Full length article

Sleep-patterns, co-sleeping and parent's perception of sleep among school children: Comparison of domicile and gender

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ABSTRACT

This study was aimed at assessment of sleep schedule, pre-sleep behavior, co-sleeping and parent's perception of sleep of school going children.
Method: Four schools each, from urban and rural area were included. Sleep patterns were assessed using the validated Hindi version of Childhood-Sleep-Habit-Questionnaire. Comparison was made between urban and rural group and between boys and girls. Interaction of gender, domicile and school-type was examined on the sleep patterns.
Results: This study included 831 school children with mean age of 8.9 years. Nearly half of the subjects were boys in this study. Urban children outnumbered those from rural area. Total sleep time on week-days was 8.3 h that increased to 9.5 h on weekends. Rural children spent more time in sleep than urban children on weekdays and weekends. A higher proportion of urban children felt sleepy during the day. Television watching before bedtime was more common in urban settings. Room sharing was more common among rural children. Nearly 65% rural parents as compared to 77.5% urban parents reported that their child was sleeping sufficient enough. Gender did not affect sleep-schedule and parent's perception regarding their child's sleep. Interaction between gender, domicile and school-type did not have any significant effect on sleep patterns.
Conclusion: Television watching before bedtime was more common among urban school children and they had shorter total sleep time. They had signs of sleep deprivation. Room sharing was more common among rural children. Despite longer sleep time, parents of rural children felt the need for more sleep.

1. Introduction

Sleep is an important part of the life and adults spend around one third of their life in sleep. In contrast to adults, infants spend nearly half of their day in sleep. Duration of sleep is not static and it shortens with the growing age, especially among children [1–4]. Reduction of sleep with the growing age can be ascribed to a number of factors that include not only biological but also environmental factors e.g., age related natural decline in sleep need, changes in presleep behavior such as–watching TV or spending time on screens or burden of the school-work [2,5,6]. Among these, watching television or spending time with a screen before bed (screen time) is known to reduce the total sleep time and to delay the sleep onset [2,5]. It has been found that children who have longer screen time, show difficulty in both sleeping as well as in waking up [7].

In addition to the factors mentioned above, sleep patterns of children are also influenced by the cultural practices and sleep schedule followed by family [8,9]. It has been reported that children of Asian origin had a later bed-time (around 10.30 pm) as compared to children with predominantly Caucasian origin who went to bed earlier (at 7.45 pm) [9]. Not only the sleep pattern but co-sleeping too is influenced by the cultural practices. It has been reported that co-sleeping was more common among Asians as compared to western children [4,10,11,12]. Aishworya et al. [13] found that children in Singapore had difficulty in sleeping alone and that they required some company to fall asleep. Similarly, co-sleeping was observed among 73% and 93% children in two studies from India [4,12]. Following the similar trend, 87% Japanese children were reported to share the bedroom with their parents [10].

However, prevalence of co-sleeping was lesser in China, where approximately 38% children were found to co-sleep with their parents [14]. Thus, with the exception of China, co-sleeping is common in Asian region. On the other hand, co-sleeping is less prevalent in West, with the prevalence of around 50% during infancy which further reduces as the age advances [15]. Thus, this data suggests that culture influences the sleep pattern as well as sleep practices.

Not only the culture, but also the domicile and gender may influence sleep. Girls have been found to have longer sleep and they spend more time in motionless sleep [16]. To make the issue further complex, a study from Brazil showed that girls had a longer nighttime sleep on holidays but not on weekdays [17]. Another study from Japan showed that girls had a longer sleep onset latency as compared to boys [18]. Thus, it appears that gender influences some of the sleep parameters that but the results were inconsistent among studies [16–19].

Considering the facts that pre-sleep behaviors, sleep schedule and sleep practices are influenced by cultural background and gender, and in view of a dearth of studies from India, which is culturally different from not only from other countries but also between it's own urban and rural areas, present study was planned. Most of the studies addressing this issue included sample from the clinics, and findings of these studies are difficult to be extrapolated to non-clinical samples [8,9,4,20,21]. Moreover, we could not find any study comparing the influence of domicile on sleep patterns, despite the fact that at least in India, socio-economic disparity is high between urban and rural areas [22]. This disparity may influence the sleep parameters by having a impact on availability of electricity and screens.

This study was designed to assess the pre-sleep behavior and sleep schedule of school going children falling in the age group of 8–13 years. We hypothesized that total sleep time would be lesser in urban children while the co-sleeping would be more frequent among rural children. We also assumed that girls would be sleeping lesser than the boys. Thus, the objectives of the study were to compare sleep pattern on the basis of domicile, school type and gender among Indian school children.

2. Method

This study was done after obtaining permission from the Institutional Ethics Committee of Himalayan Institute of the Medical Sciences, Dehradun. We included four schools from the rural area and four schools from the urban area. Urban schools included those educational institutions, which were within the administrative area of Dehradun Municipal Corporation. Rural schools were situated in an area, which was outside the jurisdiction of city's municipal corporation, but situated in a block within the same district. Among these, in each group, two schools were the public schools, run by private trusts and the Government ran the other two. In general, there is a socioeconomic difference between the government and public schools; public schools usually cater the children with higher socio-economic strata. The names of the schools were randomly chosen from the list of the major schools in the city and that of the chosen block. All the schools were running the morning shift (8.00 am to 2.00 pm).

School authorities were approached and they were explained regarding the rationale of the study. They were requested to distribute a questionnaire (vide infra) that enquired about sleep related behaviors and sleep disorders among children aging 8–13 years, irrespective of their gender. The questionnaire was distributed to all the students by their class teachers. They encouraged the children to get it filled by their parents. Questionnaires were collected a week later from each of the student by the class teachers who then submitted the questionnaires to the office of the school-authority. From there, all the questionnaires were collected by one of the authors. All the students who cooperated in the study, and whose form had complete information were included for final analysis.

2.1. Questionnaire

Questionnaire had two sections – first section explained the rationale of the study in detail to the parents and requested them to provide desired information regarding sleep of the child along with the written informed consent. It also had items that were directed towards demographic details and some items related to co-sleeping e.g., number of persons sharing the bedroom of the child in the house and number of persons sharing the bed with the child. It also had items to gather the medical history of the child. Second section consisted of Hindi version of Childhood Sleep Habit Questionnaire (CSHQ). All the items were responded by the parents.

2.2. Childhood sleep habit questionnaire

Childhood sleep habit questionnaire was developed by Owens et al. [23]. It has 45 items that enquire about the child's usual bedtime and usual wake-time on week days/week ends and naps during the day. It has many sub-scales that enquire about the bedtime behavior, sleep behavior, parasomnia, sleep related breathing disorder and daytime sleepiness. It has internal consistency of 0.68 for community sample and 0.78 for the clinical sample [23]. This has been translated and validated in many languages including Hindi [24–27]. A cutoff score of 41 has been proposed to differentiate between the children with and without sleep problems in the original study with 80% sensitivity and 72% specificity [23].

In the present study, Hindi version of CSHQ was used after obtaining permission from principal author of the original paper [23,24].

3. Statistical analysis

Statistical analysis was done using SPSS v 21.0 (IBM Inc., USA). Descriptive statistics was calculated. Normality of data was checked based upon visual analysis of the Q-Q plot curve. Proportion was compared using chi-square statistics and, independent sample 't' test was used to compare numerical variables. We compared the variable based upon two factors- first, depending upon domicile i.e., urban and rural children and secondly, between genders. Three way ANOVA was run to see the effect of gender*domicile*school type of sleep related continuous parameters.

4. Results

In this study a total of 1138 students were approached. Among these 1027 forms were returned (overall response rate 90.2%; urban=91.4%, rural=86.9%). These forms were examined for the inadequacies and 196 forms were excluded because of incomplete information e.g., missing a part of demographic data, sleep schedule, information regarding co-sleeping, pre-sleep behavior or the sleep disorders. Thus, finally the 831 (73%) forms were analyzed. Medical history was not significant in any of the children.

4.1. Demographic variables

Mean age of the subjects included in this study was 8.9+1.5