

Persistence of sleep disturbances in preschool children

The purpose of our study was to determine if common sleep disturbances in young children, such as night waking and bedtime struggle, tend to persist; if they are related to environmental stress factors and are accompanied by other behavior problems; and if their persistence is related to other factors. Sixty children aged 15 to 48 months (mean age 26.4 months) were studied by interviewing their mothers initially and after 3 years. Children with and without sleep disturbances were compared, with the latter serving as the control group. Twenty-five (42%: night waking, 22%; bedtime struggle, 13%; both night waking and bedtime struggle, 7%) of 60 children had sleep disturbances at the initial interview, and of these 25 children, 21 (84%) had persistence of sleep disturbances after 3 years. persistent sleep disturbances had a significant relationship with increased frequency of stress factors in the environment ($P < 0.01$). Other generalized behavior difficulties were present in 30% of sleep-disturbed and 19% of non-sleep-disturbed children ($P = NS$). Co-sleeping (sleeping with a parent or sibling) was noted more frequently in sleep-disturbed (34%) than in non-sleep-disturbed (16%) children. Twenty percent of the mothers at initial interview and 30% at 3-year follow-up perceived their child's sleep disturbances as stressful to them and to their family life. Early identification of the child with sleep disturbances and timely intervention would help both the child and the family. (*J PEDIATR* 1987;110:642-6)

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Sleep disturbances in young children, such as night waking and bedtime struggle, are among the most common behavior problems encountered in pediatric practice. Night waking occurs in 15% to 30% of children in the first 4 years of life.¹⁻⁶ The problem of bedtime struggle has not been recognized so much as night waking; its prevalence varies from 6% to 15% in the first 2 years.^{1,3,4} Pediatricians tend to regard child management techniques as major etiologic factors, thus looking to the parents for the cause.⁷ On the

other hand, child development specialists⁸ see the problems as common, transient developmental phenomena of early childhood. Psychiatrists^{9,10} have suggested that the persistence of sleep disturbances points to psychologic disturbances in the child that may indicate emotional conflict. Thus the cause and significance of these sleep disturbances remain uncertain, although family stress and environmental factors are considered important.¹⁻⁴

Information on the long-term course of sleep problems in children,¹¹⁻¹³ and particularly in preschool children, is sparse.⁶ Night waking appears to have declining prevalence in school-aged children^{11,12}; bedtime struggle has been described to increase in prevalence at ages 3 and 4 years.^{4,13} Our study was undertaken to determine (1) if common sleep disturbances of young children, such as night waking and bedtime struggle, tend to persist; (2) if they are related to environmental stress; (3) if sleep

Presented at the Annual Meeting of the Ambulatory Pediatric Association, Washington D.C., May 1986.

Submitted for publication Aug. 25, 1986; accepted Nov. 21, 1986.

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disturbances are accompanied by other behavioral problems; and (4) if other factors are related to persistence of sleep disturbances.

METHODS

Eighty-one children aged 15 months to 4 years (mean 26.4 months) were enrolled in the study from well-child clinics of the medical school and private pediatric offices, consecutively and without any selection process; 74 (91%) were between 15 and 36 months of age, seven (9%) between 36 and 48 months, and one child was 4 years old. Twenty-one children were lost during follow-up, so at the end of 3 years 60 children had completed the study. The demographics for the 21 children with incomplete follow-up were similar to those for the 3-year follow-up group, and there was no evidence that these children were in any way different from the 60 children we describe. Of the 60 study children, 32 (53%) were girls; 21 (35%) were black, and 39 (65%) white. The mothers of all enrolled children consented voluntarily in writing to participate in the study. Sleep questionnaires were completed by mail, telephone, and in-person interviews at the beginning of the study, and again after 3 years.

A sleep disturbance was defined as night-waking or bedtime struggle occurring 3 or more nights a week, present for at least a month at the time of interview. Night-waking was considered present if there was crying and demand for parental attention. Bedtime struggle was considered significant if the child was taking more than 1 hour to settle down at bedtime, accompanied by active protest and refusal to sleep. Sleep disturbances of minor nature and lesser frequency (occasional crying at night, bedtime struggle taking less than 1 hour of parental time) were not included. Co-sleeping was defined as sleeping in a parent's or sibling's bed for a part of or whole night, on a regular basis (three times a week or more), even when another bed was available for the child. Occasional sleeping in a parent's or sibling's bed for a few hours, when sick or scared, was not considered co-sleeping.

The presence of potentially stressful events in the child's life was assessed by using a modified version of Richman's questionnaire, adapted from Lozoff et al.¹⁻³ (Richman N, personal communication, 1986). Mothers were asked if the child had experienced any potentially stressful events in his or her life, and if so, at what age and the possible effect of the stressful event(s) on the child. The mother's perception of the effect of the stressful event on the child was considered valid, and this effect was graded as not apparent, mild, marked, severe, or unknown. The 17 potentially stressful events included death of a person important to parent or child; pregnancy, miscarriage/abortion, or still-

Table I. Prevalence and persistence of sleep disturbances in 60 study children

	Initial interview		3-year follow-up	
	n	%	n	%
Night waking	13	22	14*	23
Bedtime struggle	8	13	8	13
Both	4	7	1	2
Total	25	42	23	38

*Includes two children with no sleep problems at initial interview.

birth; child's accident, or illness of 1 week or more or requiring hospitalization, or accident or illness in the family; family move(s); vacation(s) with parents; overnight separation from mother, other unaccustomed maternal absences, or unaccustomed separation from family members other than mother; change in household composition; change of day or night sitter; parental job loss or acute financial stress; poor marital relationships, separation, or divorce; maternal depression; and any other upsetting or traumatic experience. Assessments were made of all children, both sleep-disturbed and non-sleep-disturbed.

Behavior problems in the child were identified by using a Behavior Screening Questionnaire, modified from Richman's scale.^{15,16} The Behavior Screening Questionnaire has been used in a number of epidemiologic surveys of behavior problems in preschool children.^{3,5,15-18} In addition to the sleep and bedtime behavior, other behavior problems studied included activity level, attention span, attention demand, excessive crying, temper tantrums, miserable or irritable behavior, feeling lonesome, and fears. Because three of the children were in kindergarten and three in first grade, we also asked about excessive talking, impatience, academic difficulties, and peer relations.

From the initial interview, the data collected consisted of family demographics; parent's education, occupation, child care arrangements, number and ages of family members, and number of available beds and bedrooms in the household; sleep practices such as co-sleeping; bedtime behavior and discipline; sleep disturbances described as night-waking and bedtime struggle occurring three times a week or more during the month preceding the interview; and parent's response to the child's sleep disturbances and if they were perceived as causing stress to themselves or their family life. From the 3-year follow-up interviews, the following information was collected: change in family demographics; sleep practices (co-sleeping); sleep disturbances, including night-waking and bedtime struggle; assessment of the child for the presence of other behavior

Table II. Factors associated with persistent sleep disturbances

	Sleep disturbed (n = 23)		Non-sleep disturbed (n = 37)		P
	n	%	n	%	
Environmental stresses	14	61	7	19	<0.01
Behavior problems	7	30	7	19	NS
Working mother	11	48	22	59	NS
Mother's college education (1-7 yr)	12	52	33	89	<0.03

problems; environmental stressful events experienced by child; school performance of the child when applicable; and parent's response with regard to perception of stress in the family caused by the child's sleep disturbances.

Statistical analysis. The sleep-disturbed children (25 at the initial interview, 23 at 3-year follow-up) were compared with the non-sleep-disturbed children (35 at the initial interview, 37 at 3-year follow-up), considering the latter as the control group. The demographics, sleep disturbances, and stress factor data were analyzed using descriptive statistics of means, standard deviations, ranges, and percentages. Comparison between sleep-disturbed and non-sleep-disturbed groups were made using the chi-square statistical test on frequency data, and independent t test on dimensional data. Relationships among the demographic variables and sleep disturbance were analyzed with a multivariate log-linear model.

RESULTS

The mothers of the 60 study children ranged in age from 18 to 36 years; 85% were married at initial interview, and 82% at 3-year follow-up; 80% had finished high school, and 75% had some college education, varying from 1 to 7 years; 60% were employed outside the home or were full-time students. The fathers, with the exception of one, ranged from 22 to 48 years of age; 70% had college education varying from 1 to 7 years.

Prevalence and persistence of sleep disturbances. Sleep disturbances were present in 25 (42%) of 60 study children at initial interview, and 23 (38%) of 60 at 3-year follow-up (Table I). The prevalence of night waking without bedtime struggle was 22% at initial interview, and 23% at 3-year follow-up, which included two (3%) children who developed night waking during the 3-year study period. Bedtime struggle without night waking was found in 13% of the children at both the initial and 3-year follow-up interviews; 7% at initial interview and 2% at 3-year follow-up had both night waking and bedtime struggle. Of the 25 children initially identified as having sleep disturbances, 21 (84%) had persistence of problems after 3 years (Table I). Thus

sleep disturbances that had been present for a month or more tended to persist until at least preschool years. The nature of the sleep disturbance pattern changed from night waking to bedtime struggle, and vice versa, in some children. Four children resolved their sleep disturbances within 3 years. Two of these children had night-waking, and two had bedtime struggle; none perceived any environmental stress factors or had other behavior problems. Prevalence of sleep disturbances (bedtime struggle and night waking) at the time of initial interview in the 21 (48%) children who were lost to follow-up at 3 years was not significantly different from that in those (42%) available at 3-year follow-up.

White children experienced significantly fewer sleep problems than black children did ($P < 0.02$). It could not be shown that there was any significant correlation between age, sex, size of family, father's education or employment, and the presence of sleep disturbances in the child.

Sleep disturbances and environmental stress. Fourteen (61%) of 23 sleep-disturbed children had experienced a variety of stresses in their environment. In comparison, only seven (19%) of 37 non-sleep-disturbed children had such environmental stresses ($P < 0.01$, Table II). The most common stress factor was unaccustomed maternal absence, reported in seven of 23 sleep-disturbed children and none of 37 non-sleep-disturbed children ($P < 0.01$). The reasons for unaccustomed maternal absence were mother's return to job or school, changing work hours, and study schedules. Illness or accident in the child was the next most common stress factor, reported in six of 23 sleep-disturbed children and three of 37 non-sleep-disturbed children ($P < 0.06$). Family illness was reported only in two sleep-disturbed children; maternal depression was noted in four sleep-disturbed and two non-sleep-disturbed children, and family moves were each mentioned twice in both sleep-disturbed and non-sleep-disturbed children. Many children had experienced more than one stress factor; the total number of stress factor responses were 26 in 14 of 23 sleep-disturbed and 12 in seven of 37 non-sleep-disturbed children.

Sleep disturbances and behavior problems. Seven (30%) of 23 sleep-disturbed children were found to have other behavior problems, compared with seven (19%) of 37 non-sleep-disturbed children (Table II). Such behavior problems included excessive talking, high activity level, excessive crying, temper tantrums, and difficult peer relations. Three of the sleep-disturbed children with behavior problems were in kindergarten, and three in first grade. We did not find academic difficulties or learning problems in this small group. The children with sleep disturbances who experienced stresses in their environments were also found to have two or more of the behavior problems mentioned above.

Relationship with mother's work and education. Eleven (48%) of 23 mothers in the sleep-disturbed group and 22 (60%) of 37 in the non-sleep-disturbed group were working mothers ($P = \text{NS}$, Table II). College education varying from 1 to 7 years was less frequent in mothers of the sleep-disturbed children ($P < 0.03$, Table II). The log-linear analysis of multivariate relationship among mother's education, race, and sleep disturbance indicated no significant interaction between mother's education and race ($P > 0.16$).

Sleep disturbance and stress to parents. Twenty percent of parents of sleep-disturbed children responded that sleep disturbances were causing stress in the family, and at 3-year follow-up, 30% responded similarly.

Sleep disturbances and co-sleeping. On the initial interview, eight (32%) of 25 children who were experiencing sleep disturbances slept with one or both parents on a regular basis, compared with two (6%) of 35 non-sleep-disturbed children ($P < 0.02$). After 3 years, five of these eight children persisted in co-sleeping. The three who ceased this habit had no other behavior problems. Three other sleep-disturbed children developed the co-sleeping habit during the 3-year follow up; thus eight (34%) of 23 sleep-disturbed children had a co-sleeping habit at 3-year follow-up, compared with six (16%) of 37 non-sleep-disturbed children ($P < 0.18$). Overall, co-sleeping was reported in 10 (16%) of 60 at initial interview and 14 (23%) of 60 at 3-year follow-up.

DISCUSSION

Although prevalence of sleep disturbances in young preschool children has been well documented,¹⁻⁶ their persistence over a long time has not been well demonstrated. Our findings support the previous observations that sleep disturbances are common in early childhood, and their frequency (22% night waking, 13% bedtime struggle, 7% both night waking and bedtime struggle at the initial interview) was similar to that of previous reports.^{1-6,11} Persistence of sleep disturbances for 3 years was seen in 21

(84%) of 25 sleep-disturbed children. The cause of this phenomenon remains to be explored.

The significant relationship of sleep disturbances and environmental stress found in this study points to the role of environmental factors in causing sleep disturbances and their persistence, but it could also be looked on as a cause-and-effect phenomenon. The important environmental stress experienced by sleep-disturbed children included unaccustomed maternal absence, episodes of depressed maternal moods, and illness or accident in the child or family. Similar observations have been made by others.^{1-3,18,19} Further, parents of sleep-disturbed children are reported to have a higher incidence of nervousness, mental illness, alcohol problems, and marital difficulties often ending in divorce.¹¹ Potential psychiatric problems or their increased incidence have been reported in the mothers of sleep-disturbed children.^{2,3} The absence of environmental stress factors in four children who had resolution of sleep disturbances tends to support the importance of environmental stresses as possible underlying factors responsible for persistence of sleep disturbances. This information could be important in planning and assessing the effectiveness of intervention therapy for sleep-disturbed children.

We, like others,^{1-4,20} found a significantly higher number of sleep-disturbed children practicing co-sleeping. Richman's² definition of a night-waking problem included the child sleeping with a parent, thus limiting the assessment of association of sleep disturbances and co-sleeping in her study.

The previous studies of sleep-disturbed children have not explored the association of sleep disturbances with mother's work or education. We found that sleep disturbances of children were not related to mother's regular work outside the home. However, unaccustomed maternal absences, related to mother's changing jobs or study schedules, did appear to contribute to the stressful experiences of sleep-disturbed children.

The mother's response to her child's persistent sleep disturbances was an interesting observation of this study: 20% of mothers of sleep-disturbed children at the initial interview and 30% at 3-year follow-up recognized that the child's sleep disturbances were causing stress to them and to their family life. Thus, ambivalent feelings of the mother (positive feelings mixed with resentment or hurt) may contribute another stressful experience to a sleep-disturbed child. It seems reasonable to assume that the mother and child live very closely in a two-way interacting system in which physical or mental illness or environmental stresses of one affect the other, a vicious cycle in which both mother and child have signs of stress.

The association of sleep disturbances and other behavior

problems seen in our study and by others^{2,3,15-18} suggests the importance of sleep disturbances as an early symptom of behavior problems in general. The prevalence of (19%) of behavior problems in non-sleep-disturbed children noted in our study was similar to previous observations.¹⁵ Whether the sleep disturbances result in other behavior problems or represent part of the symptom complex of childhood behavior problems deserves further exploration. However, such behaviors should not be considered abnormal. Even though a declining prevalence of night waking has been described from age 5 to 16 years,^{11,12} it remains to be determined whether these school-aged children find it more difficult to attain behavior adjustment and academic achievement in school and later in life.¹⁸

Sleep disturbances are common in early childhood and tend to persist in the preschool years. Their persistence may be indicative of the presence of stress in the child's environment. Sleep-disturbed children tend to have other general behavior difficulties, the significance of which remains to be determined. Early identification of sleep disturbances in preschool children may be important for timely and helpful intervention.

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