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CASE REPORT

Sleep Patterns of Urban and Rural School-going Adolescents

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ABSTRACT

Objective: To analyze the variance in sleep habits of adolescents (10–18 years) in urban and rural Rajasthan.
Design: Cross-sectional questionnaire-based study.
Setting: Community based school survey in an urban and a rural setting.
Subjects: School-going adolescents 10 to 18 years.

Materials and methods: A total of 565 adolescents aged 10 to 18 years were included. The questionnaire contained questions related to sleep habits. Each question was explained to the participants and their responses were noted. Outcome parameters were total sleep time.

Results: Out of 585 adolescents, 285 were residing in urban areas while 280 from rural areas. Total 43.3% adolescent were using bedroom for sleep only without any significant difference in rural and urban area. Alcohol consumption was seen in urban area only (n = 6) and mainly by 10 to 15 year age group. Urban adolescents on week days spend 7.15 hours of sleep while on week ends they spend 9.2 hours while In rural area week days sleep was 6.34 hours while at week ends it was 6.64 hours. So surprisingly sleep deprivation was more in rural area and there was not much variation in total sleep time in rural area on weekdays or weekend.

Keywords: Adolescents, Rural, Sleep patterns, Urban.

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Conflict of interest: None

INTRODUCTION

Sleep affects physical growth, behavior and emotional development besides determining cognitive functioning, learning and attention.[1] Apart from physiological, psychological and environmental factors, sociocultural factors also play a major role in determining sleep pattern of a person.[1-4] Infants sleep for 12 to 14 hours while preschool children may have day time snap. Children aged 6 to 12 years requires 10 to 11 hours of sleep in a 24-hour period while adolescents generally require about 9 to 9.30 hours of sleep per night and adults on an average about 7 to 8 hours of sleep per day.[5] Most of the studies regarding sleep habits in adolescents are from the West; however, a few Asian studies[1-3] are available and these studies emphasize the effect of culture. Sleep habits of one community cannot be generalized; moreover, sleep pattern is linked with the academic performance starting in adolescents. Wolfson and Carskadon[6] described that main correlates of poor academic performance are self-reported erratic sleep wake schedule, short total sleep time, phase delay, and poor quality sleep.

Hence, it is important to study the sleep patterns in adolescents. To the best of our knowledge, there is no published data from Rajasthan on this important yet ignored field. Therefore, this study was planned with the objective of assessing the sleep habits of urban and rural school-going adolescents.

MATERIALS AND METHODS

Children School-going adolescents of 10 to 18 years age group of two schools situated in Jaipur district one each from urban and rural area were included in the study, after taking requisite permission from the school administration.

All the adolescents studying in the these schools were contacted for the study (n = 565). Adolescents with physical illnesses, e.g., asthma, recurrent abdominal pain, sinusitis, chronic rhinitis, ADHD, depression, etc., that could have affected sleep parameters were excluded from the study. Such information was gathered from the adolescents and corroborated from the school's medical record.

PROCEDURE

The participating adolescents were explained the rationale for the study by trained pediatrician and their oral consent was taken prior to administration of a questionnaire aimed at gathering information regarding sleep habits individual items of the questionnaire were explained and adolescents were asked to respond to each question. Moreover, if any of the adolescents raised any

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query, it was resolved immediately. They were clearly instructed not to fill the responses of which they were not sure of.

RESULTS

Present study was conducted among 754 adolescents of which 565 consented to participate and were included in final analysis. Of these, 286 were males and 279 were females. On rural-urban distribution, 285 were residing in urban areas while 280 were from rural areas.

Out of 285 urban population, 138 were males while 147 were females. Total number of adolescents of 10 to 15 years age group were 347 while 218 adolescents were of 15 to 18 years age group. Out of 286 males, 154 males were of 10 to 15 years and 132 were of 15 to 18 years age groups, 193 females were of 10 to 15 years and 86 of 15 to 18 years.

Out of total 347 adolescents of 10 to 15 years age group, 195 (56.1%) were urban and 152 were rural.

In 15 to 18 years age group, 90 were urban and 128 were rural.

In our study, no significant difference of using bedroom collectively for sleep, television and food was seen among urban and rural adolescent. Out of total 565 adolescents, 245 (43.3%) were using bedroom only for sleep and distribution among urban and rural area was almost same. A significant difference in watching television and taking food in bedroom was seen as urban adolescents were using bedroom twice more than rural for watching television while rural were using bedroom twice more for food habits as compared to urban (Table 1).

Consumption of tea and coffee among adolescents was very high (34.86%) before sleep. In our study, total number of adolescents who were consuming tea and coffee was 103 and 94 in urban and rural respectively. No significant difference was seen among urban and rural adolescents. In our study, consumption of tea and coffee is very high in females as compared to males. Total 112 adolescents were of 10 to 15 years age group and 85 of 15 to 18 years age group who were consuming tea/coffee (Table 2).

There was alcohol consumption in six males. All were urban males. Out of those six males 5 were 10 to 15 years age group while one male was of >15 year age group. As alcohol consumption is very dangerous for adolescents, so it should be taken seriously. Consumption of alcohol was an alarming sign.

Urban adolescents on week days spend 7.15 hours of sleep while on week ends they spend 9.2 hours.

In rural area, the value of week day sleep is 6.34 hours while at week ends it is 6.64 hours. In our study, strict sleep routine is seen in 17.52% of adolescents with no significant difference in urban and rural adolescents. For extra sleep time on week ends in urban adolescents the most common reason was late night TV watching (Table 3).

According to age, adolescents of 10 to 15 years take sleep of 7.29 hours on week days and 7.1 hours on week ends, and, in children, age group of 15 to 18 years, 6.1 hours of sleep on week days and 8.9 hours sleep taken on week ends.

As we can see by age bands that strict sleep routine was far more in adolescents of 10 to 15 years age group.

Adolescents of age group 15 to 18 years spend 2 to 3 hours extra sleep on week ends due to more TV watching and late night outings (Table 4).

Table 1: Rural-urban distribution of adolescents on the basis of their use of bedroom for sleep, TV and food

	Sleep (%)	*Television (%)*	*Food (%)*	*TV and food (%)*	*Total*
Urban	123 (50.2%)	80 (67.2%)	38 (35.1%)	44 (47.3%)	285
Rural	122 (49.7%)	39 (32.7%)	70 (64.8%)	49 (52.6%)	280
Total	245 (43.3%)	119 (21%)	108 (19.1%)	93 (16.1%)	565 (100%)

Table 2: Age wise distribution of adolescents on the basis of their use of bedroom for sleep, TV and food

Age band	*Sleep (%)*	*Television (%)*	*Food (%)*	*TV and food*	*Total*
10–15	168 (68.5%)	71 (59.6%)	55 (50.9%)	61 (65.5%)	347
15–18	77 (31.4%)	48 (40.3%)	53 (49%)	48 (51.6%)	218
Total	245 (43.3%)	119 (21%)	108 (19.1%)	93 (16.1%)	565

Table 3: Urban-rural distribution of adolescents according to sleep habits in weekdays and weekends

Geographical distribution	*Weekdays (mean ± SD)*	*Weekends (mean ± SD)*	*Strict sleep routine*	*Age distribution*	
Urban	8.00 ± 0.707	9.37 ± 0.707	52	10–15 years	70
Rural	7.63 ± 2.12	8.37 ± 3.53	47	15–18 years	29

Table 4: Age wise distribution of adolescents according to sleep habits in weekdays and weekends

Age band	*Weekdays (mean ± SD)*	*Weekends (mean ± SD)*
10–15 years	7.29 hours	7.1 hours
15–18 years	6.1 hours	8.9 hours

If we distribute according to gender, the male in this group spend 8.4 hours sleep on week days while 9.7 hours of sleep on week ends. In female group, 7.9 hours are spend during week days and 7.8 hours on week ends.

There was not much significant difference in percentage of hour sleep in male and female group on weekdays and weekends. There is no gross difference of strict sleep routine is seen among gender (Table 5).

Table 5: Gender wise distribution of adolescents according to sleep habits in weekdays and weekends

Gender	*Weekdays (mean ± SD)*	*Weekends (mean ± SD)*	*Strict sleep routine*
Male	8.4	9.7	49
Female	7.9	7.8	50
			99 (17.52%)

DISCUSSION

In urban adolescents, average sleep was 8.00 hours on weekdays and 9.37 hours on weekends while in rural adolescents group, weekdays sleep was of 7.63 hours and 8.37 hours on weekends. So there was significant difference in both urban and rural population adolescents' sleep. In our study, on the basis of age, we found that age group of 10 to 15 years had 7.2 hours sleep on week days and 7.1 hours on week ends while in 15 to 18 years age group sleep in weekdays and weekends was 6.1 and 8.9 hours respectively. That shows that age group of 15 to 18 years sleeps more on week ends as compared to 10 to 15 years group. Gradisan et al[7] conducted a study in Australia and Carskadon et al[8] conducted in USA and concluded that in 15 to 18 years age , total weekend sleep time was 1.5 hours longer on average then weekdays night total sleep time. So our study is accordance to both above conducted studies that total weekend sleep in urban adolescents was approximately 1.5 hours longer as compared to weekday sleep. Reason presumed to be more sleep in weekends in urban adolescents group was late night television watching and late night outings.

In our study, adolescents of urban area were sleeping 1 hour more on weekends as compared to rural. A study by Gupta R, Bhatia[9] in Delhi concluded that average age of the sample was 15.1 years and total sleep time was 7.8 hours per day total sleep time decreased with higher grades. So, the result of our study is in accordance to previous conducted studies in India because we have also found that 15 to 18 years age group were taking only 6.1 hours sleep on school nights as compared to 10 to 15 years. Reason presumed to be that school going adolescents in India face the academic challenges from 15 years onward. The reason for more sleep in weekends in urban group may be their late night television watching habit and late night outings or using facebook.

Survey data from North America[10,11] Europe[12] New Zealand[13] and South Africa[14] suggest that average sleep duration reported by 6th graders in poll was 8.4 hours, whereas 12th graders reported an average of 6.9 hours of sleep on the school nights. Sleep deprived adolescents suffered from daytime sleepiness and report feeling Irritable and cranky during the day. Sleep loss and disruption always increases depression, anxiety, weight, and substance use (drug abuse). Sleep deprived individuals also exhibit more risky behavior.

TV Watching

In current study, we found that television was present in bedroom of 21% adolescents, in which 25% were from urban family and 13.9% were from rural families. Li et al[15] conducted a study among Chinese adolescents and found that television and computer was present in the bedroom of 18.5 and 18.3% of Chinese school-aged children respectively. So in our study, similar findings were noticed like study conducted of Chinese adolescents.

It has been found that presence of media (television/ internet) in the bedroom delays the bedtime and wake up time, such children spend less time in bed and are more tired during the day, as compared to their peers with no such access in their bedrooms. In our study, 25.4% of urban adolescents were using TV in bedroom as compared to rural 13.9% group. Presumed to be presence of TV in bedroom of urban population in more as compared to rural and urban are more prone to watch television. Television viewing at or around bedtime, including falling asleep in front of the television, in a common practice in many families in India.

Television viewing as preferred activity also appeared to have little overall impact on sleep, although the amount of television viewing was clearly associated with more problematic sleep. Finally, parental perception of television as having a positive, neutral, or negative effect on their child's sleep was associated with a variety of sleep disturbances.

Tea/Coffee

In our study, consumption of tea/coffee was seen in 34.89% adolescents. Urban adolescents were consuming

more (36.1%) and rural were consuming less, i.e., (33.5%). According to age group, it was found that consumption of tea/coffee was higher in 15 to 18 years age group (38.9%) as compared to 10 to 15 years (32.2%). Females (39.7%) were consuming more as compared to males (30%). Ghanizadeh and Kianppoor[16] concluded in their study that 54.3% of the students drank coffee one or more time per week in the evening and it was associated with onset of sleeping difficulties. Lee and Mcenany[17] found that boys consumed significantly more caffeinated beverages than girls while our study suggest that consumption of tea/coffee is more in girls compared to boys. In current study, 30.06% males and 39.78% females were consuming caffeinated beverages.

Alcohol and Substance Abuse

In the current study, six boys from urban area had habit of alcohol consumption, i.e., 1%, out of these 5 were 15 to 18 years age group while 1 was of 10 to 15 years age. In contrast, the boys from rural area have no history of alcohol consumption. There was no single girl of urban and rural population was involved in alcohol drinking habit. Kokiwar and Jogdand et al[18] conducted a study in Andhra Pradesh on urban adolescents and found that 323.7% of adolescents were consuming alcohol in contrast to only 1% adolescents from our study. As alcohol consumption in adolescents is an alarming sign so we should take it very seriously.

The study has several limitations. It is a field study with only 585 participants and may not represent the sleep patterns of all rural and urban Indian children. It relied on self-report and socially desirable responses cannot be ruled out. The results would have been more informative if details of parental socioeconomic status, literacy, number of siblings were collected. Since data was collected over 6 months, seasonal influence on sleep could have affected the results.

We conclude that about half of the adolescent were using bedroom for sleep only without any significant difference in rural and urban area. Alcohol consumption was seen in urban area only (n = 6) and mainly by 10 to 15 years age group. Surprisingly sleep deprivation was more in rural area and there was not much variation in total sleep time in rural area on weekdays or weekend.

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