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A study to assess the sleep hygiene practices, sleep quality and factors affecting sleep among adolescents of selected high schools in Mangaluru

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Abstract

Background: Adolescence is a concept encompassing physical and emotional stage of transition from childhood to adulthood. With dramatic physical changes and development, adolescents worldwide find themselves in a situation characterized by an uncertain status and events might affect their concept of their own. It is a crucial and dynamic time in the lives of all young people when puberty is experienced. There is ample evidence that inadequate sleep quality is linked to significant problems, in several aspects during adolescent period. Sleepiness may be a widespread problem in school setting, where both suboptimal sleep duration and sleep disturbance are associated with reduced academic functioning, including attentional difficulties and increased absences.

Methodology: A survey research approach was used in the study. The conceptual model was based on the microsystem adopted from the Bronfenbrenner's Ecological Model and modified to conceptualize the sleep quality and sleep hygienic practices in adolescents. The Bronfenbrenner's Ecological Model (1979) is a framework which reflects the highly interactive reciprocal relationship between individual, society and family. To select 150 samples from the selected schools a proportionate stratified random sampling method was used. Data was collected using four questionnaires, one for general demographic data, second was Sleep Hygiene Index (SHI), third was Pittsburgh Sleep Quality Index (PSQI) to assess the sleep quality and fourth was a checklist for assessing factors affecting sleep. The data was analyzed using descriptive and inferential statistics.

Results: The result of the study showed that the highest percentage (57.3%) of adolescents had moderate sleep hygiene practices with a score range of 28-42. Most (88%) of them had good level of sleep quality. Least (0.66%) had good sleep onset quality. The sleep onset latency of the adolescents showed that 49 (32%) had less than 15 minutes, 21.3% had latency of 16-30 minutes, 28.6% (43) had latency of 31-60 minutes while 26 (17.3%) had sleep onset latency of more than 60 minutes. The mean duration of night sleep of adolescents showed that most of them (28.6%) had obtained their optimal level of sleep, i.e., > 9 hours and 28% had obtained 6-7 hours of sleep. The sleep efficacy of the adolescents showed most (32.0%) of them had obtained more than 65-74% of sleep efficiency, some of the adolescents displayed unusual sleep disturbance and none of the adolescents reported uses of any sleep medications. Majority of them (39.9%) reported severe day time dysfunction. Majority of the adolescents (82.25%) said they were engaging in extracurricular activities other than their studies. Whereas 52.3 percentage of them were having tuition classes and 69.0% of them were facing problems in school, 48.8% had family problems, 41.0% of them had health issues, 60% of them were engaging in hobbies. The study shows no significant relationship between the sleep quality and sleep hygiene practices and there was no significant association of sleep hygiene practices and sleep quality with demographic variables.

Conclusion: The findings of the study proved that adolescents in the study obtained recommended hours of sleep for their age on school days. Sleep hygiene practices and sleep quality were moderately good among adolescents.

Keywords: Sleep, sleep hygiene, sleep quality, adolescents, sleep hygiene practices

Introduction

Adolescence is one of the most fascinating and complex transitions in the life span. The pace of growth and change is breathtaking. Biological processes drive many aspects of this growth and development from childhood to adolescent. Every adolescent has certain needs to continue their physical and other aspects of development that include nutrition, personal health, and stress reduction, sleep and rest. Teenagers vary in their need for sleep.

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Rapid physical growth, and overall increased activity of their age contribute to fatigue in adolescents. Their propensity for staying up late makes it difficult to arise in the morning and they may sleep late at any opportunity. Adequate sleep and rest at this time is important to a total health regimen [2].

Sleep is a basic human need. It is a state of rest accompanied by altered consciousness. Although the exact function of sleep is unclear, people spend one third of their lives sleeping. As a period of preparation for adult role adolescence is a time of very rapid growth and high demand for energy and nutrition [3].

Sleep hygiene practice is variety of sleep practice that are necessary to have normal, quality night times sleep and full daytime alertness. These sleep deprived habits established can lead to sleep insufficiency and impair cognitive and behavioral ability in children. Sleep hygiene practices are the several behaviors that optimize and promote good sleep and day time functioning. The timing, duration, and quality of sleep aims to assess the sleep hygiene practices among adolescents [4].

Materials and Method

Descriptive research design was adopted for this study. The populations were the adolescents of age group 13 years to 16 years from selected high schools in Mangaluru. Proportionate stratified random sampling method was used for selecting the study subjects (150). The tool were demographic proforma, sleep hygiene index questionnaire, sleep quality questionnaire and checklist for factors affecting sleep. After the pilot study, the main study was conducted and data was collected. The data obtained was analyzed based on the objectives and hypothesis using the descriptive and inferential statistics.

Results

Maximum percentage (42.0%) of adolescents were in the age group of 15-16 years. Majority (54.7%) of the adolescents were males. Maximum percentages (37.3%) were studying in the 10th standard.

Highest percentage (57.3%) of adolescents had good level of sleep hygiene practices with the and 40.7% of the adolescents had good level of sleep hygiene practices and least percentage (2.0%) had poor sleep hygiene practices. study shows that 88 percent of adolescents had good sleep quality, and 12 percent of them had moderate level of sleep quality.

The sleep onset quality of the adolescents showed that highest parentage of adolescents (96%) experienced their subjective sleep quality as fairly bad and least (0.66%) had very good, but 21.3% of them had experienced very bad sleep. The sleep onset latency of the adolescents showed that 49 (32%) had less than 15 minutes, 21.3% had latency of 16-30 minutes, 28.6% (43) had latency of 31-60 minutes while 26 (17.3%) had sleep onset latency of more than 60 minutes. This indicates that 45.9% had abnormal sleep latency.

The mean duration of night sleep duration of adolescents showed that most of them (28.6%) had obtained their optimal level of sleep, i.e., > 9 hours and 28% had obtained 6-7 hours of sleep. Least (19.3%) of them had less than 6 hours of sleep, the sleep efficacy of the adolescents showed most (32.0%) of them had obtained more than 65-74% of sleep efficiency and 16% of them had less than of sleep efficiency and 20.6% of samples had more than 85% of sleep. Some of the adolescents displayed unusual sleep disturbances and none of the adolescents reported uses of any sleep medications. Meanwhile majority of the adolescents (39.9%) reported severe day time dysfunction.

Majority of the adolescents (82.25%) said they were engaging in extracurricular activities other than their studies. Whereas 52.3% of them were having tuition classes and 69% of them were facing problems in school, 48.8% had family problems, 41% of them had health issues, 60% of them were engaging in hobbies.

The findings of the study shows there is no significant relationship between sleep quality and sleep hygiene practices and no significant association of sleep hygiene practices with demographic variables

Table 1: Frequency and Percentage Distribution of the Sample according to Demographic Characteristics of the samples
n=150

Sl. No.	Demographic variables	Frequency	Percentage
1.	Age in years		
	13-14	47	31.3
	14-15	40	26.7
	15-16	63	42.0
2.	Gender		
	Male	82	54.7
	Female	68	42.3
3.	Class		
	8 th standard	49	32.7
	9 th standard	45	30
	10 th standard	56	37.3
4.	Occupational status of father		
	Government /private	123	82.05
	Professional/non- professional	25	16.7
	Self employed	2	1.3
	Daily wages	0	0
5.	Occupational status of mother		
	Government /private	86	59.3
	Professional/non-professional	61	40.7
	Self employed	0	0
	Daily wages	0	0

6.	Type of family		
	Joint family	41	27.3
Nuclear family	109	72.7	
7.	Diet		
	Vegetarian	36	24.0
Non-vegetarian	114	76.0	
8.	Failure in the previous class		
	Yes	34	22.7
No	116	77.3	

Table 2: Frequency and Percentage Distribution of the Sample according to Demographic Characteristics of the samples n=150

Sl. No.	Demographic variables	Frequency	Percentage
9.	Homework		
	Yes	108	72.0
	No	42	28.0
10.	Leisure time activities		
	Watching television	28	18.7
	Reading story books	43	28.7
	Outdoor play	39	26.0
	Computer game and video game	14	9.35
Watching internet	26	17.3	
11.	Television placed in the room		
	Yes	30	20
No	120	80	

Table 3: Frequency and Percentage Distribution of Sample based on Sleep Hygiene Practice n=150

Sleep hygiene practice level	Range of score	Frequency	Percentage
Good	13-27	61	40.7
Moderate	28-42	86	57.3
Poor	43-65	3	2.0

Table 4: Frequency and Percentage Distribution of Samples based on level of Sleep Quality n=150

Level of sleep quality	Range of score	Frequency	Percentage
Good	11-21	132	88.0
Moderate	0-10	18	12.0

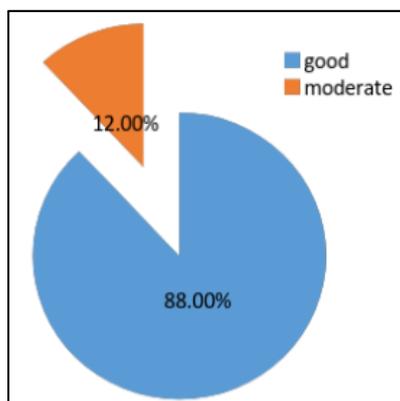


Table 5: Distribution of Sample based on level of Subjective Sleep Quality n=150

Subjective sleep quality level	Frequency	Percentage
Very good (0)	1	0.66
Fairly good (1)	21	14.0
Fairly bad (2)	96	64.0
Very bad (3)	32	21.3

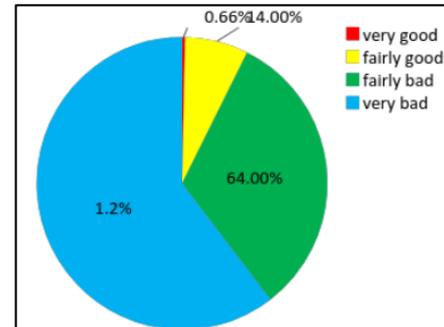


Table 6: Distribution of Sample based on level of Sleep latency n=150

Sleep latency	Frequency	Percentage
≤ 15 minutes	49	32.0
16-30 minutes	32	21.3
31-60 minutes	43	28.6
>60 minutes	26	17.3

Table 7: Frequency Distribution of Sample based on Sleep Duration n=150

Sleep duration	Frequency	Percentage
>7 hours	43	28.6
6-7 hours	36	24.0
5-6 hours	42	28.0
< 5 hours	29	19.3

Table 8: Frequency and Percentage Distribution of Sample based on the Sleep Efficacy n=150

Sleep efficiency	Frequency	Percentage
>85%	31	20.6
75-84%	47	31.3
65-74%	48	32.0
<65%	24	16.0

Table 9: Frequency and Percentage Distribution of sample based on sleep disturbance n=150

Sleep disturbance	Frequency	Percentage
Not during last month	37	24.6
Less than one week	44	29.3
Once or twice a week	44	29.3
Three or more times a week	25	16.6

Table 10: Frequency and Percentage Distribution of Sample Based on Day time Dysfunction n=150

Day time dysfunction	Frequency	Percentage
Not during last month	12	8.0
Less than one week	49	32.6
Once or twice a week	59	39.3
Three or more times a week	30	20.0

Table 11: Frequency and Percentage Distribution of Sample based Factors Affecting Sleep n=150

Factors affecting sleep	Range of score	Mean	Mean percentage (%)
Extra-curricular activities	0-2	1.650	82.25
Tuition classes	0-2	1.046	52.30
Family problems	0-5	2.440	48.80
Health issues	0-4	1.640	41.00
Problems in school	0-3	2.070	69.00
Hobbies	0-5	3.000	60.00

Table 12: Pearson correlation (r) value showing Relationship between Sleep Quality and Sleep Hygiene Practices n=150

Pearson correlation (r)	p value	Inference
0.14	0.863	Not significant

Table 13: Association of sleep hygiene practices with demographic variables. n=150

Selected variables	χ^2 value	df	Table value	Inference
Age in years	8.790	4	9.49	Not Significant
Gender	0.182	2	5.99	Not Significant
Class	8.721	4	9.49	Not significant
Occupation of father	0.701	4	9.49	Not significant
Occupation of mother	3.227	2	5.99	Not significant
Diet	0.188	2	5.99	Not significant
Type of family	1.136	2	5.99	Not significant
Failure in previous class	0.276	2	5.99	Not significant
Home work	2.320	2	5.99	Not significant
Leisure time activity	5.765	8	15.507	Not significant
Television in room	1.881	2	5.99	Not significant

Table 14: Association of sleep quality with demographic variables n=150

Selected variable	χ^2 value	df	Table value	Inference
Age in years	4.189	2	5.99	Not Significant
Gender	2.055	1	3.84	Not Significant
Class	3.747	2	5.99	Not significant
Occupation of father	4.268	2	5.99	Not significant
Occupation of mother	1.408	1	3.84	Not significant
Diet	0.977	1	3.84	Not significant
Type of family	1.046	1	3.84	Not significant
Failure in previous class	0.002	1	3.84	Not significant
Home work	0.289	1	3.84	Not significant
Leisure time activity	4.514	4	9.48	Not significant
Television in room	0.063	1	3.84	Not significant

Discussion

Present study findings shows that highest percentage (57.3%) of adolescents had moderate level of sleep hygiene and 40.7% of the adolescents had good level of sleep hygiene practices. The study findings are supported by another study conducted in Bahrain showed, the adolescents' total sleep duration was 7.07 ± 1.13 hours. A highly significant difference in sleep duration on school days and weekends between adolescents of various grade levels ($P < 0.001$ and 0.001 , respectively) [5].

The present study shows that 88 percent of the adolescents had good sleep quality, and 12 percentage of them had moderate level of sleep quality. Sleep onset quality of the subjects showed that majority of the adolescents (96%) experienced their subjective sleep quality as fairly bad and least (0.66%) had very good, but 21.35% of them had experienced as very bad sleep. The sleep onset latency of the adolescents showed that 49 (32%) had less than 15 minutes, 21.3% had latency of 16-30 minutes, 28.65 (43) had latency of 31-60 minutes while 26 (17.3%) had sleep onset latency of more than 60 minutes. This indicates that 45.9% had abnormal sleep latency. The mean duration of night sleep duration of adolescents showed that highest

percentage of them (28.6%) had obtained their optimal level of sleep, i.e., > 9 hours and 28% had obtained 6-7 hours of sleep. Least (19.3%) of them had less than 6 hours of sleep. The sleep efficacy of the adolescents showed highest percentage (32.0%) of them had obtained more than 65-74% of sleep efficiency and 16% of them had less than of sleep efficiency and 20.6% of adolescents had more than 85% of sleep efficacy. Some of the adolescents displayed unusual sleep disturbances, equal percentage (29.30%) of them had sleep disturbance less than one week and once or twice a week respectively. The supportive study on sleep pattern and practices among adolescent in Nigerian secondary schools revealed that twenty six percent reported difficulty falling asleep while 2.9% reported day time dysfunction and restlessness. About 6.6% reported problems in sleep latency and falling in the sleep and 14.4% of adolescents responded that they had sleep disturbances and 7.4% reported severe day time dysfunction [6].

In the present study majority of the samples (82.25%) of the adolescents said they were engaging in extracurricular activities other than their studies. Whereas 52.3% of them were having tuition classes and 69.0% of them facing problems in school, 48.85 had family problem, 41.05 of

them had health issues, 60% of them were engaging in hobbies. Finding of the study are similar to a study showed that main outcome measures were day time sleepiness during schooldays and sleepiness interrelationship with sleep-wake pattern, and visual media use [7].

In this study result showed that there is no significant relationship between the sleep quality and sleep hygiene practices. Similar study of relationship was reported significant relationship between sleep quality and sleep hygiene in Italian and American adolescents [8].

Present study shows that, there is no significant association of sleep hygiene practices with selected demographic variables. A pilot study was conducted in Mangalore, India showed the adolescents slept on an average of 7.68 ± 0.99 h during school days, and 8.70 ± 1.63 h on weekends. Gender showed no significance with sleep duration, Sleep hygiene practices were moderately poor among adolescents [9].

In the present study, association of sleep quality with demographic variables showed that there is no significant association of the sleep quality with demographic variables ($p > 0.05$). Epidemiological aspect of self-reported sleep onset latency among Japanese school children, 72.1% of the subjects reported short SOL (≤ 20 min). Log SOL subjects (< 20) were strongly associated with disturbed sleep manifested especially by increased risk of night awakenings, decreased sleep depth, and bad sleep in general [10].

Limitation to take into account when interpreting results include self-reported data which may be recall bias and bed sharing and parents sleep habits, are not included in the study. Sleep during non-school days not measured. The sleep behavior and outcomes and risk factors could differ between school and non-school days.

Based on the findings of the presented study recommendations offered for further research study can be conducted to compare the sleep problems in urban and rural settings and study can be conducted to assess the impact of sleep habits on academic performance among adolescents.

Conclusion

The findings of the study proved that adolescents in the study obtained recommended hours of sleep for their age on school days. Sleep hygiene practices and sleep quality were moderately good among adolescents.

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Conflict of Interest: Nil

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Ethical Clearance

The ethical clearance for the present study was obtained from A.J Ethics Committee, A.J Hospital and Research Centre, Mangaluru.

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