



A STUDY ON SLEEP HABITS OF INDIAN ADOLESCENTS COMING TO A RURAL TERTIARY CARE CENTRE

Paediatrics

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ABSTRACT

Introduction: The typical range of an individual's average number of hours spent sleeping varies across their lifetime. On the other side, lack of sleep has been linked to adverse effects like higher stress reactivity, mood swings, poorer cognition, poor performance, and a reduced capacity for decision-making. Studies carried out globally in a variety of locations have found that the quality of sleep experienced by adolescents is declining, which in turn has led to an increase in substance abuse, automobile accidents, and depression. The phenomenon known as "oversleeping" produces a disruption in the circadian rhythm, which in turn leads to a reduction in the amount of time spent awake during the day. **Aim:** To study the sleep habits of Indian adolescents coming to a rural Tertiary Care Centre. **Materials And Methods:** It is a cross-sectional study conducted over an eighteen-month period at a rural tertiary care centre in Uttar Pradesh. The sleepiness level in Adolescents was measured using Epworth Sleepiness Scale (ESS). **Results:** As per Sleepiness level (scores), there was No sleepiness among 65.0%, Mild sleepiness among 5%, Moderate sleepiness among 18% and Severe sleepiness among 12% of subjects. There was no significant difference in mean total sleep duration between males and females. Severe sleepiness was significantly more among Middle Adolescence and Late Adolescence. **Conclusion:** The incidence of excessive daily drowsiness (ESS score >10) tends to increase in middle and late stages of Adolescence. It is important to conduct more research to determine the reasons for adolescent's increased sleepiness levels.

KEYWORDS

INTRODUCTION

The complete health and well-being of a person depends on getting a decent night's sleep, as well as their physiological functions, cognitive processes, emotional control, physical development, and quality of life. The typical range of an individual's average number of hours spent sleeping varies across their lifetime. Sleep is a crucial part of the healing process because it encourages tissue repair and cellular immune activity. On the other side, lack of sleep has been linked to adverse effects like higher stress reactivity, mood swings, poorer cognition, poor performance, and a reduced capacity for decision-making. [1]

Studies carried out globally in a variety of locations have found that the quality of sleep experienced by adolescents is declining, which in turn has led to an increase in teen absenteeism from school, as well as an increase in substance abuse, automobile accidents, and depression. [2] The intrinsic circadian timing apparatus along with the homeostatic sleep-wake apparatus, are the principal systems involved in the control of sleep and are referred to as sleep-controlling system. Teenagers tend to have a physiological delay in the onset of sleep, which may cause them to remain awake for a longer period of time than younger children which may disrupt the normal functioning of the sleep-controlling system. [3]

The typical practice of staying in bed late on the weekends, with the intention of "paying off" the sleep debt accumulated during the week, causes significant variation in the sleep-wake patterns that people exhibit during the course of the week. The phenomenon known as "oversleeping" produces a disruption in the circadian rhythm, which in turn leads to a reduction in the amount of time spent awake during the day. [4] We wanted to evaluate the level of daytime sleepiness in adolescents in our study.

AIM

To study the sleep habits of Indian adolescents coming to a rural Tertiary Care Centre.

OBJECTIVE

To determine the level of daytime sleepiness.

MATERIALS AND METHODS

This is a cross-sectional study conducted over an eighteen-month period (Feb 2021 to Aug 2022) at Rajshree Medical & Research Institute, Bareilly, Uttar Pradesh, a rural tertiary care centre. Inclusion criteria: Adolescents coming to Pediatric OPD or admitted in Pediatric ward. Informed consent was taken from the parents of adolescents

included in the study. Ethical clearance was obtained from the Institutional ethical board. For the purpose of study the sleepiness level in Adolescents was measured using Epworth Sleepiness Scale (ESS). The ESS measures a participant's propensity to fall asleep while taking part in a certain activity. It shows how sleepy they generally are throughout the day. It measures drowsiness on a scale of 0 to 3, with 0 denoting "never doze off" and 3 denoting "high likelihood of dozing asleep." There are 8 items in the ESS. In 1991, Murray Johns created it. The validity of ESS has been assessed using the Multiple Sleep Latency Test (MSLT), the gold standard in the field. Various populations have been used to establish the normal ranges for ESS scores. [5] In general, a score in the 0–10 range is seen as normal. Any score more than 10 indicates fatigue. Since the ESS is a relatively simple tool that can be used with children and adolescents between the ages of 2 and 18, we decided to use it as a way for evaluating sleepiness. Adolescents were given a pre-structured ESS questionnaire and allowed 25–45 minutes to complete it, the chi-square test was used to compare frequency, while the student t-test was utilized to compare mean values between the two groups. When the p-value was less than 0.05, it was deemed significant.

RESULTS

A total of 100 adolescents (51 Male and 49 Female) were included in the study. Adolescents were categorized into 3 different age groups- Early, Middle and Late Adolescence. [Table 1 and 2]

Table 1

Gender	Frequency	Percent
Male	51	51.0%
Female	49	49.0%
Total	100	100.0%

Table 2

Age groups	Frequency	Percent
Early Adolescence (10-13 Years)	50	50.0%
Middle Adolescence (14-16 Years)	31	31.0%
Late Adolescence (17-20 years)	19	19.0%
Mean±SD	13.66±8.33 (Range = 10-20)	

There were 50 (50.0%) subjects in Early Adolescence, 31 (31.0%) in Middle Adolescence and 19 (19.0%) in Late Adolescence in our study. As per Sleepiness level (scores), there was No sleepiness (0-10) among 65 (65.0%), Mild sleepiness (11-14) among 5 (5.0%), Moderate sleepiness (15-18) among 18 (18.0%) and Severe sleepiness (>18) among 12 (12.0%) subjects. (Table 3)

Table 3

Sleepiness level (scores)	No of participants	(%)
No sleepiness (0-10)	65	65.0%
Mild sleepiness (11-14)	5	5.0%
Moderate sleepiness (15-18)	18	18.0%
Severe sleepiness (>18)	12	12.0%

The distribution of sleepiness was compared between Early Adolescence, Middle Adolescence and Late Adolescence using the chi-square test. Severe sleepiness (>18) was significantly more among Middle Adolescence and Late Adolescence. (Table 4)

Table 4

Epworth sleepiness scale score	Groups		
	Early Adolescence	Middle Adolescence	Late Adolescence
No sleepiness (0-10)	35 70.0%	17 54.8%	13 68.4%
Mild sleepiness (11-14)	4 8.0%	1 3.2%	0 0.0%
Moderate sleepiness (15-18)	8 16.0%	6 19.4%	4 21.1%
Severe sleepiness (>18)	3 6.0%	7 22.6%	2 10.5%

2 value = 7.432, p-value = 0.048*

The distribution of sleepiness was compared between males and females using the chi-square test which showed no significant difference between them. (Table 5)

Table 5

Epworth sleepiness scale score	Gender	
	Male	Female
No sleepiness (0-10)	33 64.7%	32 65.3%
Mild sleepiness (11-14)	2 3.9%	3 6.1%
Moderate sleepiness (15-18)	10 19.6%	8 16.3%
Severe sleepiness (>18)	6 11.8%	6 12.2%

2 value = 0.398, p-value = 0.941

DISCUSSION

In Indian culture, daytime naps are not only socially acceptable but also help reduce the sleep deficit as daytime drowsiness is the most obvious result of inadequate overnight sleep. Adolescents' daytime drowsiness symptoms seem to be practically universal and earlier research have shown greater incidences of excessive daytime sleepiness and dozing off in class throughout the adolescence. [6]

Relation of sleep time with age

In current study, we observed that average total sleep time was 7.4 hours per day. Severe sleepiness (>18) was significantly more among Middle Adolescence (14-16 years) and Late Adolescence (17-20 years). Gupta et al. [7] observed that total sleep time was 7.8 hours per day and the total sleep time decreased in students with higher grades. Sleep duration was considerably different across the different research age groups. Age-related changes in sleep patterns have been well documented in the past. [8] It was found that from 14 to 18 years of age, sleep duration dropped by 45 minutes on average. But we found it highly doubtful that age alone could explain for such a wide range in sleep factors. It has been discovered that having media (television/internet) in a child's bedroom causes bedtime and wake-up times to be later, and that these kids are more tired during the day than their peers who don't have such access in their bedrooms. Teenagers with advanced grades also tend to stay up later and wake up earlier. [9] Brazil has also undertaken several research on sleep duration during the second decade of life. In the city of Santa Maria/RS, 54.8% of 1,126 teenagers between the ages of 13 and 20 who were high school students slept for no more than eight hours the night before class days. [10]

Relation of sleep time with Gender

We did not find any significant difference in mean total sleep duration between males and females. Rezaei et al. [11] concluded that there was no discernible difference in the quality of sleep between male and female students are in line some earlier studies. But according to several research, female medical students' sleep is of lower quality than that of their male counterparts. [12] The variations in these results

appear to be the result of cultural differences across nations.

On weekdays, Ciampo et al.'s [13] research revealed that 42.2% of boys and 46.8% of girls slept less than the 9 hours per night recommended for this age group, while on weekends, these percentages rose to 59.8% and 47.9%, respectively. These findings are consistent with previous research showing that adolescents typically sleep less than the recommended amount.

ESS

In our research, there was No sleepiness (0-10) among 65 (65.0%), Mild sleepiness (11-14) among 5 (5.0%), Moderate sleepiness (15-18) among 18 (18.0%) and Severe sleepiness (>18) among 12 (12.0%) subjects.

In the current study, the overall prevalence of excessive daytime sleepiness was 35%. This was more than Ng EP et al.[14] who discovered EDS in 25% and Shin et al[15], 's who discovered EDS in 16% of Korean high school pupils. In fact, early school start times, such as the typical start time of 0710-0800 hours in Hong Kong, cause sleep loss and daytime lethargy. [105,106]

According to Ng EP et al.,[14] EDS was linked to snoring (OR = 6.56) and bruxism (OR = 3.66). According to a research by Gottlieb et al.,[16] the ESS score increased gradually with increasing snoring frequency, rising from 6.4 in non-snorers to 9.3 in frequent snorers. Between never snorers and frequent snorers, the incidence of excessive daytime drowsiness rose from 15% to 39%.

The incidence of excessive daily drowsiness (ESS score >10) was found to be considerably greater in students with bad grades (20.5%) compared to those with fair or excellent grades (14.2%) and 14%, respectively. Academic performance was strongly correlated with daytime sleepiness. [17] According to other research, students with more regular sleep-wake patterns—including shorter sleep latencies, fewer night awakenings, later school rise times, and later rise times on weekends—reported higher academic performance, whereas students with lower grades reported more daytime sleepiness and shorter sleeps. [15]

Limitations

This study has some limitations. Firstly, this sample only the rural adolescents coming to a tertiary care centre, hence it is not representative of all Indian adolescents. Therefore, findings cannot be generalized. Second, the cross-sectional nature of the design of this study limits the association between the cause and effect and third limitation of the study is small sample size.

Conclusion

The study shows that there was No sleepiness (0-10) among 65.0%, Mild sleepiness (11-14) among 5 %, Moderate sleepiness (15-18) among 18 % and Severe sleepiness (>18) among 12 % of subjects. There was no significant difference in mean total sleep duration between males and females. Severe sleepiness (>18) was found to be significantly more among Middle Adolescence and Late Adolescence. It is important to conduct more research to determine the reasons for adolescent's increased daytime sleepiness and longer duration of daytime sleep.

REFERENCES

- Hirshkowitz M, Whitton K, Albert SM, Alessi C, Bruni O, DonCarlos L. National Sleep Foundation's updated sleep duration recommendations. *Sleep health*. 2015; 1(4):233-43.
- Owens J, Adolescent Sleep Working Group, Committee on Adolescence. Insufficient sleep in adolescents and young adults: an update on causes and consequences. *Pediatrics*. 2014; 134(3):e921-32.
- Gangwisch JE, Heymsfield SB, Boden-Albala B, Buijs RM, Kreier F, Pickering TG. Short sleep duration as a risk factor for hypertension: analyses of the first National Health and Nutrition Examination Survey, hypertension. 2006 May 1;47(5):833-9.
- Schwartz S, McDowell Anderson W, Cole SR, Comoni-Huntley J, Hays JC, Blazer D. Insomnia and heart disease: a review of epidemiologic studies. *J Psychosom Res*. 1999;47:313-333.
- The sleepy adolescent: causes and consequences of sleepiness in teens [Internet]. [cited 2022 Apr 06]. Available from: <http://www.sciencedirect.com/science/article/pii/S1526054208000031>
- Israel A, Kramer J (2002) Safety of zaleplon in the treatment of insomnia. *Ann Pharmacother* 36: 852-9.
- Gupta R, Bhatia MS, Chhabra V, Sharma S, Dahiya D, Semalti K, Sapra R, Dua RS. Sleep patterns of urban school-going adolescents. *Indian pediatrics*. 2008 Mar 1;45(3).
- Gibson ES, Peter Powles AC, Thabane L, O'Brian S, Molnar DS, Trajanovic N, et al. "Sleepiness" is serious in adolescence: Two surveys of 3235 Canadian students. *BMC Public Health* 2006; 6:116.
- Van den Bulck J. Television viewing, computer game playing, and internet use and self-reported time to bed and time out of bed in secondary- school children. *Sleep* 2004;27:101-4.
- Pereira EF, Bernardo MP, D'Almeida V, Louzada FM. Sleep, work, and study: sleep

- duration in working and non-working students. *Cad Saude Publica*. 2011;27(5):975-84.
11. Rezaei M, Khormali M, Akbarpour S, Sadeghniaat-Hagighi K, Shamsipour M. Sleep quality and its association with psychological distress and sleep hygiene: a cross-sectional study among pre-clinical medical students. *Sleep Sci*. 2018;11(4):274-280.
 12. Suen LK, Hon KL, Tam WW. Association between sleep behavior and sleep-related factors among university students in Hong Kong. *Chronobiol Int*. 2008;25(5):760-75.
 13. Ciampo LAD, Louro AL, Ciampo IRLD, Ferraz IS. Characteristics of Sleep Habits among Adolescents Living in the City of Ribeirão Preto (SP). *J Child Adolesc Behav*. 2016;4:290.
 14. Ng EP, Ng DK, Chan CH. Sleep duration, wake/sleep symptoms, and academic performance in Hong Kong Secondary School Children. *Sleep Breath Schlaf Atm*. 2009 Nov;13(4):357-67.
 15. Shin C, Kim J, Lee S, Ahn Y, Joo S. Sleep habits, excessive daytime sleepiness and school performance in high school students. *Psychiatry Clin Neurosci*. 2003 Aug;57(4):451-3.
 16. Carskadon MA, Wolfson AR, Acebo C, Tzischinsky O, Seifer R. Adolescent sleep patterns, circadian timing, and sleepiness at a transition to early school days. *Sleep*. 1998 Dec 15;21(8):871-81.
 17. Gray EK, Watson D. General and specific traits of personality and their relation to sleep and academic performance. *J Pers*. 2002 Apr;70(2):177-206.