

Original Research Article

## Sleep Problems among Rural Preschool Aged Children

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### ABSTRACT

**Objective:** To study the sleep pattern and sleep problems among rural preschool aged children. **Material and Methods:** This is community based cross sectional study among preschool children conducted in rural area of Yadwad, Dharwad District from February 2012 to April 2012.

**Results:** A total of 80 preschool aged children were studied. Maximum children 31 (37.50%) were in age group of 49-60 months. 45 (56.25%) children required bedtime patting. 20 (25%) children had nocturnal enuresis and sleep talking. The majority children 23 (28.75%) had bedtime problems and mere 6(7.50%) children had sleep disordered breathing on BEARS screening. Specific sleep problems were more in joint family ( $\chi^2 = 12.58$ ,  $df = 1$ ,  $p = 0.0004$ , HS) and working parents.

**Conclusion:** sleep problems in rural preschool children are common and clinically important. The evaluation of sleep in children should be as natural and as routine for the pediatricians as is the evaluation of nutrition, exercise and development.

**Keywords:** BEARS questionnaire; nocturnal enuresis; preschool children; sleep problems

### INTRODUCTION

Sleep has persisted throughout evolution of mammals and birds, so it is likely that it is functionally important.

A survey from the National Sleep Foundation (NSF) shows that 69% of children of less than 10 years of age experience some type of sleep disturbances. [1] Significant sleep problems affect 25% to 40 % of children and adolescents. [2] These sleep problems tend to persist to childhood, if left untreated. Despite the high prevalence of sleep problems, most Paediatricians do not ask questions about children's sleep. The survey from community practice shows that Paediatricians acknowledge the importance of sleep problems, but they fail to screen adequately for them. [3] Several studies have demonstrated the association between sleep disorder with cardiovascular and neurocognitive complications.

The BEARS is a screening tool developed by the investigators of Brown university school of medicine, Rhode Island Hospital USA. It was designed to address the most common sleep issues in toddlers. Preschoolers and school aged children. [4] The paucity of data in India on the prevalence of sleep pattern and problems in rural preschool aged children has prompted us to carry out this study on the sleep problems of rural preschool aged children using BEARS screening tool.

### MATERIALS AND METHODS

This community based cross-sectional study was conducted in rural area of Yadwad, Dharwad district, which is an rural field practice area of rural Health training Centre, attached to S.D.M. College of Medical Sciences and Hospital, Dharwad, Karnataka. The rural Health Centre covers a population of 30,000 and provides quality

primary health care to all the population of nearby catchment area.

Sample size was calculated based on prevalence of sleep problems in children aged 2-6 years in India is 51.1%. [5] Based on the formula  $4pq/L^2$ , where p is the prevalence (51.1%), q = 1- p (48.9%) and L the permissible error, taken as 10%, the sample size worked out to be 383 at 5% alpha error. Further representative sample was considered by conducting house to house survey using systematic random sampling (every 5<sup>th</sup> child), so that sample size to be achieved will be 77.

The BEARS is a screening tool developed by the investigators, which was designed to address the most common sleep issues in toddlers, preschoolers and school aged children. It incorporates five basic sleep domains: Bedtime problems, including difficulty going to bed and falling asleep; Excessive Daytime sleepiness, which includes behaviors typically associated with daytime somnolence in children; Awakening during the night; Regularity of sleep/awake cycles (bedtime, wake time) and average sleep duration; and Snoring. These domains are felt to reflect the most common presenting sleep complaints in children. This screening tool prompts clinician's to ask parents an initial screening question about possible problems in each domain, eliciting yes or no response. If the answer is `yes` then the parents are asked to describe the problem. [6] The BEARS tool was translated to Kannada by the principal investigator who is well versed in both the languages.

Prior to the study, a pilot study was conducted involving 10 children over a period of one month (January 2012) to assess the feasibility of pre designed proforma. The tested proforma was then utilized in the present study after satisfactory reformations were made in it.

After the pilot study, present study was conducted for a period of three months from February 2012 to April 2012. The study was carried out by interviewing mother of the child by using the tested

proforma. The mother of the child signed a consent form before the data collection was initiated on voluntary basis and the children having chronic illness, neurological illness, on long term medication and with congenital anomalies were excluded. Institutional's ethical review board had approved the study.

A house-to-house survey was done, case identification was carried out with the help of medicosocial and anganwadi workers equipped with the proforma. The case load was cross-checked to reassure that the cases were not missed.

A total of 80 children in the study area were surveyed. The details of sleep problems received were recorded in the pre-designed and pre-tested proforma covering sociodemographic information like age, parent's occupation, literacy status, socioeconomic status of the family and information regarding sleep problems of the child. Specific sleep problems included sleep talking, sleep walking, bruxism and sleep terrors.

## RESULTS

Our study sample consists of 80 preschool aged children, out of which 55 (68.75%) were boys and 25 (31.25%) were girls. It was found that the maximum children 31 (38.75%) were in the age group of 49 to 60 months and almost 52 (65.00%) belonged to the Joint family. Regarding parental educational status, 61 (76.25%) parents were literates and 40 (50%) was from working class. [Table I]

Among specific bedtime routine, 45 (56.25%) children required bedtime patting and 15 (18.75%) wanted bedtime stories to be told. Milk bottle usage for sleep initiation was found in 9 (11.25%) children. When specifically asked, only 10 (12.50%) parents accepted that they threaten the child to go to sleep. Sleep talking was found in 20 (25%) children. Only 3 (3.75%) children had bruxism. The most common screening problem was bedtime problems 23 (28.75%) children followed by excessive daytime sleepiness 19 (23.75%). The least common

problem was sleep disordered breathing in 6 (7.50%) children. Co sleeping was noticed in 70 (87.50%) children. [Table II&III]

On further enquiry, it was also found that 57 (71.25%) were sleeping on floors and mere 22 (27.50%) were using mosquito nets. 42 (52.50%) children preferred open rooms for sleep and 53 (66.25%) children used some source of light during sleep.

**Table I. Sociodemographic characteristics of children (n=80)**

Age ( months)	Number	Percentage (%)
25-36	30	37.50
37-48	19	23.75
49-60	31	38.75
Birth order	Number	Percentage (%)
One	40	50.00
Two	29	36.25
Three & more	11	13.75
Type of family	Number	Percentage (%)
Nuclear	28	35.00
Joint	52	65.00
Parent's Educational status	Number	Percentage (%)
Both illiterates	09	11.25
Both literate	61	76.25
Single literate & single illiterate	10	12.50
Occupation status	Number	Percentage (%)
Working	40	50.00
Non-working	40	50.00

**Table II. Factors influencing sleeping conditions (n=80)\***

Specific bedtime routine	Number	Percentage (%)
Milk bottle	09	11.25
Bed time story	15	18.75
Bed time patting	45	56.25
Thumb sucking	03	03.75
Pinching	01	01.25
Clutching soft pillow	03	03.75
Cuddly toys	02	02.50
Crying to resist sleep	03	03.75
Others	17	21.25
Threatening to go sleep	Number	Percentage (%)
Yes	10	12.50
No	70	87.50
Specific sleep problems	Number	Percentage (%)
Nocturnal enuresis	20	25.00
Sleep talking	20	25.00
Sleep walking	00	00.00
Bruxism	03	03.75
Night mares	05	06.25
Sleep terrors	00	00.00
Others	42	52.50

\* Multiple answers

**Table III. Distribution of sleep problems across different domains of BEARS Questionnaire (n=80)\***

Domain of BEARS questionnaire	Number	Percentage (%)
Bedtime problems	23	28.75
Excessive daytime sleepiness	19	23.75
Awakenings during the night	15	18.75
Regularity and duration of sleep	18	22.50
Sleep-disordered breathing	6	07.50

\* Multiple answers

## DISCUSSION

Sleep problem is actually a sleep pattern that is unsatisfactory to the parent, child or physician. [7] It is only in last 30 years that child sleep problems have gained the attention of the scientific community. Large epidemiological studies carried out in Australia, the United States, Italy and Israel has found that about 30% preschool children suffer from sleep problems. [8-11]

In a study from Iran, Ebarhim Amintehran et al reported that the most common sleep related problem was Excessive daytime sleepiness (64.9%) followed by regularity and duration of sleep (29.2%). Sleep disordered breathing (7.1%) was least reported problem in their study. [12] Furthermore the preschool boys showed significantly less bed time problems than preschool girls. The bedtime problems top the list as sleep problems in domains of BEARS screening tool. Our study noted the incidence of bedtime problem (28.75%), excessive sleepiness (23.75%) and sleep disordered breathing (7.50%). The incidence of Bedtime problems (33.3%), excessive daytime sleepiness (32.5%) and sleep disordered breathing (4.8%) in the study done by Ravikiran et al from south India. [5] Similar study from Iran found the incidence of bedtime problems (56.44%) followed by daytime sleep (26.35%) and regularity and duration of sleep (27.75%). [4]

Another study from Finland reported that 45% of children had at least one sleep related problem. Among them majority (14.1%) were unwilling to go to bed , children (10.2%) had difficulties in falling asleep and sleep related breathing problem was found in 8.2% of children. [13] However The Finnish study included age group 3-6 years and used a Sleep Disturbance Scale for Children (SDSC) as a screening tool.

The varying results among numerous studies is attributed to lack of uniform definitions for the frequency of events used in carrying out the sleep research .Moreover the possibility of underreporting of sleep problems in children by parents who are either ignorant or extremely tolerant. In fact

parents often regard many behavioral problems as normal phenomena.

There are few limitations in our study: 1) any information gathered with the help of questionnaire is influenced by commitment of the subject and absence of objective confirmation of the complaints. 2) parental sleep pattern is not enquired although it is believed that they do affect sleep pattern among co sleeping preschool children with parents. 3) seasonal variations of sleep pattern are not studied.

## CONCLUSION

Sleep problems in preschool children are common and clinically important. A child sleeping through the night is a highly esteemed milestone. When the child does not sleep well the parents do not either. The evaluation of sleep in children should be as natural and as routine for the pediatricians as is the evaluation of nutrition, exercise and development. We authors suggest that further studies in community as well clinical settings in India should be done before recommending the use of BEARS sleep screening tool in children.

### Authors' contributions

Dr. Praveen Bagalkot conceived the study concept and design, analysis and interpretation of data.

Dr. Mayur S S participated in drafting the article and revising it critically for important intellectual content.

All authors read and approved the final manuscript.

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### Competing interests

The authors declare that they have no competing interests.

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