

Relation between Internet Addiction and Sleep Problems among Adolescents

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Abstract:

Background: The prevalence of internet use among adolescents has extremely increased and has negative impact on adolescents' lives. It appears to be related with problematic sleep habits and sleep problems. **The aim of the study:** investigate the relation between internet addictions and sleep problem among adolescents. **Subjects and Methods: Research design:** A Cross-sectional research design was adopted for this study. **Setting:** three preparatory and secondary schools at Assuit City in October 2016. **Subject:** A total of 180 adolescents were recruited to the study which selected randomly. **Tools of data collection:** There were three tools used in the current study as the following: A structured socio-demographic questionnaire, Young's Internet Addiction Scale (IAS) and semi-structured inquiry on sleep habits/sleep problems of adolescents. **Results:** The mean age of the sample was 14±0.98 years (range 12-18 years). The current study indicated an association between the internet addiction and impaired sleep. Results found to have higher frequencies of several sleep problems including difficulty in initiating and sustaining sleep, difficulty in waking up and feelings of sleepiness in day. **Conclusion:** It was concluded that sleep problems were found to be more frequent in adolescents with a higher IAS total score. **Recommendation:** Health care nursing providers must be aware of the possible negative impact of Internet addiction and Careful supervision and evaluation of adolescents to who are under the risk of internet addiction and sleep problems.

Key words: Internet addiction, sleep problems, adolescent.

Introduction

The internet has become an important tool for social interaction, information, and entertainment ⁽¹⁾. However, as the internet has moved into homes, schools, internet cafes, and businesses, there has been a rapidly growing public awareness of the potential adverse effects arising from excessive internet usage which is a condition also known by internet addiction ⁽²⁾.

Adolescence is a period of increased social interaction and tasks that occurs simultaneous with rapid growth. The result can be emotional instability, parental conflict, altered feelings of attachment and self-worth,

and a sense of isolation due to restricted independence and autonomy. These factors can promote addictive behavior in adolescents ^(3, 4). As adolescents allocate ever increasing time periods for internet use, the risk for developing maladaptive internet use (MIU) is inherent ⁽⁵⁾. Adolescents have the highest prevalence rates of Internet addiction ⁽⁶⁾. The prevalence of internet use among adolescents in the last ten years has extremely increased ⁽⁷⁾. Compared to those without internet addicts, the internet addicts had higher rates of psychopathy (65.0%), suicidal thoughts in a week (47.0%), history of suicide attempt (23.1%), and attempt for suicides in one year (5.1%)

⁽⁸⁾.Internet addiction is one of the problems emerged with the development of technology. Considering the potential negative effects of internet addiction on health ^(9,10). Internet addiction and other problematic internet use behaviors can have important influence on the sleep-wake program, leading to sleeplessness and other sleep disorders. Heavy internet use associated with insomnia, also increased time paid on the internet led to the important disturbance of sleep ^(11, 12, 13).and are associated with sleep delays, irregular sleeping patterns and excessive daytime sleepiness ⁽¹⁴⁾.Internet associated problems became the most significant social and behavioral problem, which can cause dysfunctional problems ⁽¹⁵⁾. such as grey matter atrophy in the brain, negatively affecting concentration and memory, as well as the ability to make decisions and set goals ⁽¹⁶⁾.In addition, heavy Internet use may cause psychological disorders, such as Internet addiction, depression, and anxiety ⁽¹⁷⁾.The nurses caring adolescents in clinic or school should play a vital role in preventing model of internet addiction. Adolescents addicted to Internet need enough support and consideration for them. So nurse's counselors and teachers also need to be aware of the prevalence and the problematic behaviors associated with excessive internet use for early prevention. And t is also necessary to make the youth and their parents aware of the dangers of internet addiction and pay attention to consequences connected with it and the identification of potentially life-threatening behaviors ^(18, 19).

Significance of the study:

93% of adolescences of ages 12–17 years old go online in the U.S, as do 93% of Japanese, 71.8% of

Chinese, and 74.5% of Indian adolescents the 26 cities that covered 65,000 persons in 16,500 household has shown 1.6 million school children use the internet for about 322 minutes a week and about 3.4 million college students use the internet about 433 minutes a week. The most frequently internet using by Egyptian students was (93%) and habitual use of internet late night was reported by 26.9% of Egyptian students ⁽⁷⁾.

Its negative influence on social functioning has brought to question the enduring effects of this reform. Excessive internet use can lead to sleep deprivation and restlessness apart from the physical problems such as backache Currently about 81 million internet users in India a number that will nearly triple by around 2015 to 237 million ⁽²⁰⁾. Internet addicts suffer from emotional problems such as depression and anxiety-related disorders and over 60% of people seeking treatment for IAD (Internet Addiction Disorder) ⁽²¹⁾.

Aim of the study:

The aim of this study was to investigate the relation between internet addictions and sleep problem among adolescents.

Research hypothesis:

There is an association between internet addiction and sleep problems among Adolescence

Subjects and Methods:

Research design:

A descriptive exploratory design was used.

Study setting:

This study was conducted at two preparatory and one secondary school students at Assuit City. These include Shohda El-thowra and El- tahrer

preparatory school, and El-Khayate secondary school. Data collection was conducted on October 2016.

Study subjects:

Multistage stratified sampling was adopted of 180 adolescents were recruited to the study at Assuit city which contains 15 governmental girls' preparatory schools; and 10 secondary schools. We selected 10% from the total number of schools by stratified random sample which was about three schools. The total number of students in all preparatory and secondary schools was about 500 to 600 students, we taken 10% of students from the three schools by simple random sample (180 girls) which was selected systematic randomly. The students were from grade one, two and three.

Tool for data collection:

There were three tools used in the current study as the following:

Tool I: A structured questionnaire was developed based on review of the related literature, consisted of four items about the socio-demographic characteristics of adolescent, including gender, age, and educational level.

Tool II: Young's Internet Addiction Scale to examine the impact on life related to internet use. It is comprised of 20 multiple-choice questions written at a 5-point Likert scale, classified as rarely, occasionally, frequently, often, and always; given a total score ranging from 20 to 100 points, with higher scores reflecting a greater tendency toward addiction. Three types of internet user groups were identified in accordance with the original scheme of Young: Internet addicts (IAs), possible internet addicts (Pas) and nonaddicts (NAs), whose scores on the IAS were higher than 80, 50-79, and below 50, respectively (22).

Tool III: Semi-structured Inquiry on sleep habits/problems. The inquiry included questions on the sleep habits/problems of the adolescents. The questions of the inquiry investigated the sleep habits of adolescents in weekdays) "When do you usually get to bed", "How long does it take you to fall asleep in the nights", "After falling asleep, how many times a night do you get awake (staying awake more than 10 minutes)", "How often do you sleep after coming from school", and "How do you grade your sleep quality". The questions of the inquiry were designed as a 5-point Likert scale (never, rarely, occasionally, frequently, and always) and questions focused on sleep problems of the sample. Some examples of the inquiry are as follows: "How often do you fall asleep in the classroom", "How often do you feel sleepy during lessons", "How often do you have trouble to wake up in the morning and have nightmares.

Content validity and reliability:

It was be used to modify the tools. It ascertained by 7 jury of expertise from 4 professor nursing and 3 professor medical staff, who were reviewed the tools for clarity, relevance, comprehensiveness, understandable and applicability.

The tool is reliable for this study, the knowledge by Cronbach,s Alpha is 0.82 and practice is 0.93 and also attitude is 0.86 by the same test.

Field work:

- Before starting this study, formal administrative approval were taken from authorities in the setting.
- Permission was obtained from ministry of education in Assiut City,

official permission from the managers of the five preparatory and secondary schools.

- After obtaining the written permission from the schools and permission from the girls for data collection, the girls were interviewed face to face by the researchers and a total of 180 questionnaires were distributed.
- Data collection was conducted in October 2016.
- The Participants were asked to read each question carefully and to answer the questions honestly. Also, they were asked to circle the answer that best described them the majority of the time.
- The researchers visited each school two to three times every week to collect the data. It was done during the routine work of the school.
- The participants take about 25-40 minutes to fulfillment the questionnaire.
- Investigation the relation between internet addictions and sleep problem among adolescents was done by Young's Internet Addiction Scale and semi-structured inquiry on sleep habits/problems.
- The researcher scored the scale of Young's Internet Addiction Scale which comprised of 20 multiple-choice questions written at a 5-point Likert scale which classified as rarely, occasionally, frequently, often, and always; given a total score ranging from 20 to 100 points, with higher scores reflecting a greater tendency toward addiction. Three types of internet user groups were identified in accordance with the original scheme of Young: Internet addicts (IAs), possible internet addicts (Pas) and nonaddicts (NAs), whose scores on the IAS were higher than 80, 50-79, and below 50, respectively.
- In semi-structured Inquiry on Sleep Habits/problems the questions of the inquiry were designed as a 5-point

Likert scale (never, rarely, occasionally, frequently, and always) and focused on sleep problems of the sample.

Pilot study:

A pilot study was carried out before starting of data collection on (10 %) of the study sample for the purpose to test the clarity, completeness, and to determine the time involvement. According to the results of the pilot study, the needed modification, omissions, and/or additions were done. Participants in the pilot study were excluded from the study subjects.

Administrative and Ethical consideration:

The researchers explained to students the aim, and methodology and benefit of the study. The students were clearly informed that their participation is voluntary and have the ethical right to participates or refuse the participation in the study. It was further emphasized that their responses are confidential, and had their right to withdraw from the study any time without giving further explanation. Privacy and confidentiality were resolutely kept in all data collection procedures.

Statistical analysis:

Data collected and analyzed by computer program SPSS" ver. 21" Chicago. USA. Data expressed as mean, Standard deviation and number, percentage. Person's correlation used to determine significance. N.s $P > 0.05$ no significant, * $P < 0.05$ significant, ** $P < 0.001$ moderate significance and *** $p < 0.000$ highly significance.

Results:

Table 1: Socio-demographic characteristics of adolescent, The table clarifies that 135 (75%) were female. The mean age of the sample was 13.42 ± 2.71 years and 153(85%) of adolescents were in Preparatory level.

Table 2: Displays Adolescents' sleep habits and sleep quality, the table clarifies that 18(10%) get to bed after 24:00, 11(6%) take 1 hour to fall asleep in the night, 30(17%) of adolescents only had very good sleep quality grade.

Table 3: Shows the frequencies of adolescents' sleep Problems, It can be noticed that 30 (17%) adolescents reported that they occasionally fall asleep in class, 30 (17%) adolescents reported that they frequently feel sleepy during lessons and 38 (21%) adolescents reported that they had difficulty to wake up in the morning.

Table 4: States internet use among adolescent .The table clarifies that 25% (n=45) of the adolescents reported using internet almost every day. 81 (45%) adolescents reported to spend more than 1 hour when they were online.

Table 5: Clarifies IAS total scores of the sample . according to the table (70%) adolescents had a IAS total score below than 50, (18%) adolescents had a IAS total score from 50 to 79 and (12%) adolescents had a IAS total score higher than 80.

Table 6: illustrates relation between total IAS and sleep problems of the adolescents, according to the table , there are a highly significant difference between total IAS and sleep problems.

Discussion:

Problematic Internet use is becoming a significant public health issue among adolescents that requires urgent attention. Excessive Internet use may not only have direct adverse health consequences but also have indirect negative effects through sleep deprivation. Internet addiction should be considered as a serious problem among the adolescents. So, it is necessary for adolescents and young adults to be educated for the proper use of the internet in order to prevent from internet addiction so that the aim of the study was to investigate the relation between internet addictions and sleep problem among adolescents Ataollah et al. ⁽²⁴⁾.

The current study mentioned that ten percent of adolescents get to bed after 24:00, and about six percent only take 1 hour to fall asleep in the night, less than one fifth of adolescents only had very good sleep quality grade, these results was similar to the results conducted by Ekinici et al. ⁽²⁵⁾.who found that the same percent of adolescents reported that they got to bed after 24:00 and more than one percent of the adolescents spent more than 30 minutes to fall asleep in the night. Also Tahiroglu et al. ⁽²⁶⁾.found that students used the internet more than 12 hours weekly.

In a study by Liu et al. ⁽²⁷⁾.found one fifth of adolescents reported their sleep quality as poor. A number of studies have shown late bed times and delayed sleeping in adolescents Moore, ⁽²⁸⁾.

The results of the current study showed that the frequencies of adolescents' sleep Problems that less than one - fifth adolescents reported that they occasionally fall asleep in class and more than one fifth

adolescents reported that they had difficulty to wake up in the morning, this result was in accordance with the study conducted by Ekinici et al. ⁽²⁵⁾ who reported as regarding the sleep problems that, almost one-third of his sample stated that they frequently felt tired and sleepy during the day and one-fifth stated that they frequently had difficulty to wake up in the morning.

The results of the current study stated that one quarter of adolescents were use the internet almost every day and less than half of adolescents reported to spend more than 1 hour when they were online, this result was in accordance with the study conducted by Ekinici et al. ⁽²⁵⁾ who reported that in his study, that approximately one-fourth of adolescents stated that they used the internet almost every day and spent more than one hour online and more than one quarter of them spending more than one hour when online. Ekinici et al., ⁽²⁵⁾ and also nearly to the study conducted by Tahiroglu et al. ⁽²⁶⁾ who found that less than ten percent of their students , used the internet more than 12 hours weekly.

In the current study we categorized IA to most of them was normal internet usage, less than one fifth of adolescents had a IAS total score from 50 to 79 and more than ten percent of adolescents had a IAS total score higher than 80.

Kakkar et al. ⁽²⁹⁾ matched with our result and found that more than one third and two percent of participants were categorized as moderate to severe Internet addiction respectively. Also Kheirhah et al. ⁽³⁰⁾ investigated the prevalence of Internet addiction in the Mazandaran province as they found that less than one quarter of the Internet users were Internet addicts.

The study illustrated the relation between total IAS and sleep problems of the adolescents and revealed that there was a highly significant difference between total IAS and sleep problems, . the results were in the same line with Van, ⁽³¹⁾ and Yen et al. ⁽³²⁾ who mentioned in his study that, that excessive internet use was related with delayed bed times, delayed wake-up times and tiredness in weekdays.

Also finding conducted by Ekinici et al. ⁽²⁵⁾ who stated that sleep problems were found to be more frequent in adolescents with a higher IAS total score.

Conclusion:

It was concluded that sleep problems were found to be more frequent in adolescents with a higher IAS total score; sleep disturbance is associated with problematic Internet use

Recommendation:

- Health care providers must be aware of the possible negative impact of Internet addiction
- Careful supervision and evaluation of adolescents to who are under the risk of internet addiction and sleep problems.
- Prevention programs should be implemented for the school' students as a role of school nurses to develop their abilities in teaching and counseling and in preventing and responding to internet addiction also encourages school staffs to cooperate to monitor students who are may have potentially life-threatening behaviors
- Internet addiction should be considered as a serious problem among the adolescents. So, it is

necessary for adolescents and young adults to be educated for the proper use of the internet in

order to prevent from internet addiction.

Table (1): Socio-demographic characteristics of adolescent

Items	%	No
Age (years)		
12 -	50	90
14 -	35	63
16 - 18	15	27
Mean± SD		13.42 ± 2.71
Gender		
Female	75	135
Male	25	45
Educational level		
Preparatory	85	153
Secondary	15	27

Table 2: Adolescents' sleep habits and sleep quality

Sleep habits and sleep quality of adolescents					
When do you usually get to bed? (In hours, N %)	20:00-21:00 63(35%)	22:00 38(21%)	23:00 54(30%)	24:00 7(4%)	After 24:00 18(10%)
How much time does it take to fall asleep in the nights? (In minutes, N %)	5-10 74(41%)	15-20 63(35%)	30 18(10%)	30-45 14(8%)	1 hour 11(6%)
After falling asleep, how many times a night do you get awake? (N %)	Never 81(45%)	1-2 63(35%)	3-4 27(15%)	5-7 7(4%)	8-10 2(1%)
How often do you sleep after coming from school? (N %)	Never 45(25%)	Rarely 68(38%)	Occasionally 38(21%)	Frequently 20(11)	Always 9(5%)
How do you grade your sleep quality? (N %)	Very good 30(17%)	Good 63(35%)	Moderate 54(30%)	Bad 22(12)	Very bad 11(6%)

Table 3: Characteristics of adolescents' sleep problems

Items	Never n (%)	Rarely n (%)	Occasionally n (%)	Frequently n (%)
Fall asleep in class	77(43%)	68 (38%)	30(17%)	5(2%)
Feel sleepy during lessons	13(7%)	65(36%)	72(40%)	30(17%)
Difficulty to wake up in the morning	16(9%)	56(31%)	70(39%)	38(21%)
Have nightmares	63(35%)	72(40%)	27(15%)	18(10%)

Table (4): Internet use among Adolescent

Items	%	N
How often do you use internet in a week?		
- Once in a week	40.00	72
- 2-3 times a week	35	63
- Almost everyday	25	45
How much time do you usually spend when you are online?		
- Less than 30 minutes	20	36
- Between 30 and 60 minutes	35	63
- More than 1 hour	45	81

Table (5): IAS total Score

Items	Below 50	*50-79	*Higher than 80
IAS total Score	(126)70	(32)18	(22)12

Table 6: Relation between total IAS and sleep problems of the adolescents

Items	IAS total Score			p-value
	Below *50 (126)70	*50-79 (32)18	*Higher than 80 (22)12	
How often do you fall asleep in class?				
Never or rarely	132(73)	43(24)	5(3)	*0.001
Occasionally	102(57)	69(38)	9(5)	
Frequently	60(33)	97(54)	23(13)	
How often do you feel sleepy during lessons				
Never or rarely	145(81)	31(17)	4(2)	*0.001
Occasionally	110(61)	63(35)	7(4)	
Frequently	88(49)	87(48)	5(3)	
How often do you have difficulty to wake up in the morning				
Never or rarely	142(79)	34(19)	4(2)	*0.001
Occasionally	135(75)	40(22)	5(3)	
Frequently	101(56)	72(40)	7(4)	
How often do you have nightmares				
Never or rarely	126(70)	49(27)	5(3)	*0.001
Occasionally	123(68)	50 (28)	7(4)	
Frequently	101(56)	65(36)	14(8)	

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