAT scores).

PSQI group	N	IAT Mean Scores	Std. Deviation	*p*-value
<5	313	27.52	7.94	<0.0001
≥5	187	49.80	14.78	

The table 8 shows the association of sleep quality with internet use [IAT scores]. The study groups were divided into 2 groups based on PSQI scores. with PSQI <5 good quality of sleep and PSQI ≥ 5 poor quality of sleep.
313 subjects in our study were having good quality of sleep and 187 subjects were having poor quality of sleep.
The mean IAT score of the study subjects with good quality sleep was 27.52
The mean IAT scores of the study subjects with poor quality sleep was 49.80
It was observed that study subjects having poor quality of sleep were having high IAT scores in comparison to those having good quality of sleep.
There was a significant association found between sleep quality and internet addiction (p-value<0.0001) which was statistically significant.

Table 9. Correlation between IAT and PSQI scores.

Correlations

		IAT	PSQI
IAT	**Pearson Correlation**	1	.862**
	Sig. (2-tailed)		.000
	N	500	500
PSQI	**Pearson Correlation**	.862**	1
	Sig. (2-tailed)	.000	
	N	500	500

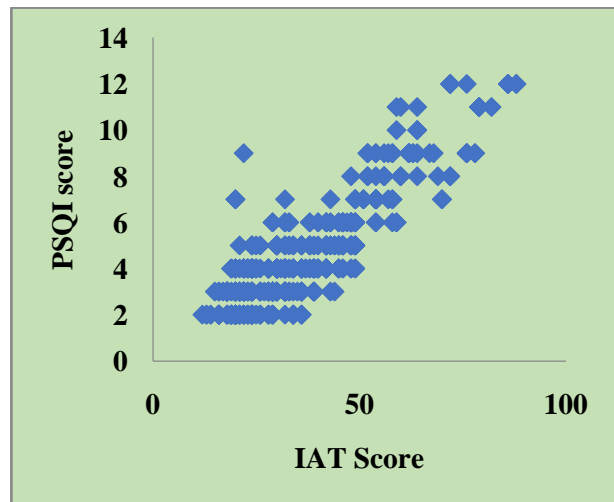****. Correlation is significant at the 0.01 level (2-tailed).**

Figure 1. Correlation graph between Sleep Quality (PSQI score) and Internet Use (IAT score).Taking IAT score on x-axis and PSQI score on y-axis.

Discussion
The severity of internet addiction is well established and in the fifth edition of the Diagnostic and

Statistical Manual of Mental Disorders (DSM-5), Internet Gaming Disorder is identified in Section III as a condition warranting more clinical research and experience before it might be considered for inclusion in the main book as a formal disorder. [11] Internet addiction is correlated with many Psychiatric and psychosocial disorder including poor sleep quality.[12] The COVID-19 pandemic has had a significant impact on everyday functioning, considerable measures being taken to reduce the spread of virus like prolonged lockdowns, physical distancing among others. Amidst all of this, studies report an increase in internet addiction especially among adolescents.[13]

Results of our study showed that there was no statistical significance between internet addiction and age, sex and residence of study group. There was no statistical significance between poor sleep quality and age, sex and residence of study group. Most of our study groups were using internet for education purposes, followed by social networking, entertainment and news/gaming. Most of the participants were using internet during night hours followed by evening, afternoon and least in the morning. Most of the participants were using internet at home followed by hostel, college and least at cyber café. 15.4% of our study group had problematic internet use (possible addicts/addicts) 37.4% of our study group were having PSQI score of ≥ 5 indicating poor sleep quality. There was poor sleep quality in moderate user or addicts than in normal on average user and this relationship was statistically significant in our study. Findings of our study were consistent with majority of such type of studies carried by various workers. Our study found that there is a significant relationship between internet addiction and quality of sleep among the medical students.

Conclusion

Detection of internet addiction therefore assumes a greater importance in professional institutions such as medical colleges. There should be measures in the 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 quality of life. Initiatives must be taken in order to create opportunities for relaxation, recreation and other extra-curricular activities. There is also a growing need to increase awareness of healthy sleep habits to improve the quality of life. It needs to be emphasized that students will have to be educated in safe and healthy practice for internet use.

Limitations

The present study was conducted in a single government tertiary care teaching hospital but the environment and educational resources may be different in private medical colleges as also in government degree colleges. Sample size of the study was less and was not carried out on large representative population. Both sleep quality and internet use was self reported.

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