

Original Article

A CROSS SECTIONAL STUDY ON SLEEP HYGIENE AMONG MORNING SHIFT SCHOOL GOING CHILDREN

Sanjay Dixit¹, Suraj Sirohi², Salil Sakalle³, Rahul Rokade⁴, Sugandha Sirohi⁵

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Author's Affiliation:

¹Professor & Head; ²Assistant professor; ³Associate Professor; ⁴Demonstrator, Department of Community Medicine, MGM Medical College, Indore; ⁵PhD scholar, Hospital Administrator, Institute of Management Studies, Indore

Correspondence:

Dr. Suraj Sirohi
Email: surajsirohi@gmail.com

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ABSTRACT

Introduction: Sleep hygiene is defined as "The controlling of all behavioural and environmental factors that precede sleep and may interfere with sleep". It is practicing of the guidelines to ensure more restful, effective sleep which can promote daytime alertness, memory, performance & growth of children. Subnormal sleep hygiene is a major problem with school children.

Objective: The aim of the study was to assess the various aspects of sleep hygiene in morning shift school going children.

Methods: This study was carried out among 300 morning shift school going children of 6 to 12 years in different geographical sites in Indore city. After obtaining informed consent, a pretested semi-structured questionnaire was administered to mothers of these children. The instrument also included the respective scoring in Epworth Sleepiness Scale (ESS). The data were analysed using appropriate statistical tests.

Results: Among the study population, maximum (44.33%) children were from > 10 to 12 year of age. It was observed that the group having ESS \geq 10 comprised of 25.8% out of total children taking day time naps ($\chi^2=22.10/p$ value=0.000), 42.86% of total children who skipped meals frequently at night ($\chi^2=80.69/p$ value=0.000).

Discussion: The present study tried to find out the pervasiveness of sub normal sleep hygiene, most striking fact found was that 90% children had less than 10 hrs of daily total sleep i.e. less than the recommended for this age group, 14% of children were having poor sleep hygiene, while 10.67% of children were having their ESS score between 7 to 9 (borderline).

Conclusion: All affected children need intervention to conquer and to prevent future risk of becoming sleep deprived, their parents should also be given health education and should be counselled about the proper methods of promoting sleep hygiene.

Keywords: Morning shift, school children, subnormal sleep hygiene.

INTRODUCTION

Subnormal sleep hygiene is a major problem with school children. Subnormal attention, lower academic skills and inappropriate behaviour can be caused due to lack of sleep. Today's classrooms are filled with students who are too tired to function at their maximum learning potential. Different children display different signs of subnormal sleep hygiene. Some children get lethargic or zone out while some are grumpy. Other children can become hyperactive due to lack of sleep. All of these signs lead to problems in school. Students having difficulty with attention problems and hyperactivity can be found in many classrooms.

Sleep hygiene is defined as "The controlling of all behavioural and environmental factors that precede sleep and may interfere with sleep".¹ It is practicing of the guidelines in order to ensure more restful, effective sleep which can promote daytime alertness, memory, performance & growth of children. Children with poor sleep hygiene may show irritability, temper tantrums, decreased patience, hyperactivity, crying, fussiness, tiredness when they wake-up in the morning, poor concentration, poor school performance, poor impulse control, clumsiness etc. School children need to go to bed about the same time every night. The guidelines for sleep requirements for children are: ages five to eight- 10-11 hours per night, ages nine to eleven- 9-10

hours per night.² All children are unique but these suggested times are a starting point. Trouble sleeping and daytime sleepiness can be indications of subnormal sleep hygiene. The International Classification of Sleep Disorders-Revised (ICSD-R) states "The importance of assessing the contribution of inadequate sleep hygiene in maintaining a pre-existing sleep disturbance cannot be overemphasized".³ The present study is an attempt to find out the sleep hygiene among morning shift school going children in a cosmopolitan city of Madhya Pradesh, India.

OBJECTIVES

The broad objective of the study was to assess the various aspects of sleep hygiene in morning shift school going children while the specific objectives were: 1) To study the school hours of morning shift school going children; 2) To assess the various aspects of day time naps of morning shift school going children; 3) To study the socio-behavioural aspects due to altered sleep hygiene among these children; and 4) To assess the change in academic performance of these children.

METHODOLOGY

The present cross sectional study was carried out in the field practice area of Urban Training Health Center, Department of Community Medicine, MGM Medical College, Indore covering three different randomly selected geographical sites with the aim to include families of all socio-economic profile. A convenient sample of 300 children was taken as the basis for conducting the study to reveal association between morning-shift of school & sleep hygiene of these children. A house to house survey done in these three different geographical sites and first 100 fulfilling the selection criteria were selected from each site. After obtaining informed written consent, a pretested semi-structured questionnaire was administered to mothers of these children for obtaining the required information. The study tool was designed to elicit the information regarding their socio-economic profile and variables concerned with the main theme of the study including various questions related to child such as his/her school timings, extracurricular activities, academic performance, day time drowsiness, behavioural changes, day time naps (≤ 20 minutes), skipping meals at night, health status, any complaints from school, duration of watching TV etc. The instrument also included the respective scoring in Epworth Sleepiness Scale (ESS),⁴ which was completed by children's mothers. The ESS has 0 to 3 scoring reflection (0 = never sleeps, 1 = slight chance, 2 = moderate chance and 3 = high chance of sleeping), it assesses the probability of sleeping in accordance with various situations viz. while sitting in class, watching TV, travelling in bus/car and while waiting for lunch/dinner etc. After completion of filling the questionnaire by children's mothers, an immediate evaluation based on the

ESS score of every individual child was done in the same sitting followed by an interactive education session of mothers whose child had the ESS score ≥ 7 was undertaken through an eye-catching pamphlet containing the remedies in the form of written tips to prevent and overcome the problems of subnormal sleep hygiene. Finally the data was collected in the form of master table and was tabulated in Microsoft excel spread sheet. Analysis was done using SPSS (Statistical Package for Social Sciences) software version 20. The socio-economic profiling was done based on modified Kuppaswamy scale (Group 1 and 2 for low, group 3 & 4 for middle, group 5 & above for high income group).⁵ Appropriate statistical tests like Chi-Square & t-Test were applied wherever necessary.

Inclusion Criteria: All the morning shift school going children in the age group of 6 to 12 years and whose mothers gave an informed written consent to be a part of the present study.

Exclusion Criteria: All the noon shift school going children and/or the children below 6 years or above 12 years of age and/or whose mothers had not given written consent to be a part of present study.

RESULTS

The current study was conducted by administering the pretested semi-structured questionnaire to the mothers of 300 morning shift school going children. Among the study population, 59 children (19.67%) were from > 6 to 8 years age group, 36% were from > 8 to 10 years age group while 44.33% of the total children were from > 10 to 12 year of age group. Among which 63% of children were male and the rest 27% were female. A total of 41.33% children were from high income group families, 34% were from middle income group and 24.67% of children were from low income group families (based on Modified Kuppaswamy scale). It was observed that maximum (61.33%) children had school time of 6 hrs and only 4% had the school time of 4 hrs. A total of 90% children had less than 10 hrs of daily total sleep; only 30 children (10%) had sleep of more than 10 hrs. Out of total, 86.67% children were involved in extracurricular activities of which maximum (total 184 children) were occupied by sports activity whereas a total of 128 children (42.67%) were involved in the academic (tuition) classes in addition to their school timings. On the question of day time naps, mothers of 38.67% children responded that their ward were having day time naps which might be because of inadequate night sleep. A total of 74.66% children were found to have behavioural changes such as irritability & restlessness after coming home. It was observed that 28% of children were frequently skipping their dinner because of sleep whereas 33.33% of children frequently fell sick which resulted their abstinence from the school. Among the study group 12.67% of children were found to be drowsy during day time while 16% of children had declining academic performance compared with their

previous year records. Investigators found that 50% of children got complaints from their school about their absent mindedness. In accordance with the ESS scores analysis, it was observed that 14% of children were found having subnormal sleep hygiene on the basis that they were having ESS score ≥ 10 ; worth mentioning fact found was that 10.67% of children were having their ESS score in between 7 to 9 i.e. they were on

the edge of becoming sleep deprived due to their sub-normal sleep hygiene and had highest chance of converting to higher score. Various study variables were cross analysed with children's ESS score (ESS ≥ 10 & ESS < 10) and statistically significant relationship was found between ESS score & these variables (as shown in Table 1).

Table 1: Relationship between the ESS score & various characteristics of children

	Daytime naps		Skipping meals		Declining academic performance		Daytime drowsiness		Frequently falling sick	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
ESS ≥ 10	30	12	36	6	18	24	12	30	24	18
ESS < 10	86	172	48	210	30	228	26	232	76	182
Total	116	184	84	216	48	252	38	262	100	200
χ^2	$\chi^2=22.10, P=0.0001^\dagger$		$\chi^2=80.69, P=0.0001^\dagger$		$\chi^2=26.21, P=0.0001^\dagger$		$\chi^2=11.17, P=0.0008^\dagger$		$\chi^2=12.46, P=0.0004^\dagger$	

χ^2 = Chi square test with p value, \dagger = test applied is significant since p-value < 0.05

It was observed that the group having ESS ≥ 10 comprised of 25.8% out of total children taking day time naps (n=116) ($\chi^2=22.10/p$ value=0.000) whereas 42.86% of total children who skipped meals frequently at night (n=84) ($\chi^2=80.69/p$ value=0.000) had their ESS ≥ 10 . About 31.58% of total children who remain drowsy throughout the day (n=38) ($\chi^2=11.17/p$ value=0.000) and 37.5% of total children whose academic performance was declining (n=48) ($\chi^2=26.21/p$ value=0.000) along with 24% of total children who frequently fall sick (n=100) ($\chi^2=12.46/p$ value=0.000) were from the same set i.e. had their ESS ≥ 10 . The t-Test was applied for total sleeping hours between the two groups (ESS ≥ 10 & ESS < 10) and significant difference was found between the two groups (t= -2.3 & P=0.022). This shows that there was a significant difference in day time naps of both the groups. The group with ESS ≥ 10 had more day time naps than ESS < 10 . The mean night sleeping hours of children were 8 hrs 19 min. This is quite less than recommended number of sleep hours for school going children i.e. 10 to 11 hrs.²

DISCUSSION

The sleep hygiene is an important aspect that should be taken care of specially in growing children for their appropriate and sound intellectual as well as psychosocial development. Inadequate night sleep will lead to various conditions of ill health, physiological and behavioural changes especially in children. Trouble sleeping and daytime sleepiness can be indications of subnormal sleep hygiene. The present study tried to find out the pervasiveness of sub normal sleep hygiene in one of the vulnerable group i.e. morning shift school going children. The most striking fact found was that a total of 90% children had less than 10 hrs of daily total sleep which was less than the recommended sleeping hours for this particular age group, another one was that 14% of children were having poor sleep hygiene (based on their ESS score ≥ 10)

while 10.67% of children were having their ESS score between 7 to 9. This group was having their sleep hygiene at risk and methods of prevention should be used in these children to prevent them from becoming sleep deprived from subnormal sleep hygiene. The American Academy of Sleep Medicine (AASM) recommends that "Children need more night sleep than adults for full daytime functioning and healthy long-term development. Younger children should get to bed much earlier than their adolescent siblings. A child in school going age requires 10 to 11 hrs of night sleep".²

Investigators also found the relevant detrimental effects of poor sleep hygiene in the form of day time naps in 38.66% of children under study while most of the children (74.67%) studied showed irritability and some behavioural changes in their day-to-day life. Skipping routine meals, frequently fell sick, declining academic performance and complaints from the school were other common problems observed with numerous children covered under the present study. Another study carried out by Bhatia et al, in UCMS Delhi, India concluded that adolescents of higher grades had lesser sleep time and frequent awakenings and suffered daytime leg pain and felt sleepy during daytime. These factors suggest increasing sleep deprivation among higher grades.⁶ The present study explored that many of the children had subnormal sleep hygiene and scores of frequent children were found having their sleep hygiene at risk.

CONCLUSION AND RECOMMENDATIONS

In today's changing world, with availability and abundance of sleep distracting stuff the sleeping hours, as well as sleeping habits of every age group have transformed to a greater extent. It became a major problem in school age children and in teenagers as it affects them the most. The peer pressure, to be a good academic performer and real-time parent's ex-

pectations make the circumstance more stressful for children. It is necessary to have a plentiful good quality and quantity sleep to relieve the day-to-day induced stress. All those affected children need intervention to conquer and to prevent future risk of becoming sleep deprived, their parents should also be given health education and should be counselled about the proper methods of promoting sleep hygiene and about the future risks of this kind of improper sleep behaviour of their children. Bedtime needs to be determined by the parents. On the basis of the findings of the present study, recommendations suggested to help and prevent a child from having subnormal sleep hygiene are to give healthy and nutritious diet to your child, avoidance of caffeinated drinks at night, keep the bedroom quiet and free from the distracting things such as television, computer/laptop and video games etc. and the most important is to maintain regularity and preciseness in everyday bedtime and children need to understand that it is non-negotiable.

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