

Original Article

# SLEEP DURATION AND SLEEP HYGIENE PRACTICES IN ADOLESCENTS : AGE AND GENDER DIFFERENCES

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## Abstract :

**Aim:** The study aims at assessing the sleep hygiene practices among Indian adolescents and to identify the age and gender influence on sleep duration and sleep hygiene practices.

**Methods:** The data was drawn from a part of pilot study conducted among adolescents from sixth to 12<sup>th</sup> grade in India as a part of doctoral research. A stratified random sampling method was used. A total of 58 adolescents, 29 males and 29 females participated in the study. Data was collected using two questionnaires, one for the general demographic data with a part on sleep duration and the second for estimating the sleep hygiene practices.

**Results:** The adolescents slept on an average of 7.68±.99 h during school days, and 8.70±1.63 h on weekends. Middle adolescents slept less than early adolescents. Gender showed no significance with sleep duration, since p-values were >.05 level of significance. The mean sleep hygiene index scores were 28.59 ±6.71. Even though the sleep hygiene scores of males were slightly better than females, it was not statistically significant.

**Conclusion:** Adolescents in the study obtained less than recommended hours of sleep for their age on school days. Sleep hygiene practices were moderately poor among adolescents. Emphasizing good sleep hygiene practices, and integrating sleep promotion programs into daily routines should be considered to improve the sleep problems in adolescents.

**Keywords :** Sleep, Gender, Sleep Hygiene, Adolescents, Sleep duration

## Introduction :

Adolescent period is a characteristic time with many changes in sleep-patterns, as shown in many studies. These alterations are attributed to puberty, biological and homeostatic changes in the circadian and sleep/wake systems, as well as environmental factors influencing life style of adolescents.<sup>1-3</sup> Adolescents increasingly suffer from insufficient sleep and excessive daytime sleepiness. It is estimated that adolescents requires 9.2 hours of sleep across all pubertal stages, and the sleep need is not

r e d u c e d d u r i n g adolescence.<sup>4</sup> But studies show that approximately 45% and 85% of sixth to 12<sup>th</sup>-grade students report sleeping less than the recommended amount on school nights, and 44% of

students report difficulty staying awake during school.<sup>5</sup> In another study in Japan, the high school students were reported to be getting only 6.3 hours of nocturnal sleep as attributed to their life style.<sup>6</sup>

Sleep is essential for optimizing physical, cognitive and emotional functioning and for maintaining good quality of life. Sleep deprivation, or obtaining less than recommended hours of sleep is found to impair adolescents' ability in learning and academic success as well as it leads to problems in emotional regulation resulting in increased stress, changes in mood, decreased motivation and behavioral and emotional problems.<sup>7,8</sup> In a prospective study during 3 years done by Shochat,<sup>9</sup> on 2000 young adolescents in age group of 11-14 years, it was found that shorter sleep increase the risk of depressive symptoms and low self-esteem both concurrently and over time. Poor perceived mental health and low life satisfaction with insomnia is also reported due to lack of sleep.

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Studies on sleep patterns of adolescents based on gender and age shows inconsistent results. Many studies did not find gender differences.<sup>10,11</sup> Whereas in some studies, girls reported to wake up early on weekdays but later on weekends. In another study, girls found to wake up earlier on weekdays, and with same sleep length as boys, found to accumulate higher sleep debt resulting in delayed wake up times on weekends than boys.<sup>12</sup> The variability in these results could be due to the differences in measurement of sleep time or in the age of participants in the study.<sup>13</sup>

Sleep hygiene is the practice of several behaviors that optimize and promote good sleep and daytime functioning. Ensuring regular bedtimes and rise times, limiting napping during the day, having a relaxing sleep schedule, avoiding stimulants before bedtime and ensuring a favorable sleeping environment are parts of promoting good sleep hygiene behaviors.<sup>7</sup> The quality of sleep in children is affected by the level of sleep hygiene practices.<sup>14</sup> Poor sleep quality along with insufficient sleep is found to affect academic performance.<sup>15</sup> The primary aim of this study was to assess the sleep hygiene practices among Indian adolescents and to identify the age and gender influence on sleep duration and sleep hygiene practices.

#### Methods :

The present study data was drawn from a part of pilot study conducted among adolescents from sixth to 12<sup>th</sup> grade in India as a part of doctoral research. Participants were studying in various schools in Mangalore, and were aged between 11-17 years. Three schools which were randomly selected participated in the study. A total of 58 students, 29 male adolescents and 29 female adolescents, selected using a stratified random sampling method, were included in the study. Gender was used as a criterion for stratification. Institutional Ethical Committee approval was obtained to conduct the study. Once the schools' permission was received, parental consent for the adolescent's to take part in the study and child's assent to voluntarily participate in the study was taken. The data was collected during the months of July and August 2013.

Questionnaires were distributed to adolescents during school hours and collected back on the same day. Two questionnaires were used: one consisted of questions related to adolescents' basic information such as age, grade in school, gender, and a part related to sleep duration, i.e., hours slept during a typical school day and weekend and the second assessed the sleep hygiene behaviors using Sleep Hygiene Index developed by Mastin, Bryson and Corwyn, 2006.<sup>16</sup> This questionnaire consists of 13 items, on a five point Likert scale (Never =1, rarely = 2, sometimes= 3, frequently= 4, always= 5). Items scores were summed providing a global assessment of sleep hygiene. The scores ranged from 13-65, higher scores indicative of more maladaptive sleep status. The Cronbach's  $\alpha$  of the scale is 0.66 with a good test-retest reliability ( $r=0.71$ ). Permission was obtained for using the scale in the study.

#### Results :

A total of 58 adolescents participated in the study. Equal number of boys and girls, i.e., 29 each were included. Adolescents were aged between 11-17 years (mean age 14.02). When classified according to groups (adolescent classification by American Academy of Pediatrics) of early and middle adolescents (Table 1), 31 of them were in early adolescent age group (11-14 years) and 27 of them were in middle adolescent age group (15-17 years).

#### *Sleep Duration on weekdays and weekends among adolescents*

The adolescents slept on an average of  $7.68 \pm .99$  h during school days, and  $8.70 \pm 1.63$  h on weekends. This shows that they are not obtaining the recommended hours of sleep for their age group on week days, and was compensated by sleeping extra hours on weekends (Table 2). Middle adolescents were affected more than early adolescents. The sleep duration of early and middle adolescents during weekdays and weekends were compared using Mann-Whitney test. A highly significant difference in the average sleep of early adolescents and middle adolescents was found, in favor of early adolescents since all the p-values were less than .05 significance level.

A gender-wise comparison of sleep was carried out for school day and weekends for the hours of sleep. The results showed that there is no significant difference between males and females in average sleep on school days and weekends, since the p-values are  $> .05$  level of significance

Table 1. Classification of adolescents

		n	%
Age (in years)	Early adolescents	31	53.4%
	Middle adolescents	27	46.6%
	Total	58	100.0%

(Table 3).

### Sleep Hygiene Practices

The mean sleep hygiene index scores were  $28.59 \pm 6.71$  ( $28.71 \pm 6.44$  in the experimental group and  $28.42 \pm 7.21$  in the control group). A gender-wise distribution of sleep hygiene scores showed that the mean sleep hygiene scores for males were slightly better than females ( $26.93 \pm 6.82$  vs.  $30.24 \pm 6.28$ ). However, it was not statistically significant, since the p-value .079 was  $> .05$  level of significance (Table4).

Table 2 : Average Sleep Duration and Age of Adolescents

	Age (in years)						Mann Whitney P-value*
	Early adolescents		Middle adolescents		Total		
	Mean	SD	Mean	SD	Mean	SD	
How much sleep do you get on an average during a school day? (hours/day)	8.06	0.97	7.24	0.84	7.68	0.99	0.001
How much sleep do you get on an average during a week end? (hours/day)	9.35	1.65	7.94	1.25	8.70	1.63	0.001
Overall average sleep	8.71	1.07	7.59	0.87	8.19	1.12	$< 0.001$

\* $p < .05$  level of significance

Table 3. : Average Sleep Duration &amp; Gender Distribution of Adolescents

	Sex						Mann Whitney P-value*
	Male		Female		Total		
	Mean	SD	Mean	SD	Mean	SD	
How much sleep do you get on an average during a school day? (hours/day)	7.48	1.01	7.88	0.95	7.68	0.99	0.177
How much sleep do you get on an average during a week end? (hours/day)	8.95	1.65	8.45	1.60	8.70	1.63	0.232
Average sleep	8.22	1.12	8.16	1.15	8.19	1.12	0.797

\* $p < .05$  level of significance

Table 4. : Gender and Sleep Hygiene Scores of Adolescents

		Sleep Hygiene Score
Male	Minimum	16
	Maximum	39
	Mean	26.93
	SD	6.82
Female	Minimum	19
	Maximum	45
	Mean	30.24
	SD	6.28
Total	Minimum	16
	Maximum	45
	Mean	28.59
	SD	6.71
Mann Whitney P-value*		0.079

\* $p < .05$  level of significance

### Discussion :

Sleep loss in adolescents, either by societal changes due to lifestyle choice, or due to academic pressures are becoming increasingly common in our modern society. Insufficient sleep can result in excessive daytime sleepiness and therefore lead to problems which affects adolescent's health and cognitive functioning.<sup>17</sup> But in spite of increasing prevalence and negative consequences, the awareness and appreciation of sleep and health issues among the general public and health professionals are extremely limited.<sup>1</sup>The present study investigated the sleep duration and sleep hygiene practices and assessed its gender-wise differences among Indian adolescents. Adolescents in this study obtained 48.6 min less than the

recommended 9 h of sleep, i.e., only 8.19 h of sleep. But during school days, they slept much less, i.e., 7.68 h. This made them sleepy over the weekends, indicating a marked sleep debt. The results were similar to other studies,<sup>7</sup> in which adolescents slept for more hours to compensate for their lost sleep. Girls slept slightly more than boys on school days ( $7.88 \pm .95$  vs.  $7.48 \pm 1.01$ ). It was similar to the study results obtained by Moore,<sup>13</sup> where girls slept 22.14 min more than boys. However, gender was not statistically significant in the present study. Sleep duration and age showed similar results with the study by Mateo,<sup>12</sup> where bedtimes were later with increasing age and sleep length decreased with increasing age. The adolescents in the present study reported moderately poor sleep hygiene practices.

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The magnitude of the sleep problems among adolescents is an important concern in their development and emotional well-being. Delayed circadian timings occur with puberty,<sup>19</sup> and in combination with minimal parental influence and environmental factors results in development of improper sleep schedules and poor sleep habits. Emphasizing good sleep hygiene practices, and integrating sleep promotion programs into daily routines should be considered to improve the sleep problems in adolescents.

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