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Original Article

A Descriptive Study to Assess the Quality of Sleep among Adolescents in Selected Schools of the City in View to Prepare Information Booklet

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Abstract

Background: It is of utmost importance to understand the repercussions of unhealthy sleep pattern and the environmental factors which affect the sleep quality among adolescents so that urgent actions could be taken to mitigate the effect. A community based cross-sectional study was conducted to determine the prevalence of poor sleep quality among adolescents of an urban resettlement colony and to evaluate the association of poor sleep quality with the correlates. About 257 adolescents aged 15–18 years were involved in the study.

Materials and Methods: The research design is a descriptive research design use to assess the quality of sleep among adolescents in selected schools of the city. The investigator conducted the study in selected schools of the city. The targeted population of the study will be adolescent of 10th std students. The adolescents studying at selected schools of the city. The sampling technique use in this study is non-probability purposive sampling for sample and simple random sampling technique for selecting the schools.

Result: A 136 (52.91%) have moderate sleep trouble, 83 (32.29%) have light, and 38 (14.78%) have severe. There was a strong relationship between family type, number of siblings, studying in bed, school distance, and mobile phone ownership. Age, gender, religion, monthly family income, place of residence, duration of sleep time, duration of screen addiction social media, mode of travel to school, and physical difficulties were not associated with adjustment problems.

Conclusion: The findings of the present study indicated that adolescent having moderate to mild level of sleep difficulty.

Keywords: Descriptive study, quality of sleep, adolescents, schools

Introduction

It is of utmost importance to understand the repercussions of unhealthy sleep pattern and the environmental factors which affect the sleep quality among adolescents so that urgent actions could be taken to mitigate the effect.[1]

Sleep is a regular cycle of a person's life from birth on and functions as a healthy preparation for the following day, enabling a person to rest, grow, develop, and learn. Although the duration of sleep varies from person to person, studies have shown that adolescents need at least 8–10 h of sleep per night.[2]

Phase of adolescence is marked by changes that occur on many deferent aspects of the individual's life including, changes in sleep patterns.[3]

Sleep plays an active role in the brain during an individual's overall development, especially regarding restorative functions.[3]

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Some study analysis showed that about 20% of adolescents were observed as poor sleepers.[3]

Some researches focusing on disturbed sleep and associated factors in adolescents, found that almost 35% of adolescents showed poor sleep that increased with age.[3]

Whereas, the prevalence of poor sleep, increases with age, grade level, and older adolescents showed worse sleep problems and sleep disturbances. Psychological factors may direct the sleep patterns in adolescents, interacting with biological regulatory processes, like autonomy to decide the right time to go to bed, use of technology/electronic equipment, social activities, and parental-set-bedtime.

Adolescents need for sleep has been estimated up to 9.2 h/day. Poor sleep may lead to poor diet, obesity, stunted growth, mental health issues, and substance abuse.[1]

Sufficient and shorter sleep latency may lead to better academic performances as compared to insufficient sleep.[1]

The factors that are been associated with poor sleep quality found that, use of electronic devices such as television, gaming consoles, and computer, being an important part in the lives of the present day of adolescents, that seem to affect the quality of sleep.[1]

Objectives

The objectives are as follows:

1. To assess the quality of sleep among adolescents
2. To find out the significant association between the quality of sleep score among adolescent with selected demographic variables.

Materials and Methods

Study design and setting

The research design is a descriptive research design use to assess the quality of sleep among adolescents in selected schools of the city. The investigator conducted the study in selected schools of the city.

Sample size and sampling method

Sample size

The adolescents studying at selected schools of the city. The sample size comprised 257 adolescents who met with the inclusion criteria.

Sampling method

The sampling technique use in this study is non-probability purposive sampling for sample and simple random sampling technique for selecting the schools.

Data collection procedure

The adolescents who fulfilled the criteria were selected by the non-probability purposive sampling method. The researcher introduced themselves to the adolescents. The researcher assured the participants for the confidentiality of their responses. All the data collected by Google form in pandemic condition. The purpose of this study was explained to every sample so as to get their full cooperation. Adequate privacy was provided to every sample. The main study was conducted for a period of 4 week. 257 adolescents were taken as a sample by the simple random sampling method.

Plan for data analysis

The collected data were analyzed using descriptive statistics such as frequency and percentage. The analyzed data were presented in the form in tables and figures. The study data were analyzed in following way-

1. Socio demographic data: This would be analyzed in terms of frequency and percentage, was presented in diagram.
2. Quality of sleep: This would be analyzed in terms of frequency and percentage, was presented in diagram.
3. Association with the quality of sleep level with demographic variables: This would be analyzed in terms of frequency and percentage and Chi-square test.

Data analysis and interpretation

- Section A: Distribution of samples according to demographic variables [Table 1]
- Section B: Distribution of samples according to quality of sleep among adolescent [Table 2]
- Section C: Association between the quality of sleep score among adolescent with selected demographic variable [Table 3].

Section A: Distribution of samples according to demographic variables

- The majority of samples 147 (57.19%) belongs to 15–16 years and 110 (42.80%) belongs to 17–18 years
- 146 (56.80%) were female and 111 (43.19%) were male
- 103 (40.07%) belong to Hindu religion followed by 81 (31.51%) belongs to Christian religion 62 (24.12%) belongs to Muslim religion and 11 (4.28%) belongs to other religion
- The majority of the samples 151 (58.75%) having monthly family income between 10,001 and 30,000 Rs. Followed by 78 (30.35%) having <10,000 Rs. 23 (8.94%) having 30,001–50,000 Rs. And 5 (1.94%) having 50,000 and above
- The majority of the samples 154 (59.92%) having nuclear family followed by 99 (98.52%) having joint family and 4 (1.55%) had extended family
- The majority of respondent 97 (37.74%) having more than two siblings followed by 83 (32.29%) having two siblings and 77 (29.96%) having one sibling
- 109 (42.41%) living in home followed by 78 (30.35%) living at relatives' home, 64 (24.90%) living at hostel, and 06 (2.33%) living as a paying guest
- 182 (70.81%) taking less than 6 h of sleep followed by 54 (21.01%) taking 6–8 h of sleep and 21 (8.17%) taking more than 8 h of sleep
- 201 (78.21%) using social media more than 1 h followed by 48 (18.67%) using 1 h and 8 (3.11%) using <30 min. 131 (50.97%) study while lying in bed and 126 (49.02%) does not have habit of study while lying in bed

Table 1: Frequency and percentage distribution of demographic variables (*n*=257)

Characteristics	Category	Samples	
		Frequency	Percentage
Age	15–16 years	147	57.19
	17–18 years	110	42.80
Gender	Male	111	43.19
	Female	146	56.80
Religion	Hindu	103	40.07
	Muslim	62	24.12
	Christian	81	31.51
	Other	11	4.28
Monthly family income	<10,000 Rs.	78	30.35
	10,001–30,000 Rs.	151	58.75
	30,001–50,000 Rs.	23	8.94
	50,000 and above	5	1.94
Type of family	Nuclear family	154	59.92
	Joint family	99	38.52
	Extended family	4	1.55
No. of siblings	One	77	29.96
	Two	83	32.29
	More than two	97	37.74
Place of residence	Home	109	42.41
	Hostel	64	24.90
	Paying guest	06	2.33
	Relatives Home	78	30.35
Duration of sleep time	<6 h	182	70.81
	6–8 h	54	21.01
	More than 8 h	21	8.17
Duration of screen addiction social media	<30 min	8	3.11
	1 h	48	18.67
	More than 1 h	201	78.21
Habit of study while lying in bed	Yes	131	50.97
	No	126	49.02
Distance of school from home	<30 min	148	57.58
	1 h	78	30.35
	More than 1 h	31	12.06
Mode of travel to the school	By walk	40	15.56
	Own transport	64	24.90
	School bus	123	47.85
	Public transport	30	11.67
Do you have your own mobile	Yes	187	72.76
	No	70	27.23
Presence of any medical issues	Yes	22	8.56
	No	235	91.43

Table 2: Level of difficulty of sleep among adolescent (*n*=257)

Level of difficulty quality of sleep	Total score	Frequency	Percentage
Mild	0–25	83	32.29
Moderate	26–50	136	52.91
Severe	51–75	38	14.78

- The majority of 148 (57.58%) had <30 min followed by 148 (30.35%) had 1 h and 31 (12.06%) had more than 1 h of distance of school from home
- 123 (47.85%) using school bus for transportation followed by 64 (24.90%) using own transport facility, 40 (15.56%) going school by walk, and 30 (11.67%) using public transport. 187 (72.76%) samples having their own mobile and 70 (27.23%) does not have own mobile
- The majority of samples 235 (91.43%) does not have any medical issue and 22 (8.56%) has medical issues.

Section B: Distribution of samples according to quality of sleep among adolescents

This section deals with the analysis and interpretation of quality of sleep level being summated using frequency and percentage.

The data presented in Table 2 depicts that in the majority of 136 (52.91%) having moderate level of difficulty in sleep followed by 83 (32.29%) has mild level of difficulty in sleep and 38 (14.78%) has severe level of difficulty in sleep.

Section C: Association between the quality of sleep score among adolescent with selected demographic variable

To find out the association between the quality of sleep among adolescent with the selected socio-demographic variables the following significant objective is formulated- "To find significant association between quality of sleep with demographic variables among the adolescent."

Table 3: Association of Chi square value showing association of quality of sleep level with demographic variables

Socio-demographic variables	Level of quality of sleep			Df	*P*-value	≤2 value	Result
	Mild	Moderate	Severe				
	n	*n*	*n*				
Age				2	0.856	0.312	NS
15–16 years	46	80	21				
17–18 years	37	56	17				
Gender				2	0.090	4.82	NS
Male	43	56	12				
Female	40	80	26				
Religion				6	0.980	1.14	NS
Hindu	34	54	15				
Muslim	18	36	8				
Christian	27	41	13				
Other	4	5	2				
Monthly family income				6	0.463	5.66	NS
<10,000 Rs.	27	40	11				
10,001-30,000 Rs.	49	83	19				
30,001-50,000 Rs.	6	10	7				
50,000 and above	1	3	1				
Type of family				4	0.000	20.5	S
Nuclear family	63	64	27				
Joint family	19	69	11				
Extended family	1	3	0				
Number of siblings				4	0.046	9.69	S
One	23	43	11				
Two	37	37	9				
More than two	23	56	18				
Place of residence				6	0.945	1.71	NS
Home	39	54	16				
Hostel	19	36	9				
Paying guest	1	4	1				
Relatives Home	24	42	12				
Duration of sleep time				4	0.369	4.28	NS
<6 h	63	96	23				
6–8 h	13	31	10				
More than 8 h	7	9	5				
Duration of screen addiction social media				4	0.05	9.41	NS
<30 min	2	5	1				
1 h	21	16	11				
More than 1 h	60	115	26				
Habit of study while lying in bed				2	0.000	17.0	S
Yes	52	53	26				
No	31	83	12				
Distance of school from home				6	0.008	13.8	S
<Half hour	53	82	13				
1 h	19	43	16				
More than 1 h above	11	11	9				
Mode of travel to the school				6	0.626	4.38	NS
By walk	14	18	8				
Own transport	21	31	12				
School bus	39	71	13				
Public transport	9	16	5				
Do you have your own mobile				2	0.010	9.15	S
Yes	56	109	22				
No	27	27	16				
Presence of any medical issues				2	0.54	1.23	NS
Yes	5	14	3				
No	78	122	35				

S: Significant, NS: Non-significant, *P*-value is significant if it is $P<0.05$

Table 3 depicts that there was significant association between type of family, no. of siblings, habit of study while lying in bed, distance of school from home and do you have your own mobile? and there was no significant association between age, gender, religion, monthly family income, place of residence, duration of sleep time, duration of screen addiction social media, mode of travel to the school, and presence of any medical issues with the level of adjustment problems.

Discussion

Study were supported by the similar study conducted by Mahasweta Dubey, Baridalyne Nongkynrih, Sanjeev Kumar Gupta, Mani Kalaivani, Anil Kumar goswami and Harshal Ramesh salve on sleep quality assessment of adolescents residing in an urban resettlement colony. Found that 7.3% of them were found to be poor sleepers. Poor sleep quality was observed to be higher during school days as compared to vacation (9.3% and 6.5%, respectively). Adolescents of age group equal to and >15 years have higher odds of having poor sleep quality than those younger than 15 years of age.[1]

Similar study conducted by Ravi Gupta, Manjeet Singh Bhatia, Vishal Chhabra, Sameer Sharma, Davinder Dahiya, Kapil Semalti, Rahul Sapra And Ramanpreet Singh Duaon sleep patterns of urban school-going adolescents found that adolescents of higher Grades had lesser sleep time, and frequent awakenings; suffered day time leg pain, and felt sleepy during the day. These factors suggest increasing sleep deprivation among higher graders.[4]

Similar study conducted by Gowtham Murugesan, Logamani Karthigeyan, Praveen Kumar selvagandhi, Vijayprasad Gopichandran on sleep patterns, hygiene and daytime sleepiness among adolescent school-goers in three districts of Tamil Nadu: A descriptive study Over 64% of adolescents sleep <8 h at night with 5.6% sleeping <6 h About 48% of adolescents suffered from prolonged sleep-onset latency and about 43% had interrupted sleep. Over 64% of adolescents watched television (TV) in bed and >23% reported use of mobile phone in bed. About 64% of adolescents had at least one form of poor sleep hygiene behavior.[5]

Similar study conducted by Silvia HM Pucci and M Graca Pereira on sleep quality in adolescents: What's discriminates good from poor sleepers. Reviles that age, caffeine intake, psychological morbidity, daytime sleepiness, and family sleep behaviors discriminated adolescents who had good versus poor sleep quality. Low function values indicate good sleep quality (mean = –0.354) and higher function values indicate poor sleep quality (mean = 0.519). Therefore, lower values of the discriminant function belong to the good sleep quality group.[3]

Short *et al*., 2013: A study was conducted to examine the efficacy of self-report and parental report of adolescent sleep problems. About 308 adolescents (aged 13–17 years) from eight socioeconomically diverse South Australian high schools participants were enrolled in this study. Participants completed a survey battery during class time, followed by a 7-day Sleep Diary and the Flinders Fatigue Scale completed on the final day of the study. Parents completed a Sleep, Medical, Education, and Family History Survey. The percentage of adolescents fulfilling one or more of the criteria for a sleep problem was inordinately high at 66%. Adolescent self-reporting a sleep problem was significantly lower than the adolescents who had one or more of the clinical criteria for a sleep problem (23.1% vs. 66.6%; $\chi^2 = 17.46$, $P < 0.001$). Parental report of their adolescent having a sleep problem was significantly lower than adolescent self-report (14.3% vs. 21.1%, $P < 0.001$). Adolescents who reported un-refreshing sleep were 4.81 times more likely to report a sleep problem. For every hour that bedtime was delayed, the odds of self-reporting a sleep problem increased by 1.91 times, while each additional 10 min taken to fall asleep increased the odds 1.40 times. While many adolescents were found to have sleep patterns indicative of a sleep problem, only a third of this number self-identify having a sleep problem, while only a sixth of this number are indicated by parental report.[6]

Fuligni *et al*., 2016: A study was conducted to assess the daily concordance between parent and adolescent daily sleep habits, how that concordance compares to other predictors of sleep, and whether the degree of concordance varies across families. A total of 421 adolescents (Mage = 15.03 years) and their primary caregivers (Mage = 41.93 years) reported their sleep, bed, and wake times on a daily basis for a 2-week period. Approximately 80% of the sample repeated the same protocol one year later. Multi-level modeling indicated a significant concordance between parent and adolescent sleep, bed, and wake times on a daily basis. Concordance existed independent of other predictors of sleep such as day of the week and adolescent study time. Larger families and those with higher levels of parent adolescent support exhibited greater concordance. Adolescent sleep was found to be connected to the sleep habits of their parents, above and beyond commonly-known structural and experiential factors that shaped teenage sleep.[7]

Xu *et al*. 2019: A cross-sectional analysis of data from adolescents aged 16–19 years who participated in the 2005–2006 National Health and Nutrition Examination Survey (n = 542). Multivariable logistic regression models, adjusted for confounders, examined the relationship between objectively measured physical activity, self-reported screen time, and sleep quantity and quality. Samples who met the current physical activity recommendation had 50% lower odds of having sufficient sleep (≥8 h) than those not meeting the recommendation (OR = 0.50, 95% CI: 0.26, 0.94). Samples who met the screen time recommendation (≤2 h/day) had 55% lower odds of reporting poor sleep quality than those whose screen time exceeded the recommendation (OR = 0.45, 95% CI: 0.22, 0.91), with similar patterns observed for females and males. However, males who met both physical activity and screen time recommendations had 73% lower odds of reporting poor sleep quality than males who met neither recommendation (OR = 0.27, 95% CI: 0.07, 0.99). In conclusion, PA and screen time are associated with sleep quantity or sleep quality in adolescents, and there are differences in these associations by sex.[8]

Conclusion

The results of this study showed that adolescents have modest to moderate sleep difficulties.

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