

Quality of Sleep among the Adolescents Using Smartphone at a Selected College

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Abstract

Sleep is a natural periodic state of rest for mind and body with closed eyes characterized by partial or complete loss of consciousness. The depth of the sleep is not constant throughout the sleeping period. The quality of adolescent sleep may have changed due to smartphones, at the same time the prevalence of neck pain and low back pain have been increased. So, the researcher was interested to carry out a "A study to assess the quality of sleep among the adolescents using smartphone at a selected college". Major objectives of the study were to assess the quality of sleep among adolescents. The research approach used in the study was quantitative approach. The investigator adopted a non-experimental descriptive research design. The study was conducted at SCPM College of Nursing and Paramedical Sciences, Gonda. The sample size of the study was 164 college students. Non probability convenient sampling technique was used to assess the quality of sleep among college students based on objectives. The tools used for data collection were demographic variables performance and Sleep quality scale (SQS) was used to assess the quality of sleep among adolescents. Data collection was done for a period of one week. It took nearly 30 minutes for the sample to complete data collection. The same procedure was followed for all samples. The data was analyzed using descriptive and inferential statistics. *Major findings of the study was* The Level of quality of sleep among adolescents using smart phone findings revealed that out of the 164 samples of adolescents, 4 (2.43%) have poor quality of sleep, 63 (38.41%) have mild quality of sleep, 88 (53.65%) had moderate quality of sleep, 10 (6.09%) had good quality of sleep. The findings of the study shows that the college students have some sleep problem with using smart phone.

Keywords: Quality of Sleep; Adolescents; Smartphone.

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INTRODUCTION

Sleep is a natural periodic state of rest for mind and body with closed eyes characterized by partial or complete loss of conscious. Sleep is a basic necessity that constitutes almost one third of hours in a human life time. It is a reversible unconsciousness, were the body and mind are renewed, repaired and developed. Sleep is a corner

stone of adolescence development. Although the sleep duration varies 8 to 10 hours per night is sufficient for like sleep deficiency, Kidney diseases, High blood pressure, Diabetes mellitus and Stroke. There are many types of sleep disorders like insomnia; sleep related breathing disorders, adolescence.¹

Lack of sleep has a influence on quality of life as it may result in consequences central disorders of hyper somnolence, circadian rhythm sleep wake disorders, parasomnics. Smart phone can change the sleeping time and shorten the sleeping period. Smart phones content can cause extreme excitement or cause recurring voyages. There is a relationship between smart phone usages and sleep quality. In sleep quality has been affected in delayed the sleeping time, sleeping difficulty because of over usage of smart phones. In Recently this problem is seen commonly in adolescence like college students who use mobile phones in night time and not able to go for sleep will reduce the sleeping quality of adolescence.²

Indian Journal of occupational and Environmental Medicine (2016) statistics showed that 70% of adults with sleep disturbances had health consequence such as high blood pressure, back pain and gastrointestinal disturbances. There are several factors that affect sleep. These factors can be both external and internal. Internal factor include change within the body such as alterations in brain functions when it goes through the stages of development of mental stress. External factors affecting sleep include food, sleep, environment and medications, education increase risk for sleep disturbances.³

Need for the study

India's mobile phone industry is one of the fastest growing industries in the world. According to a senior analysis of consumer research at the younger group children's ageing 12 years told have their mobiles with various activities. Many parents are buying mobile phones for their children. Mobile phones can make parents and children's feel safer.⁴

Subscription to mobile phones has increased drastically during the past decade. In 2013, there are almost as many subscriptions to more than half of them (3.5 billion of the total 6.8 billion subscriptions). Mobile phone industries have been one of the fastest growing industries in recent times. At present, India has 287 million mobile phone users and nearly 1,15,000 towers which emit electromagnetic radiations. But the end of 2010, the number of mobile phone users is estimated to rise

to 500 million. The use of mobile phones among young children is also increasing drastically.⁵

National Sleep Foundation (2017) statistics showed that about 50-70 million adults have sleep disorders. 48% report snoring, 37.9% falling asleep during a day, 47% falling asleep while driving, 30% were have insomnia. In worldwide international journal of preventive medicine (2014), statistics showed that, the prevalence of over use of cell phone was 10.5% and the prevalence of sleep quality was 61.7% of students used more than 2 hours of daily. The total score of sleep quality showed a Significant direct correlation by cell phone addiction score. In India JK Nayak Computers and education 123, 164-173, (2018) statistics showed that, the number of smart phone users in adolescence in India was estimated to reach over 760 Millions in 2021, and the number of smart phone users in worldwide forecasted to exceeds 3.8 Billionusers in 2021. In Tamil Nadu Gideon J.L, *et al* (2018) nearly 43.36% of the rural citizen in Himachal Pradesh have smart phones with net Connection and in Tamil Nadu its around 41.98%.⁶

Smartphone, a device that was once considered has now become a necessity. Following its introduction in 1973, for the sole purposes of making and receiving calls, with the advancement in technology its usage, has evolved to a maximum including facilities like camera, internet and much more.⁷

Many adolescents have more than one Smartphone with them. During the investigation, the investigator found that many adolescents were addicted and having problems with wrong usage of smartphones. This leads to a decreased quality of life which makes adolescents get complicated in their health issues in future. It is extremely important for the nurse to assess the knowledge on the impact of Smartphone on physical health among adolescents. So, this has been a driving force for the investigator to conduct such a study to assess sleep quality among adolescents using Smartphone at a selected college.

Statement

A study to assess the quality of sleep among the adolescents using Smartphone at a selected college in Gonda.

OBJECTIVES

1. To assess the quality of sleep among the adolescents using Smartphone.

- To associate the level of quality of sleep among the adolescents using Smartphone with their selected demographic variables.

Null Hypothesis

NH₁: There is no statistically significant association between the quality of sleep among adolescents using Smartphone with their selected demographic variables.

Assumptions

- Adolescents need to have adequate information regarding hazards of smartphone usage.
- Adolescent need to be given education programme on hazards of smartphone usage.

Delimitations

- The study was delimited to a period of one week of data collection.
- Smart phone usage is limited in SCPM College of Nursing and Paramedical Sciences, Gonda.

Criteria for Sample Selection

Inclusion Criteria

- Students who are willing to participate in the study. Students who were present at the time of data collection.
- Students who use more than 2 hours per day

Exclusion Criteria

- Students who are not able to read and write in English.
- Students who were not present at the time of data collection.
- Students those who don't have smart phone.

METHODOLOGY

The research approach used in the study was quantitative approach. The investigator adopted a non-experimental descriptive research design. The study was conducted at SCPM College of Nursing and Paramedical Sciences, Gonda. The sample size of the study was 164 college students. Nonprobability convenient sampling technique was used to assess the quality of sleep among college students based on objectives. The tools used for data collection were demographic variables performance and Sleep quality scale (SQS) was used to assess the quality of sleep among adolescents.

Data collection was done for a period of one week. After obtaining formal permission, investigators approached each student who fulfilled inclusion criteria and a brief introduction about the study was given. Samples were made comfortable, and confidentiality of the response was assured. It took nearly 30 minutes for the sample to complete data collection. The same procedure was followed for all samples. The data was analyzed using descriptive and inferential statistics.

RESULTS

The table 1 shows the frequency and percentage distribution of the demographic variables among the adolescents using smart phones.

Table 1: Frequency and percentage distribution of the demographic variables among the adolescents using smartphone

Demographic Variables	Frequency	Percentage
	(No)	(%)
<i>Level of education</i>		
a) 1st year Bsc Nursing	34	20.73
b) 2nd year Bsc Nursing	48	29.26
c) 3rd year Bsc Nursing	47	28.65
d) 4th year Bsc Nursing	35	21.34
<i>Gender</i>		
a) Male	0	0
b) Female	164	100
c) Other	0	0
<i>Age of the student</i>		
a) 17 - 18	31	18.90
b) 19 - 20	93	56.70
c) 21 - 22	38	23.17
d) Above 22	2	1.21
<i>Religion</i>		
a) Hindu	25	15.24
b) Christian	138	84.14
c) Muslim	1	0.60
d) Others	0	0
<i>Family History</i>		
a) Joint Family	37	22.56
b) Nuclear Family	123	75
c) Extended Family	1	0.61
d) Single parent Family	3	1.83

table cont...

<i>Income level per year</i>		
a) 20000 - 50000	76	46.30
b) 50001 -100000	44	26.82
c) 100001 - 150000	25	15.24
d) Above 150000	19	11.58
<i>Sleep hours</i>		
a) More than 10 hours	4	2.43
b) 9 hours	20	12.19
c) 8 hours	87	53.04
d) Less than 7 hours	53	32.31
<i>Woke up time</i>		
a) Before 5 am	74	45.12
b) Between 5 - 6 am	44	26.82
c) Between 6 - 7 am	22	13.41
d) After 7 am	24	14.63
<i>Duration of smartphone usage</i>		
a) 1 - 2 years	4	2.43
b) 3 - 4 years	24	14.63
c) 5 - 6 years	74	45.12
d) More than 6 years	62	37.80
<i>Average time does the phone spend a day</i>		
a) 3 hours	28	17.07
b) 4 hours	28	17.07
c) 5 hours	35	21.34
d) More than 5 hours	73	44.51
<i>Have any use of smartphone at bedtime</i>		
a) Yes	39	23.78
b) No	62	37.80
c) Sometimes	63	38.41
<i>Do you sleep with your mobile</i>		
a) Yes	27	6.46
b) No	107	65.24
c) Sometimes	30	18.29
<i>Do you have any pain in wrist or back of neck from phone use while bedtime</i>		
a) Yes	17	10.36
b) No	125	76.22
c) Sometimes	22	41

With respect to level of education, 34 (20.73%) were in the 1st yr. BSc Nursing, 48 (29.26%) were in 2nd yr BSc Nursing, 47 (28.65%) were in 3rd yr BSc Nursing and 35 (21.34%) were in 4th yr BSc Nursing. With respect to gender, 164 (100%) were females. With respect to age 31 (18.90%) were in

17-18 years, 93 (56.70%) were in 19-20 years, 38 (23.17%) were in 21-22 years and 2(1.21%) were in above 22 years.

With respect with religion 25 (15.24%) are Hindu, 138 (84.14%) are Christian, 1 (0.60%) are Muslim. With regards to family history 37 (22.56%) were in joint family, 123 (75%) were in nuclear family, 1(0.61) were in extend family and 3 (1.83%) were in single parent family. With respect to income level per year 76 (46.3%) were in 20000-50000, 44 (26.82%) were in 50001-100000, 25 (15.24%) were in 100001-150000, 19 (11.58%) were in above 150000.

With respect to sleep hours 4 (2.43%) were in more than 10 hours, 20 (12.19%) were in 9 hours, 87 (53.04%) were in 8 hours and 53 (32.31%) were in less than 7 hours. With respect to woke up time 74 (45.12%) were in before 5 am, 44 (26.82%) were in Between 5 - 6 am 22(13.41%) were in Between 6 - 7 am and 24 (14.63%) were in After 7 am. With respect to duration of smartphone usage 4 (2.43%) were in 1 - 2 years, 24 (14.63%) were in 3 - 4 years (45.12%) were in 5 - 6 years and 62 (37.80%) were in More than 6 years. With respect to average time does the phone spend a day 28 (17.07%) were in 3 hours, 28 (17.07%) were in 4 hours, 35 (21.34%) were in 5 hours and 73 (44.51%) were in More than 5 hours.

With respect to having any use of smart phone at bedtime 39 (23.78%) were using smart phone at bedtime, 62 (37.80%) were not using smart phone at bed-time and 63 (38.41%) were sometimes using smart phone at bedtime. With respect to do you sleep with your mobile, 27 (16.46%) sleep with mobile, 107 (65.24%) were not sleep with mobile and 30 (18.29%) were using mobile in sometimes. With respect to pain in wrist or back of neck from phone use while bedtime 17 (10.36%) were having pain in the wrist or back of neck from phone use while bed time, 125 (76.22%) were not having pain in the wrist or back of neck from phone use while bed time and 22 (13.41%) were having sometimes pain in the wrist or back of neck from phone use while bedtime.

Table 2: Frequency and percentage distribution of quality of sleep among adolescents using smartphone.

Level of Quality of Sleep	Frequency (n)	Percentage (%)
Poor quality of sleep (57 - 75)	4	2.43
Mild quality of sleep (38 - 56)	63	38.41
Moderate quality of sleep (20 - 37)	88	53.65
Good quality of sleep (0 - 19)	10	6.09

Table 2 reveals the frequency and percentage distribution of the quality of sleep among 164 adolescents, revealed that 4 (2.43%) students have poor quality of sleep, 63 (38.41%) have mild quality of sleep, 88 (53.65%) had moderate quality of sleep, 10 (6.09%) had good quality of sleep.

Table 3: Assessment of mean and standard deviation of quality of sleep among the adolescents using smartphone. N = 164

Variable	Mean	Standard Deviation
Quality of Sleep	35.81	10.74

Table 2 States the mean and standard deviation of the quality of sleep among the adolescents using smart phone. The study revealed that the quality of sleep meanvalue was 35.81 with the standard

deviation of 10.74.

The findings of the table revealed that there was a statistical significant was found between the quality of sleep and demographic variable such as level of education at ($x^2 = 15.65$, $p < 0.001$) Age of the student ($x^2 = 107.41$ $p < 0.001$), Religion at ($x^2 = 14.63$, $p < 0.001$), Family History at ($x^2 = 4.29$, $p < 0.001$), Income level per year at ($x^2 = 18.86$, $p < 0.001$), Sleep hours at ($x^2 = 4.43$, $p < 0.001$), Woke up time at ($x^2 = 20.9$, $p < 0.001$), Duration of smartphone usage at ($x^2 = 3.71$, $p < 0.001$), Average time does the phone spend a day at ($x^2 = 3.71$, $p < 0.001$), use of smart phone at bedtime at ($x^2 = 1.74$ $p < 0.001$), pain in wrist or back of neck from phone use while bedtime at ($x^2 = 9.04$, $p < 0.001$), whereas no significant association was found with the remaining variables at $p < 0.05$ level.

Table 4: Association of quality of sleep among adolescents with their selected demographic variables

Demographic Variables	Poor quality of sleep		Mild quality of sleep		Moderate quality of sleep		Good quality of sleep		Chi-Square Value
	F	P	F	P	F	P	F	P	
	(n)	%	No	%	No	%	No	%	
Level of education									
a) 1st year Bsc Nursing	0	0	15	9.14	15	9.14	4	2.43	$x^2 = 15.65$ d.f = 9 $p < 0.001$ (S)*
b) 2nd year Bsc Nursing	0	0	24	14.6	23	14.02	2	1.21	
c) 3rd year Bsc Nursing	0	0	16	9.75	28	17.07	2	1.21	
d) 4th year Bsc Nursing	3	1.82	13	7.92	18	10.97	1	0.6	
Age of the student									
a) 17 - 18	0	0	8	4.87	20	12.19	2	1.21	$x^2 = 107.41$ d.f = 9 $p < 0.001$ (S)*
b) 19 - 20	1	0.6	38	23.1	48	29.26	6	3.65	
c) 21 - 22	1	0.6	20	12.9	17	10.36	1	0.6	
d) Above 22	0	0	1	0.6	1	0.6	0	0	
Religion									
a) Hindu	1	0.6	12	7.31	13	7.92	1	0.6	$x^2 = 14.63$ d.f=9 $p < 0.001$ (S)*
b) Christian	2	1.21	61	37.1	68	38.1	5	3.04	
c) Muslim	0	0	1	0.6	0	0	0	0	
d) Others	0	0	0	0	0	0	0	0	
Family History									
a) Joint Family	0	0	22	13.41	14	8.53	1	0.6	$x^2 = 4.29$ d.f=9 $p < 0.001$
b) Nuclear Family	3	1.82	47	28.65	65	39.63	8	4.87	
c) Extended Family	0	0	0	0	1	0.6	0	0	
d) Single parent Family	2	1.21	1	0.6	0	0	0	0	
Income level per year									
a) 20000 - 50000	1	0.6	33	20.12	40	24.39	4	2.43	$x^2 = 18.86$ d.f=9 $p < 0.001$ (S)*
b) 50001 - 100000	1	0.6	18	10.97	22	13.41	4	2.43	
c) 100001 - 150000	0	0	12	7.31	12	7.31	1	0.6	
d) Above 150000	0	0	7	4.26	9	5.48	0	0	

table cont...

Sleep hours									
a) More than 10 hours	0	0	1	0.6	3	1.82	0	0	$\chi^2 = 4.43$ d.f=6 p<0.001
b) 9 hours	1	0.6	8	4.87	13	6.7	2	1.21	
c) 8 hours	1	0.6	35	21.3	45	27.43	6	3.65	
d) Less than 7 hours	2	1.21	25	15.24	22	13.41	2	1.21	
Woke up time									
a) Before 5 am	0	0	0	0	3	1.82	1	0.6	$\chi^2 = 20.9$ d.f=6 p<0.001 (S)*
b) Between 5 - 6 am	0	0	13	7.92	12	7.31	1	0.6	
c) Between 6 - 7 am	1	0.6	30	18.29	35	21.34	5	3.04	
d) After 7 am	2	1.21	26	15.85	33	20.12	2	1.21	
Duration of smartphone usage									
a) 1 - 2 years	1	0.6	34	20.73	32	19.52	5	3.04	$\chi^2 = 3.71$ d.f=9 p<0.001
b) 3 - 4 years	1	0.6	16	9.75	23	14.02	2	1.21	
c) 5 - 6 years	1	0.6	8	4.87	14	8.53	1	0.6	
d) More than 6 years	0	0	9	5.48	15	9.14	2	1.21	
Average time does the phone spend a day									
a) 3 hours	1	0.61	14	8.53	14	8.53	0	0	$\chi^2 = 3.71$ d.f=9 p<0.001
b) 4 hours	0	0	10	6.09	15	9.14	3	1.82	
c) 5 hours	1	0.6	14	8.53	16	9.75	4	2.43	
d) More than 5 hours	1	0.6	26	15.85	40	24.39	3	1.82	
Use of smartphone at bedtime									
a) Yes	0	0	17	10.36	21	12.8	1	0.6	$\chi^2 = 1.74$ p<0.001
b) No	2	1.21	22	13.41	34	20.73	4	2.43	
c) Sometimes	2	1.21	26	15.85	31	18.9	4	2.43	
Sleeping with smartphone									
a) Yes	1	0.6	10	6.09	14	8.53	2	1.21	$\chi^2 = 11.26$ d.f=6 p<0.001 (S)*
b) No	1	0.6	46	28.01	53	32.3	6	3.65	
c) Sometimes	1	0.6	11	6.7	17	10.36	2	1.21	
Do you have any pain in wrist or back of neck from phone use while bedtime									
a) Yes	2	1.21	5	3.04	7	4.26	1	0.6	$\chi^2 = 9.04$ d.f=6 p<0.001
b) No	2	1.21	55	33.53	61	37.1	8	4.87	
c) Sometimes	0	0	9	5.48	14	8.53	0	0	

DISCUSSION

The first objective findings revealed that the frequency and percentage distribution of sleep quality of sleep among 164 adolescents, 4 (2.43%) have poor quality of sleep, 63 (38.41%) have mild quality of sleep, 88 (53.65%) had moderate quality of sleep, 10 (6.09%) had good quality of sleep. The mean quality of sleep among adolescents using smartphone was 35.81 with standard deviation of 10.74.

The second objective of the findings revealed that there was a statistically significant association was found between quality of sleep and demographic

variable. Hence hypothesis stated that "there is no significant association of the quality of sleep among the adolescents using smartphone with their selected demographic variables" was not accepted with the demographic variables.

The findings of the study was supported by the following study regarding relationship between demographic and quality of sleep. The study was conducted among 200 students of a college. Questionnaire method was used for the study. The research design was descriptive looking at the sleep quality among adolescents. The research findings showed that there were no significant differences between sleep quality and demographic variables.⁸

CONCLUSION & SUMMARY

Increasing mobile phone usage and lack of adequate knowledge about the quality of sleep among adolescents using smartphone could be important reasons to have contributed to rise in physiological and psychological health symptoms among adolescents. Lack of sleep has an influence on the quality of life as it may result to consequences, and it can be minimized or eliminated by spreading awareness on the subject matters especially on restricted usage and getting habituated to devices. The enhancement of knowledge regarding the quality of sleep among adolescents using smart phone is essential in preventing complications.

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