

Brief Reports

Patterns and Problems of Sleep in School Going Children

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Manuscript received: February 21, 2005, Initial review completed: April 12, 2005;
Revision accepted: July 14, 2005.

This study was conducted to assess the sleep habits and problems of 103 young school going healthy children (3-10 yr) during their visit to hospital for minor illnesses or routine health visits for immunization. The average duration of daily sleep (nocturnal and daytime nap) was 10.32 ± 1.18 hours and the percentage of children who took regular daytime nap was 28.2%. Co-sleeping, a traditional cultural practice in India was found in 93% of the children. Sleep related problems were reported in 42.7% children that included nocturnal enuresis (18.4%), sleep talking (14.6%), bruxism (11.6%) nightmares (6.8%), night terrors (2.9%) snoring (5.8%) and sleepwalking (1.9%). On univariate analysis, sleep related problems were notably common if it was nuclear family (Fisher's exact test; $P = 0.01$), mother was younger in age (Mann Whitney U test; $P = .04$) and less educated (Mann Whitney U test; $P = .04$). However, when these predictors were entered simultaneously into a logistic regression model, only nuclear family remained as significant predictor of sleep related disorders (odds ratio 2.41; CI; 1.04-5.57). We conclude that sleep problems are frequent among healthy school going children seen at general pediatric practice.

Key words: School children, Sleep disorders, Sleep habits.

LAST few decades have witnessed a renaissance of sleep research particularly about basic science, epidemiology and disorders of sleep in children(1-2). Our current state of knowledge in understanding epidemiology and nature of sleep problems in school children leaves most pediatricians ill-equipped to guide parents and take remedial measures for physical, psychological and academic consequences of sleep problems in some children(3). Moreover, there is a paucity of data in India on the prevalence of sleep patterns and problems in children(4,5). We, therefore, carried out a preliminary questionnaire survey for parents of school

going children attending out patient services of Advanced Pediatric Center, Chandigarh for routine immunization or minor complaints.

Subjects and Methods

This was a cross-sectional prospective study incorporating parental report about the sleep habits and problems of school going children, conducted from September 2003 to March 2004. The research ethics board of PGI, Chandigarh, approved the study.

We randomly recruited a convenience sample of 103 school going children (aged 3-10 years) from the out patient services of

Advanced Pediatric center while they waited for general pediatrics appointment. Exclusion criteria were child with chronic illness, child on long-term medication or having any neurological illness. After having obtained the informed consent, a medical research worker collected baseline demographic data that included: parents age, education, socio-economic status, caste, religion, residential accommodation and family organization. Specific child variables recorded included sex, birth order, educational standard and number of siblings. The medical research worker filled the questionnaire by enquiring, clarifying and noting down the parents' responses. The questions for this survey were designed from literature review and clinical experience of authors. We evaluated the sleep patterns along with certain common disorders of sleep such as sleep walking, sleep talking, night mares, sleep terrors, bruxism, nocturnal enuresis and sleep disordered breathing.

Data were summarized using descriptive statistics. Chi-square test (Fisher's exact test) and Mann-Whitney U test were used for univariate analysis. Spearman's correlations were computed for various sleep-waking cycle-related variables. All P-values were 2-tailed.

Results

Our study sample had 103 children with the mean subject age of 5.76 ± 1.89 years, 65 (63.1%) were boys, and 38 (36.9%) were girls. They reported to the outpatient clinic for either immunization (51), upper respiratory tract infection (22), diarrhea (11), skin problem (1) or were normal, accompanying the sick child (18). The average daily total sleep duration (nocturnal \pm daytime nap) was 10.32 ± 1.18 hours, of which the night sleep duration was 8.77 ± 0.80 hours. The median onset time for nocturnal sleep was 10.00 pm (range; 7.00 pm

- 12.30 am) and the median morning wake up time was 7.00 am (range; 5.00-8.30) am. The percentage of children who took regular daytime nap was 28.2%. The duration of daytime napping had highly significant and positive correlation with the sleep onset timing (Spearman's $r = 0.28$; $P = 0.009$) and time needed to fall asleep (Spearman's $r = 0.22$; $P = 0.04$); whereas there was only a trend for significant correlation with morning wake up time (Spearman's $r = 0.20$; $P = 0.06$). To put it simply, longer the duration of daytime napping, significantly delayed was the time of onset of sleep at night. Children with onset of sleep after 10 pm had significantly longer daytime naps, got up significantly late in the morning and had significantly shorter duration of night sleep. Less than half of the children (42%) had a specific bedtime routine, which included bedtime story, bedtime patting, music, milk bottle, pinching, clutching soft pillow, cuddly toys, thumb sucking or crying to resist sleep. Nearly one-third (34%) of the parents reported change in the sleeping schedule during the weekends. Two-third children refused to sleep without the presence of their parents. Half of the children feared sleeping alone; one-fourth required lights on; and 16% wanted the door to remain open. In 35% of children, parents had to resort to threats in order to make their children sleep. TV viewing interfered with the child's sleep routine leading to delayed sleep in 39% of the children and awakening problems in the morning. Another 34% children feared sleeping in the dark. The specific fears included darkness, lizards, ghosts, and storms. 40% of the parents reported problems in awakening their children which resulted in the child resisting taking a bath, or going to the toilet, missing breakfast, missing school conveyance, and cranky mood. However, daytime awakening resistance did not lead to decrease in alertness, feeling of tiredness, or

increase in number of short naps among these children. Ninety three per cent children shared the bed with their parents and no child slept in a separate room, despite many reporting the facility of spare bedrooms.

Forty-four (42.7%) children in our study had some sleep problem, out of which 30 (29.1%) children had a single sleep problem, 10 (9.7%) had two and 4 (3.8%) had more than two sleep problems. Among the various problems, nocturnal enuresis and sleep talking were reported most frequently in 19 (18.4%) and 15 (14.6%) children respectively followed by bruxism in 12 (11.7%) while sleepwalking was the least frequently observed in only 2 (1.9%). Other sleep problems reported by parents included nightmares in 7 (6.8%), sleep terrors in 3 (2.9%) and snoring in 6 (5.8%) children. Out of 12 children with bruxism, 11 (91.7%) were male (Fisher's exact test; $P = 0.05$) while there was no sex predilection for other reported sleep disorders in our study. School related problems reported by parents were tiredness (6.8%), frequent yawning (1%) and short naps (5.8%). On univariate analysis, sleep related disturbances were significantly higher if it was nuclear family (Fisher's exact test; $P = 0.01$), mother was younger in age (Mann Whitney U test; $P = 0.04$) and mother was less educated (Mann Whitney U test; $P = 0.04$). No significant correlation was observed with the socioeconomic status and the type of housing. However, when these predictors were entered simultaneously into a logistic regression model, only nuclear family remained as significant predictor of sleep related disorders (odds ratio 2.41; CI; 1.04-5.57).

Discussion

School aged children are traditionally assumed to be good sleepers, yet evidence from recent surveys as well as our study do not

support this assumption(6). As many as 42% of the parents reported some form of sleep problem. Sleep problem is actually a sleep pattern that is unsatisfactory to the parent, child or physician(7). To make the definition of sleep problem even more difficult, families vary greatly in their tolerance of their children's sleeping habits; what one family finds problematic, another family takes it as a matter of course. The prevalence of sleep problems in the general population of children has been estimated at approximately 5-16% for sleepwalking(2,8), 1-6.5% for sleep terrors(9-10), 5-18% for nocturnal enuresis(11-12), and 5-10% for sleep talking(13-14) which are comparable to the results in our study. These estimates vary greatly because rarely are the same definitions for the frequency of events used and there are no commonly accepted definitions currently in use for these disorders. The possibility of underreporting also cannot be ruled out in our socio-cultural scenario where many of parents are either ignorant or extremely tolerant and regard many behavioral problems as normal phenomena. Our study revealed that nuclear family is an independent predictor of sleep problems, though underlying causal factors cannot be deciphered due to observational design of the study. Yet the recent trends for urbanization, family nucleation and working-parent culture has altered the traditional social fabric of our society, which might adversely affect the conundrum of common childhood behavioral problems including sleep. There is, however, scarcity of literature on this issue and a community based case-control study may help in clarifying this issue

As expected, cosleeping was almost universal (93%) in our study participants despite many reporting the facility of spare bedrooms. Prevalence of cosleeping did not decrease with increasing age as 91% of the children above 7 years (constituting 23.3% of

the study cohort) were still sharing the bed with their parents which is more than 68.7% reported by Kaur et al in the similar age group from urban Indian families(4). The prevalence of co- sleeping is considerably higher than that reported from the developed countries (5-52%)(15).

There are certain limitations in our study. It had been shown that by restricting questioning to parents only, one-third of all potential cases of sleep problems might go unnoticed. In order to increase the sensitivity of screening children's sleep problems, both parents and children should provide information in epidemiological settings as well as in clinical work. The study also failed to highlight the underlying reasons for parents not seeking consultation despite encountering sleep related problems in their children.

To conclude, though our results may not be generalized to all populations, the overall prevalence of sleep related problems in our study sample is enough to caution the pediatricians about the need to sort through sleep problems in the office settings.

Contributors: BB designed the study, analyzed the data and drafted the manuscript. PM contributed her expertise in helping in designing the study and revising the manuscript and SK collected the data.

Competing interests: None stated.

Funding: Postgraduate Institute of Medical Education and Research, Chandigarh.

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