

Internet Addiction and Sleep Quality among Adolescents of Secondary School of Biratnagar

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ABSTRACT

Background: Adolescents are becoming more and more dependent on the internet, which has a detrimental effect on the quality of their sleep. This study aimed to assess internet addiction and sleep quality among the adolescents of Secondary School in Biratnagar.

Methodology: A descriptive correlational study was carried out among 286 adolescent students of grades 11 and 12 at selected Secondary School, Biratnagar. Proportionate stratified random sampling was used to select the sample. Data was collected using a self-administered structured questionnaire. The standard tool “Internet Addiction Tool” and “Pittsburgh Sleep Quality Index” were used to assess level of internet addiction and sleep quality. The obtained data were entered in Statistical Package for Social Science (SPSS) version 23 and analyzed using descriptive and inferential statistics.

Results: The study findings revealed that more than half (55.9%) of the adolescents had good sleep quality. Nearly half (44.1%) of adolescents had poor sleep quality. Nearly half (45.1%) of the adolescents had normal level of addiction, 36.4% had mild internet addiction and 18.5% of adolescents had moderate addiction. There was significant association between level of internet addiction and the level of sleep quality (p value <0.05).

Conclusion: The study findings concluded that internet addiction is associated with poor sleep quality, so there is need to conduct various health education and promotion program at an early stage to prevent from psychological comorbidity on a regular basis.

Keywords: *Adolescents, internet addiction, sleep quality.*

INTRODUCTION

Adolescence refers to the stage in human development where individuals are making the transition from childhood to adulthood and it may be identified by the changes in biological processes, cognition, psychological, and social changes that take place during this period.¹ People’s sleep pattern is slightly impacted by increased use of digital media and the internet, and when sleep quality deteriorates, feelings of stress, anxiety, and depression get worse.² Due to early internet exposure, personality and individual risk factors, as well as environmental factors that increases their level of sensitivity, adolescents are considered to be a vulnerable population that is more to the danger of internet addiction.³ Adolescents try to cope with emotional crises that occur during adolescence by cutting off contact with others, avoiding lengthy social interaction, acting aggressively, and indulging in

addictive behavior. Adolescents are particularly drawn to modern technological forms of communication because they facilitate social interaction while also fostering anonymity, a sense of community, and social acceptance.⁴ Internet users are increasing at a pace of 4.1% per year (196 million users). The maximum amount of time spent on internet is 6 hours and 57 minutes per day on connected activities. Internet addiction was demonstrated by the excessive use of technology. Between 2021 and 2022, there were 822 thousand (7.7%) more internet users in Nepal.⁵ More than half of the world’s internet users live in Asia, where the percentage of people who use the internet has climbed from 17% in 2005 to 53.6% in 2019.⁶ There is mounting research that suggests a connection between internet addiction and various sleep problems. Internet addiction is one of the main factors contributing to the emergence and worsening of sleep disorders, notably

those affecting adolescents, in today's technologically advanced industrial society⁷. Since studies⁶ on internet addiction and sleep quality in diverse Nepali settings have shown that excessive internet addiction is linked to poor sleep quality. As a result, the researcher felt the need to undertake a study that would associate adolescent internet addiction with sleep quality.

METHODS

Descriptive cross- relational study was conducted among adolescents of Shikshyadeep Boarding Secondary School, Biratnagar-9, Morang. Population of the study were all the boys and girl's students, studying in science faculty in morning shift of grade 11 and 12. Total population for the study were 1050 students in both grade 11(i.e. 500) with 10 sections and 12 (i.e. 550) with 11 sections. Each section consists 50 students. The sample size for the study was estimated by using Cochran formula⁶, i.e. $n = z^2pq/e^2$. Proportionate stratified random sampling technique was adopted to select 286 sample in this study. Considering the grade as a stratum, adolescents' students was selected from each strata by simple random sampling method (lottery method). In the study, each stratum sample size was calculated by using the formula. Sample size (n^n) = $n/N \times N^n$. Sampling frame was generated from class teacher of Shikshyadeep boarding Secondary School. The roll number and grade of each respondent was written in a piece of paper. The papers was folded and mixed and 286 paper picked at random to select respondent to be included in the study. A self-administered Structured questionnaire was used to assess internet addiction and sleep quality among adolescents which consisted of two parts. The first part consisted of items related to socio- demographic and internet related variables. Socio- demographic variables included: Age in years, sex, grade, religion, types of family, place of residence, education of parents, occupation of parents, Income of parents and internet related variables included device for internet use, purpose of using internet, duration of internet use/day, money spent on internet/month. The second part consisted of Internet Addiction, which was assessed by using Internet Addiction Test⁸.

Internet Addiction Test is a reliable and validated instrument to measure internet addiction. It is developed by Dr. Kimberly Young. It consists of 20 items that measures mild, moderate and severe level of internet addiction. It is based upon 5- point Likert scale ranging

from 0-5. Where, 0= Not applicable, 1= Rarely, 2= Occasionally, 3= Frequently, 4= Often, 5= Always. The maximum score is 100. Higher the score higher is the severity of the problem.

The level of internet addiction was categorized as 0–30: Normal level of internet use 31–49: Mild level of internet addiction; 50–79: Moderate level of internet addiction and 80-100: Severe dependence upon internet addiction. The value of Cronbach alpha of internet addiction was 0.85.

The third part consisted of Sleep quality, which was assessed by Pittsburgh sleep quality index (PSQI)⁹. Pittsburgh sleep quality index (PSQI) was developed by Buysse and his colleagues in 1989 at the University of Pittsburgh. Pittsburgh sleep quality index (PSQI) which uses a 19 items tool to assess the sleep quality of adolescents over a period of one month. PSQI score creating seven component i.e. subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medication, day time dysfunction. Each of these major components is initially assessed within itself. Subsequently, the scores of seven elements are added together. The questions are graded on a scale of 0 and 3. Where, minimum score (0) is better and maximum score (3) indicate a worse. The global scores >5 were considered as poor sleep quality. The value of Cronbach alpha was 0.73 for sleep quality.

The pretesting of the tool was done among 29 adolescents, i.e. 10% of sample size at Arniko Secondary School to check its clarity, feasibility and understandability. Ethical permission was taken from the Institutional Review Committee of National Medical College (Ref. MN-NMC/558/080-081). Data Collection permission was taken from principal from Shikshyadeep Boarding Secondary School for data collection. The written informed consent was obtained from the parents and assent was obtained from the respondents. Privacy was maintained during data collection and confidentiality and anonymity of data was maintained. Data was collected from 2080/04/25 to 2080/04/32. The data was entered and analyzed in statistical package of social science (SPSS) version 16. The data was analyzed according to the nature of variables by using descriptive statistics (frequency, mean, standard deviation and percentage) to identify the level of internet addiction and level of sleep quality. Likewise, Inferential statistics (chi-square test

was used to measure the association between internet addiction and sleep quality with socio-demographic and spearman correlation test was used to measure the relationship internet addiction and sleep quality). Kolmogorov Smirnov Normality test was done to check the normality of data.

RESULTS

Table 1 shows Socio- demographic characteristics of respondents. The mean age of the respondents were 16.94 ± 0.959 years. More than half of the respondents (59.1%) were male. More than half (52.4%) of respondents were from grade 12. Almost all of the respondents (96.2%) followed Hindu religion. Majority (63.3%) of the respondent belonged to Nuclear family. Almost half (46.9%) stayed at parent’s house. Similarly, 37.1% of respondent’s family annual income is less than 1,00,000.

Table 1: Socio- demographic characteristics of respondents n=286

Variables	Number	Percent
Age (In years)		
Mean age ± SD, (range)=16.94±0.959 (16-17.9)		
Sex		
Male	169	59.1
Others	117	40.9
Grade		
Class 11	136	47.6
Class 12	150	52.4
Religion		
Hinduism	275	96.2
Christian	1	0.3
Muslim	10	3.5
Family type		
Nuclear	181	63.3
Joint	100	35.0
Extended	5	1.7
Residence		
Hostel	46	16.0
Without Parents	106	37.1
With Parents	134	46.9
Annual family income (In NRs)		
less than 1,00,000	106	37.1
1,00,001-2,50,000	82	28.7
2,50,001-5,00,000	55	19.2
above 5,00,001	43	15.0

Table 2 depicts more than half (55.9%) of the respondents had good sleep quality. Whereas nearly half (44.1%) had poor sleep quality.

Table 2: Respondents’ level of sleep quality n=286

Sleep quality	Number	Percent
Poor sleep quality (>5)	126	44.1
Good sleep quality (<5)	160	55.9

Table 3 shows nearly half (45.1%) had normal level, 36.4% had mild internet addiction followed by 18.5% of respondent had moderate addiction.

Table 3: Respondents’ level of internet addiction n=286

Level of Internet Addiction	Number	Percent
Normal (0-30)	129	45.1
Mild (31-49)	104	36.4
Moderate (50-79)	53	18.5
Severe (>80)	-	-

Table 4 reveals that there was significant association between the level of internet addiction and the level of sleep quality (p<0.000).

Table 4: Association of level of internet addiction with level of sleep quality among respondents n=286

Level of Sleep quality	Poor N (%)	Good N (%)	chi-square(χ ²) Value	P-value	
Level of Internet Addiction	Normal	36 (27.9)	93 (72.1)	25.657	0.000*
	Mild addiction	57 (54.8)	47 (45.2)		
	Moderate addiction	33 (62.3)	20 (37.7)		

* p-value significant at < 0.05

Table 5 shows relationship between internet addiction and sleep quality, which was determined by Spearman's rho test. The obtained P-value was found to be statistically significant (p = 0.000) at < 0.05 level of significance. Hence, there was significant relationship between Internet Addiction and poor Sleep Quality among Adolescents.

Table 5: Relationship between internet addiction and poor sleep quality among respondents (n=286)

Variables	Mean± SD	Spearman rho	P-value
Internet Addiction	34.53 ± 15.99	0.376	0.000*
Poor Sleep Quality	4.54 ± 2.52		

* p-value significant at < 0.05

DISCUSSION

In this study it was observed that nearly half of respondents (45.1%) had no addiction, whereas 36.4% had mild addiction and 18.5% had moderate addiction and none of the respondents had severe addiction which are similar with the findings of study conducted by Karki et al.,⁶ in peri-urban setting of Nepal, which showed that majority of respondent (65.2%) had no addiction, 21.5% had borderline addiction, 13.3% had possible addiction and none of the respondents had likely internet addiction. The present findings are in contrast with the findings of the study conducted by Agrawal.¹⁰ among adolescents in India which revealed that mild (53.31%), moderate (43.77%) and severe addiction (3%) respectively which is higher than the present study. Compared to the present study, these figures indicate a greater prevalence and intensity of internet addiction among Indian adolescents. The possible reason for variation may be due to variation in sample size, sampling settings and methodological approach.

This study showed that the mean percentage of sleep quality among adolescents is 4.54 ± 2.521 ., which is almost similar to the study conducted by Karki et al.,⁶ in which mean percentage of sleep quality of adolescents were 4.6 ± 2.3 . The similarity highlights a uniform pattern across adolescents, suggesting that poor sleep quality is prevalent in this age group. Similarly, The Mean \pm SD of Internet Addiction is 34.53 ± 15.99 , which is inconsistent to the study conducted by Bhandari et al¹¹. The inconsistency in findings may be explained by variations in research methodology, differences in cultural norms and practices, as well as geographical factors that shape adolescents' lifestyles and behaviors.

Study findings of Karki et al.⁶ revealed a statistically significant association between internet addiction and poor sleep quality which supports the present study findings regarding the association between internet addiction and sleep quality. However, Indian studies^{10, 12} report higher prevalence and severity of addiction, suggesting that contextual factors such as urbanization, access to technology, and cultural practices may explain the differences.

The present study revealed a significant positive correlation between internet addiction and poor sleep quality ($r = 0.376$, $p < 0.001$). This finding suggests that adolescents with higher levels of internet addiction are more likely to experience disturbances in their sleep patterns. The results are consistent with previous studies conducted both in Nepal⁶ and internationally¹³, reinforcing the growing evidence that excessive internet use negatively impacts sleep quality.

CONCLUSION

On the basis of study findings, it can be concluded that more than half of the respondents had internet addiction and nearly half of the respondents had poor sleep quality. It also revealed that internet addiction is associated with sleep quality among adolescents of secondary school of Biratnagar, Morang. So, there is need to conduct awareness program and health education program for adolescents.

CONFLICT OF INTEREST: We declare no conflict of interest

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