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Original Research Article

A comparative study of pre-sleep activities affecting the sleep of rural and urban adolescents in Tumkur district

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Abstract

Background: Sleep affects mental, emotional and physical wellbeing of an adolescent. On an average for adequate development an adolescent should sleep for at-least 8 to 10 hours per day.

Objectives: To study the pre-sleep activities affecting the sleep of rural and urban adolescents.

Methods: A cross-sectional questionnaire-based school survey was designed with a sample size of 992 for the adolescents aged between 10 to 16 years of age. Children with illnesses that affected their sleep were excluded from the study. A pre-designed questionnaire was distributed to each of them. Later the data was tabulated in Microsoft excel and statistical analysis was done using software SPSS 22.0.

Result: On comparing various factors that affect sleep, it was found that 27.62% of the subjects consumed beverages like tea and coffee before sleep, 42.64% used mobile phones before sleep, 58.06% watch television late at night, 41.73% consume dinner late in the night i.e., after 10 pm and 28.53% have sleep disturbance due to exam stress and fear. The use of mobile phones before sleep and late-night dinners was more among the adolescents residing in the urban areas compared to those in the rural areas which was statistically significant (p<0.0001).

Conclusion: Pre sleep activities have a major impact on the quality of sleep, hence addressing them is essential.

Keywords: Sleep, adolescent, rural, urban

Introduction

The transition from childhood to adulthood is marked by the onset of puberty. This is a critical phase for an adolescent where physical maturation takes place [1]. There are multiple factors which influence it and among them sleep is a major one. Sleep affects mental, emotional and physical wellbeing of an adolescent [2]. On an average for adequate development an adolescent should sleep for at-least 8 to 10 hours per day. This shall ensure an optimal health. For a better outcome they need to be consistent with their sleeping schedules. They should go to bed regularly at a specific time, wake up at specific time and this should be followed even during weekends [3]. The sleep is influenced by various factors such as life style of the child, hormonal imbalances, emotional disturbances and relative sleep needs. Although the sleep-wake circadian rhythm is intrinsically regulated, external factors also influence it. If there is inadequate sleep for a long term then it leads to "sleep debt", which causes decrease in concentration, daytime dozing and repeated napping [4]. In the present time the major contributors to poor sleep schedule are television watching, excessive

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use of mobile phones and easy access to social media.
To the best of our knowledge not many studies in Karnataka are done on pre sleep activities in adolescents that affect their sleep. Hence, the aim of our study was to know about the pre sleep activities in adolescents that affect their sleep in Tumkur district which can help to intervene and promote better sleep practices in them.

Materials and Methods

A cross-sectional questionnaire-based study was designed to study the pre sleep activities in adolescents in rural and urban areas of Tumkur district. Institutional ethical committee approved the study. It was a community-based school survey with a sample size of 992 achieved through convenience sampling. The adolescents aged between 10 to 16 years of age were included for the study. They were further divided into two groups, 10-13 years as early adolescents and 13-16 years as mid adolescents. Prior permission from the management of the institutes was taken. Three institutes from the Tumkur district were selected, two from rural and one from an urban area respectively. A total of 992 adolescents whose parents gave informed consent were included for the study. Children with illnesses that affected their sleep such as chronic sinusitis, bronchial asthma, depression, anxiety disorders, ADHD etc. were excluded from the study. The students were explained regarding the study. A pre-designed questionnaire was distributed to each of them. The questionnaire contained questions which gathered information regarding their sleeping habits. Each question was explained to them in English and their vernacular language. All the queries of the students were clarified immediately. Later the data was tabulated in Microsoft excel and statistical analysis was done using software SPSS 22.0.

Results

The study was conducted among 992 adolescents. The study group included a total of 540(54.43%) males and 452(45.57%) females (Table 1). Out of the total adolescents, 230(23.19%) belonged to urban area and 762(76.81%) to rural area. Among the 230 urban subjects, 103(44.78%) were male and 127(55.22%) were female. Among the 762 rural subjects 437 (57.35%) were male and 325(42.65%) were female (Table 2). There were a total of 485(48.9%) adolescents between the age group of 10-13 years and 507 (51.1%) adolescents between the age group of 13-16 years. In the age group between 10-13 years, 269(55.5%) were male and 216(44.5%) were female, 104(21.4%) of them belonged to urban area and 381(78.6%) to rural area. In the age group between 13 – 16 years, 271(53.5%) were male and 236(46.5%) were female, 126(24.9%) of them belonged to urban area and 381(75.1%) to rural area. On comparing various factors that affect sleep, it was found that 27.62% of the subjects consumed beverages like tea and coffee before sleep, 42.64% used mobile phones before sleep, 58.06% watch television late at night, 41.73% consume dinner late in the night i.e., after 10 pm and 28.53% have sleep disturbance due to exam stress and fear. The urban and rural distribution, gender and age distribution of the same has been tabulated in table 3. On comparing the usage of bedrooms for purpose of television watching and food consumption, our study found that majority of the urban adolescents (74.35%) used their bedrooms to watch TV and rural adolescents (68.50%) used it to consume food. The urban subjects (41.33%) used bedrooms significantly for both watching TV and food consumption. There were no students with history of alcohol consumption or smoking.
The table 4 shows the association between the factors affecting sleep and the area of residence. The use of mobile phones before sleep is more among the adolescents residing in the urban areas compared to those in the rural areas and this difference has been found to be statistically significant ($p< 0.0001$). Late night dinners are more common among the adolescents residing in the urban areas. Hence significant association has also been found between late night dinner and sleep of the adolescents residing in the urban areas ($p<0.0001$). On comparing the number of sleeping hours between the urban and rural adolescents, it was found that the urban adolescents on an average spent 7.5 hours on week days on sleep and 9.4

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hours on weekends on sleep. The rural adolescents on an average spent 7.2 hours on week days on sleep and 8.18 hours on weekends on sleep. The strict sleep routine was followed only by 15.5% of the adolescents. Late night TV watching was the most common reason for extra sleep on the weekends. On comparing the sleeping hours between the age groups, it was found that the adolescents between 10-13 years spent an average of 8.2 hours for sleep and 13-16 years spent 7.32 hours during the weekdays. On weekends adolescents between 10-13 years spent 9.8 hours for sleep while adolescents between 13-16 years spent 8.18 hours. A strict sleeping schedule was followed better by the adolescents between 10-13 years than 13-16 years. Most common reasons being exam stress, late night studying, late night use of mobile phones and late-night TV watching (Table - 5).

Table 1: Gender wise distribution of the subjects

Gender	No. of subjects (n=992)	%
Male	540	54.43
Female	452	45.57

Table 2: Urban-Rural and gender wise distribution of the subjects

	10 – 13 years		13- 16 years		Total
	Male	Female	Male	Female	
Rural	220	161	217	164	762
Urban	49	55	54	72	230
Total	269	216	271	236	992
	485		507		

Table 3: Gender, age and urban-rural distribution of the factors affecting sleep

Factors affecting sleep	Rural (n=762)				Urban (n=230)			
	10-13 years		13-16 years		10-13 years		13-16 years	
	Male	Female	Male	Female	Male	Female	Male	Female
Consumption of beverages like tea and coffee before sleep	33 (4.33%)	42 (5.51%)	87 (11.42%)	46 (6.04%)	12 (5.22%)	15 (6.52%)	18 (7.83%)	21 (9.13%)
Use of mobile phones before sleep	43 (5.64%)	44 (5.77%)	132 (17.32%)	56 (7.35%)	31 (13.48%)	33 (14.35%)	29 (12.61%)	55 (23,91%)
Late night television watching	146 (19.16%)	104 (13.65%)	154 (20.21%)	43 (5.64%)	33 (14.35%)	31 (13.48%)	24 (10.43%)	41 (17.83%)
Late night dinner	88 (11.55%)	76 (9.97%)	84 (11.02%)	31 (4.07%)	30 (13.04%)	32 (13.91%)	30 (13.04%)	43 (18.70%)
Exam stress and fear	22 (2.89%)	48 (6.30%)	65 (8.53%)	87 (11.42%)	08 (3.48%)	11 (4.78%)	15 (6.52%)	28 (12.17%)
Consumption of alcohol and substance abuse	00	00	00	00	00	00	00	00

Table 4: Association between the factors affecting sleep and the area of residence (rural Vs urban)

Factors affecting sleep	Rural (n=762)	Urban (n=230)	Statistical value
Consumption of beverages like tea and coffee before sleep	208	66	Chi Square= 0.173 DF= 1 p = 0.6775
Use of mobile phones before sleep	275	148	Chi Square= 57.68 DF= 1 *p*< 0.0001

ISSN 2515-8260 Volume 09, Issue 05, 2022

Late night television watching	447	129	Chi Square= 0.4809 DF= 1 p = 0.4880
Late night dinner	279	135	Chi Square= 35.43 DF= 1 *p*<0.0001
Exam stress and fear	222	62	Chi Square= 0.4099 DF= 1 p = 0.5220

Table 5: Gender, age and urban-rural distribution of the Number of sleeping hours/day.

Number of sleeping hours (hours/day)	Rural (hours/day) mean± SD	Urban (hours/day) mean± SD	10 – 13 years (hours/day) mean± SD	13- 16 years (hours/day) mean± SD	Male (hours/day) mean± SD	Female (hours/day) mean± SD
Weekdays	7.2±0.14	7.5±0.34	8.2±0.54	7.32±0.94	7.22±0.54	7.57±0.23
Weekends	8.18±1.98	9.4±1.12	9.8±1.98	8.18±1.98	9.18±2.34	8.28±1.44

Table 6: Comparing the number of hours that adolescents spent on sleep.

		Present study (in hours) mean± SD	Kakkar *et al*. study [6] (in hours) mean± SD	Mathew *et al*. study [7] (in hours) mean± SD
Week days	Urban	7.5±0.34	8.00±0.707	7.4±1.2
	Rural	7.2±0.14	7.63±2.12	
weekend	Urban	9.4±1.12	9.37±0.707	9.03±1.4
	Rural	8.18±1.98	8.37±3.53	

Discussion

Sleep is an integral part in the life of any healthy individual and sleep problems can affect the intellectual abilities including the performance at school [4]. On comparing the number of hours that adolescents spent on sleep, it was found that the duration of sleep was longer on weekends than weekdays both in urban and rural areas. The results were similar to the studies done by Kakkar, *et al*. and Mathew, *et al*. as shown in table-6 [6, 7] but no such difference was found in the study by Mishra, *et al*. [8].

On comparing the factors that influence sleep, like the consumption of tea/ coffee it was found that 27.62% of the adolescents in our study consumed tea/coffee prior to sleep when compared to a study by Kakkar *et al*. which showed 34.89%. In our study the consumption was more in the urban subjects (28.70%) than rural subjects (27.30%) which was similar to the study by Kakkar *et al*. [6]. On comparing the use of mobile phones before sleep, our study showed 42.64% use mobile phones before sleep which was higher compared to a study done by Murugesan *et al*. where it was around 23% [5]. It was higher in urban subjects (52.17%) than rural (36.09%). Most of them used it for watching videos, sending text messages etc. which was similar to the study done by Munezawa *et al*. [9]. On comparing the late-night television watching our study showed that 58.06% watch television late at night, which was less than the study done by Murugesan *et al*. [5]. In our study 58.66% of the rural adolescents viewed TV prior to sleep which was higher than the urban adolescents, 56.08% probably as it is a major source of entertainment to the family in rural areas. In our study there were no adolescents with history of alcohol consumption or smoking when compared to the study by Kakkar *et al*. which had 1% [6]. This could be due to fear among the students to express the truth.

ISSN 2515-8260 Volume 09, Issue 05, 2022

Limitations

The sample size is small with uneven distribution of subjects among urban and rural areas. Parents needed to be included in the study for better information retrieval.

Conclusion

Sleep problems are common among adolescents. Their pre sleep activities have a major impact on their quality of sleep, hence addressing them is essential.

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