Sleep hygiene a neglected paediatric identity – A cross-sectional study

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Abstract

Background: Sleep is the physiological need of any human being; its role in paediatric mental and physical development is irreplaceable. However, in recent days, the rising trend of childhood obesity makes it essential to assess the sleep hygiene of the children to know if there is any adjacent association. **Objectives:** 1. To estimate the prevalence of poor sleep quality using Sleep Hygiene Index Scoring. 2. To determine the association of sleep quality with academic performance and body mass index among the school children. **Materials and Methods:** The present cross-sectional study was conducted among 322 children aged between 7 and 12 years attending paediatric OPD of a private tertiary care hospital, Puducherry. Using Sleep Hygeine Index scoring with the cut off 16, prevalence of poor sleep quality was assessed and its association with BMI and academic performance was determined. Frequency, proportion, and Chi-square test were used for analysis; P value < 0.05 was considered statistically significant. **Results:** The mean age of the participants was 8.8 ± 2 years, and most of them were boys. Around 53% of the children had poor quality of sleep, and there was a positive association between poor sleep quality with obesity (P value: 0.0003) and unfavourable academic performance (P value: 0.00001). **Conclusion:** Sleep hygiene importance should be taught to the parents and periodical assessment helps in predicting the neglected reason for obesity and poor academic performance, which could be managed easily with small lifestyle changes.

Keywords: Academic performance, childhood obesity, sleep hygiene

Introduction

Right from birth, the role of sleep in physical and mental health is unnegotiable. Every phase of life is, however, related to different sleep pattern, and this transition is not always biological but have lots of external factors influencing it. Children who are the most vulnerable population of sleep deprivation often do not complain, not knowing its importance.[1-3]

Adequate sleep is the basic need to carry out even the routine activity efficiently. Children and adolescents require at least eight to nine hours of sleep at night daily.[4-7] Studies have shown that sleeping for less than the recommended number of hours is associated with problems related to attention, behavior and learning.[8] Recently, various studies have also determined association between improper sleep and obesity but still the relationship between sleep and BMI remains unclear with widely varying results.[9,10]

Sleep hygiene may be described as practicing behaviors that facilitate sleep and avoiding behaviors that interfere with sleep.[11] There are various content-validated scales for assessing sleep hygiene, namely Sleep Hygiene Awareness and Practice Scale, Sleep Hygiene Self-Test, Pittsburgh Sleep Quality Index, Sleep Hygiene Index among these Sleep Hygiene Awareness and Practice Scale, and Sleep Hygiene Self-Test shown to have lesser internal consistency, having a Cronbach's alpha value of 0.47 and 0.54, respectively.[11-14]

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Based on the above background, the study was planned to estimate the prevalence of poor sleep quality using Sleep Hygiene Index Scoring and determine the association of sleep quality with academic performance and Body mass Index among the school children.

Materials and Methods

After the Institutional Scientific and Ethical clearance, the present cross-sectional study was conducted at Paediatric OPD of Tertiary care Hospital, Puducherry among the children aged between 7 and 12 years. The inclusion criteria for the study include children aged between 7 and 12 years, attending the Paediatric OPD without major health ailments during the study period, having come along with either of the care giver, given assent and consent to participate in the study.

Around 322 children fulfilling the inclusion criteria were involved in the study. The sample size of 322 was derived using the formula $4pq/d^2$, where the minimum required sample size came as 292; considering a nonresponse rate of 10%, a higher sample of 322 was considered for the study purpose. Th study tool was used to collect the required information for the study; the variables include basic sociodemographic details, variables of Sleep Hygiene Index Scoring scale (to determine the quality of sleep), details of Average Academic performance as mentioned by the caregiver, and measurements like weight (kg) and height (cm) to determine the Body mass Index.

For the study purpose, using the reference cut off of 16 from a previous research study,[15] those who have obtained a score of 16 and above on Sleep Hygiene Index Scoring scale are said to be with poor sleep quality, and those who have obtained score of <16 are said to be without poor sleep quality. Academic performance was classified as Favourable and Unfavourable Academic performance based on the Average percentage of marks obtained in the last 1 year. Those who have obtained >70% score on average are said to have Favourable Academic performance and vice versa to have Unfavourable Academic performance. Body mass Index was classified based on Asian cut-off classification.

Statistical analysis was done using SPSS 21. Continuous variables were expressed as mean ± SD, and discrete variables were expressed in frequency and proportion. Chi-square test was used to determine the association between Academic Performance and BMI with Sleep Quality; P value < 0.05 was considered statistically significant.

Results

The mean age of the study participants was 8.8 ± 2 years; majority of the children were boys (61%).

On analysing the Sleep hygiene scale, it was noted that most of the participants had more than 2 h day time nap (61%)

with different bedtime (53%) and waking time (45%). Most of them did not do any strenuous exercise before 1 h of going to bed (36%) or had habit of alcohol/caffeine intake within 4 h of going to bed (94%). Most of them stayed longer in bed more than twice a week (42%) and went to bed feeling anger/stressed (31%). Most of them do something that wake them before bedtime (40%) and a lesser proportion (8%) reported that they sleep in uncomfortable bed and mattresses. While 27% of them mentioned they never had an uncomfortable environment, other 27% mentioned that they always had an uncomfortable environment. The majority of them did not do any other important work during bedtime (44%), while reported that they think and plan after going to bed (47%) [Table 1].

Considering the cut-off score of 16, the participants were classified into those with poor sleep quality and those without poor sleep quality. It was found that more participants were present with poor sleep quality 171 (53%).

In determining the association between poor sleep quality and Body mass Index, it was found that the proportion of participants with overweight and obesity is higher among those with poor sleep quality compared to those without poor sleep quality. On the other hand, the proportion of participants who is underweight and normal are higher among those who did not have poor sleep quality compared to those with poor sleep quality; this difference was found to be statistically significant, having a Chi-square value of 18.43 and a P value of 0.0003 (<0.05) [Table 2].

On determining the association between poor sleep quality and Academic performance, it was found that the proportion of participants with Unfavourable Academic performance was higher among those with poor sleep quality compared to those without poor sleep quality; this difference was found to be statistically significant having a Chi-square value of 48.3 and a P value of 0.00001 (<0.05) [Table 3].

Discussion

In the current study, the prevalence of poor sleep quality was 53%, which was lesser compared to the study conducted by Maheshwari G *et al.*,[16] where they witnessed 64.24% of students having poor sleep quality. This higher prevalence could be because of the disparity in age of the study participants between the two studies. Maheshwari G *et al.*[16] had a high number of adolescent schoolchildren and vice versa.

The current study findings showed a significant association between poor sleep quality and unfavourable academic performance; this was similar to the finding of Rose S *et al.*[17] who also reported an association between lower academic performance and poor sleep quality; the relationship between the sleep quality and academic performance is further confirmed by the findings of Phillips AJ *et al.*[18] who stated that for every 10-point increase in sleep regularity index, there is a 0.10 increase in Academic performance.

Questions	SHI Score				
	0 n (%)	1 n (%)	2 n (%)	3 n (%)	4 n (%)
I take daytime naps lasting two or more hours	29 (9%)	35 (11%)	42 (13%)	196 (61%)	20 (6%)
I go to bed at different times from day to day	32 (10%)	20 (6%)	32 (10%)	68 (21%)	170 (53%)
I get out of bed at different times from day to day	42 (13%)	29 (9%)	26 (8%)	81 (25%)	144 (45%)
I exercise to the point of sweating within 1 h of going to bed	116 (36%)	64 (20%)	48 (15%)	52 (16%)	42 (13%)
I stay in bed longer than I should two or three times a week	35 (11%)	39 (12%)	52 (16%)	61 (19%)	135 (42%)
I use alcohol, tobacco, or caffeine within 4 h of going to bed or after going to bed	302 (94%)	20 (6%)	0	0	0
I do something that may wake me up before bedtime (for example: play video games, use the internet, or clean)	61 (19%)	39 (12%)	42 (13%)	52 (16%)	129 (40%)
I go to bed feeling stressed angry, upset, or nervous	39 (12%)	74 (23%)	52 (16%)	58 (18%)	99 (31%)
I use my bed for things other than sleeping or sex (for example: watch television, read, eat, or study	109 (34%)	64 (20%)	39 (12%)	55 (17%)	55 (17%)
I sleep on an uncomfortable bed (for example: poor mattress or pillow, too much or not enough blankets)	58 (18%)	77 (24%)	45 (14%)	39 (12%)	26 (8%)
I sleep in an uncomfortable bedroom (for example: too bright, too stuffy, too hot, too cold, or too noisy)	87 (27%)	35 (11%)	45 (14%)	68 (21%)	87 (27%)
I do important work before bedtime (for example: pay bills, schedule, or study)	142 (44%)	58 (18%)	35 (11%)	58 (18%)	29 (9%)
I think, plan, or worry when I am in bed	26 (8%)	26 (8%)	22 (7%)	97 (30%)	151 (47%)

Table 1: Distribution of participants based on Sleep Hygiene Index Scale scoring (*n*=322)

Table 2: Association between Poor Sleep Quality and Body Mass Index (*n*=322)

Poor Sleep Quality	ASIAN Body Mass Index (BMI) category				Significance
	Underweight	Normal	Overweight	Obese	
Present	32	30	60	49	Chi square=18.43
Absent	26	58	38	29	*P*=0.0003

Table 3: Association between Poor sleep Quality and Academic performance (*n*=322)

Poor Sleep Quality	Academic Performance		Significance
	Favourable	Unfavourable	
Present	76	95	Chi-square=48.3
Absent	124	27	*P*=0.00001

The current study showed a positive association between poor sleep quality and childhood obesity with a Chi-square value of 18.43 and a *P* value of 0.00001. Various research studies support the current study findings; short sleep duration was associated with childhood obesity around the world. Sleep duration in children may have long-term consequences on BMI[19] and other health behaviours, such as regular exercise, stress management, and adopting healthy diets,[20] and poor sleep quality (higher PSQI-BR scores) was significantly associated with low physical activity levels ($\beta = -0.05$; 95% CI $- 0.09, -0.01$), which could have an indirect effect on obesity.[21]

Conclusion

There is an extremely high prevalence of poor quality of sleep in the paediatric age group with a positive association with obesity; it is an alarming remark, being a predictor for most of noncommunicable diseases. Sleep which is often ignored to be a part of the health component must be more emphasized. Parents should be taught about the importance of sleep, and the ill effects of improper sleep hygiene apart from the routine academic discussion during the parent's meeting, which also increases academic performance in future.

Conflicts of interest

There are no conflicts of interest.

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