

# SLEEP PATTERN AND NIGHT AWAKENING IN HEALTHY INFANTS

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## ABSTRACT

*Sleep pattern and night-awakening were studied in 500 healthy infants by a semistructured interview method. A total of 92.2% infants shared bed with their mothers, 6.8% with grand parents and 1% with fathers. Paternal participation at bedtime was observed to be insignificant. Infants of non-working mothers and families with vegetarian habits slept significantly more as compared to the working mothers and families with non-vegetarian habits. Night-time awakening was reported in 96% of the infants. If a child is functioning well in other areas of life, parents can be assured that the problem is not of serious concern and unnecessary medication of infants should be avoided.*

**Key words:** *Sleep pattern, Night-waking.*

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The establishment and maintenance of stable pattern of night-time sleep is of major importance to both the developing child and its caretaker. Pediatricians and family practitioners are regularly asked to advise when a child's sleep problem disturbs the family(1). So it is important to know the pattern of sleep and night-time awakening in normal children. There are some studies dealing with the subject in children between 1 and 5 years, but scanty data is available for infants. Thus, the present study was planned to find out the sleep pattern and night-time waking and assess its correlation with socio-demographic variables in healthy infants.

## Material and Methods

The sample included 500 healthy infants belonging to Ludhiana City (Punjab). They were evenly distributed in age groups 0-1 month (Group I), 2-3 months (Group II), 4-6 months (Group III), 7-9 months (Group IV) and 10 months to 1 year (Group V). The infants who were found to have any organic general and systemic cause for sleep problems were not included in the study. Various socio-demographic parameters were recorded. Parents of the selected cases were interviewed to obtain information about their child's sleep pattern and night-time awakening. They were asked to indicate the time and regularity of bed-time and nap-time behavior, bed-time routine, duration for the child to fall asleep after being put to bed, recount his behavior prior to sleep, and if the child slept through the night. If the child awoke, a note was made of the frequency, behavior on awakening, and action required to get him back to sleep. Night-awakening was defined as an episode of infant arousal during the night-time requiring the parent to resettle the child(2). The calculation of number of

sleep hours was based on the information provided by the parents.

The data were statistically analysed and Pearson correlation coefficients were also computed.

## Results

The analysis of data revealed that 275 (55%) were boys, 338 (67.6%) Hindu and 162 (32.4%) Sikh. Fifty two (10.4%) mothers were working and 165 (33%) of them were illiterate. Almost half (56.6%) the infants belonged to families with vegetarian habits and remaining 43.4% were non-vegetarian; 42.8% families were nuclear. All of them belonged to urban families with middle socio-economic status. The total number of children in the family was one in 30.2%, two in 34.6% and three or more in 35.2% cases. The birth order was first in 40%, second in 33%, third in 18.4% and fourth or more in 8.6%.

A vast majority (92.2%) of the infants slept with their mothers, 6.8% with grandparents and 1% with fathers. The sleeping arrangements of boys and girls, Hindus and Sikhs, did not differ significantly. However, all of the children who slept with the father were from Group V. The children who regularly shared bed with grandparents were from Groups III, IV and V. Maternal supervision at bed time and during night, was observed irrespective of sex, religion, literacy level and working/non-working mothers. Paternal supervision at bedtime, e.g., putting the child to bed, was reported for only 1% of the total children, that too in Group V. However, paternal participation during night, i.e., to resettle the child on awakening, was observed in 11.4% of cases.

The mean ( $\pm$ SD) duration of sleep was  $16.3 \pm 1.1$  hours in age Group I and decreased as the age advanced. The total du-

ration of sleep was not affected by sex, religion and literacy level of the mothers. Birth order of the child, number of siblings in the family and type of family also had no effect on the duration of sleep was more in infants of non-working mothers. In 369 (73.8%) cases lights were left on during night. Four hundred and twenty seven (85.4%) of them had bed time routines of less than 30 minutes whereas bed time routines of more than 30 minutes were reported in 73 (14.6%) cases. The percentage of infants with sleep onset latency time of less than 30 minutes in age Groups I, II, III, IV and V was 77, 80, 83, 87 and 100, respectively which indicated that the sleep onset latency time decreased as the age advanced.

Night-time awakening (*Table II*) was reported in 480 (96%) of the children studied. In a majority of the cases, frequency of night-time awakening varied between 2 and 4. The frequency of night-time awakening decreased as the age advanced ( $r = -0.43$ ). There was no difference amongst boys or girls, and working or non-working mothers on the frequency of night-time awakening. The time taken by a majority (85.2%) to fall asleep again was less than 30 minutes while the remaining (14.8%) required more than 30 minutes to fall asleep again.

The most common (82.2%) practice to put the child back to sleep during night was bottle feeding, breast feeding (14.2%), or feeding with cup or spoon (3.6%). Only 14 (2.8%) children (Group V) required treasured objects at bed time. Two hundred and twenty four (44.8%) mothers felt that their sleep was disturbed due to night-time awakening of their infants and 118 (23.6%) of them felt that their work suffered.

## Discussion

The results of this study clearly indicate

TABLE I—Mean ( $\pm$  SD) Sleep Hours

Groups	Male	Female	Hindu	Sikh	Vegetarian	Non-vegetarian	Mother	
							Working	Non-working
I (n = 100)	16.1 $\pm$ 3.1	15.2 $\pm$ 3.5	17.6 $\pm$ 3.5	16.3 $\pm$ 4.1	17.6 $\pm$ 3.7	15.5 $\pm$ 3.8*	11.8 $\pm$ 1.2	16.8 $\pm$ 3.7*
II (n = 100)	16.6 $\pm$ 3.4	15.5 $\pm$ 1.9	13.4 $\pm$ 1.9	13.8 $\pm$ 4.4	15.3 $\pm$ 4.1	12.6 $\pm$ 2.9*	All mothers	non-working
III (n = 100)	12.8 $\pm$ 2.3	13.2 $\pm$ 3.3	12.2 $\pm$ 3.1	11.0 $\pm$ 2.8	13.8 $\pm$ 3.4	10.8 $\pm$ 1.3*	10.1 $\pm$ 0.9	11.8 $\pm$ 2.9*
IV (n = 100)	9.1 $\pm$ 2.9	9.1 $\pm$ 2.7	8.6 $\pm$ 2.7	9.5 $\pm$ 1.5	9.6 $\pm$ 2.7	9.2 $\pm$ 2.6	9.4 $\pm$ 1.0	9.1 $\pm$ 3.2
V (n = 100)	10.3 $\pm$ 1.9	9.4 $\pm$ 2.9	10.6 $\pm$ 2.0	9.8 $\pm$ 2.4	9.9 $\pm$ 1.1	9.9 $\pm$ 2.2	All mothers	non-working

\* Statistically significant.

TABLE II—Frequency of Night Awakening

Frequency	Age group					Total n(%)
	I n(%)	II n(%)	III n(%)	IV n(%)	V n(%)	
0	0 (0)	0 (0)	0 (0)	9 (9)	11 (11)	20 (4)
1	0 (0)	7 (7)	30 (30)	22 (22)	24 (24)	83 (16.6)
2	20 (20)	36 (36)	17 (17)	43 (43)	3 (33)	149 (29.8)
3	41 (41)	32 (32)	25 (25)	16 (16)	18 (18)	132 (26.4)
4 or more	39 (39)	25 (25)	28 (28)	10 (10)	14 (14)	116 (23.2)

Correlation co-efficient,  $r = -0.43$  (not significant).

that the infants who shared bed with their mothers were 92.2%, grandparents 6.8% and fathers 1%. But Beltramini and Hertzog(3) in their study, among 109 preschool children from New York, reported that all of the children slept in their own crib or bed at each of the age level examined. The difference may be due to the fact they did not include infants below 1 year of age; child rearing practices may also be different. In accordance with findings of another study(2), we did not find any significant difference of sleeping patterns between boys and girls.

Paternal participation at bed time was observed to be very insignificant, as previously reported(2). Fathers seem to participate in bed time routines of older children(2). The total duration of sleep observed in this study goes well with that reported by Weissbluth(4). We found that the infants from families with vegetarian habits in Groups I, II and III slept significantly more as compared to their non-vegetarian counterparts. Such a difference has not been previously reported. Significantly more total duration of sleep hours in infants of non-working mothers may be due to more time available to these children for mother-infant bonding.

Night-time awakening in the present study was seen in a large proportion of subjects as compared to earlier studies(1,3,5,6). An explanation of this finding is sharing of beds by all the infants with parents due to which the infant establishes a learned association between parental presence and falling asleep. If the infant awakes at night, he or she may need the same condition to return to sleep, having not learned to fall asleep unaided. It has been reported that parents can contribute inadvertently to the problem if they rock, hold or feed their infants to sleep during bed time(7). Adair *et al.*(2) also observed a positive correlation between parental presence at bed-time and night waking.

To conclude, night-time waking among normal infants is quite frequent, which is frequently of great concern to parents because this is inconvenient and annoying. Studies are needed to formulate advice and guidance in such cases. If a child is functioning well in other areas of life, parents can be assured that the age-wise sleep pattern and night-time waking are not of serious concern and they should be encouraged to tolerate this type of behavior to avoid unnecessary medication to infants.

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