

Special Section: Sleep Medicine Education based on NIH Sleep Academic Award Program
Use of the ‘BEARS’ sleep screening tool in a pediatric residents’
continuity clinic: a pilot study

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Abstract

Objective: To assess the effectiveness of a simple, 5-item pediatric sleep screening instrument, the BEARS (B=Bedtime Issues, E=Excessive Daytime Sleepiness, A=Night Awakenings, R=Regularity and Duration of Sleep, S=Snoring) in obtaining sleep-related information and identifying sleep problems in the primary care setting.

Setting: Pediatric residents’ continuity clinic in a tertiary care children’s hospital.

Methods: BEARS forms were placed in the medical records of a convenience sample of 2 to 12 year old children presenting for well child visits over the 5 month study period. Sleep-related information recorded in the BEARS visit and in the pre-BEARS visit, which was the subject’s most recent previous well child check (WCC), was coded with respect to whether or not a sleep problem was indicated, and whether sleep issues were addressed.

Results: A total of 195 children had both a documented pre-BEARS and BEARS WCC visit. BEARS visits were significantly more likely than the pre-BEARS visits to have any sleep information recorded (98.5% vs. 87.7%, $p < 0.001$), and to have information recorded about bedtime issues (93.3% vs. 7.7%, $p < 0.001$), excessive daytime sleepiness (93.9% vs. 5.6%, $p < 0.001$), snoring (92.8% vs. 7.2%, $p < 0.001$), nighttime awakenings (91.3% vs. 29.2%, $p < 0.001$), and regularity and duration of sleep (65.3% vs. 31.5%, $p < 0.001$). Significantly more sleep problems were identified during the BEARS visits in the domains of bedtime issues (16.3% vs. 4.1%, $p < 0.001$), nighttime awakenings (18.4% vs. 6.8%, $p < 0.001$) and snoring (10.7% vs. 4.6%, $p = 0.012$). Finally, almost twice as many BEARS charts had sleep mentioned in the Impression and Plan (13.1% vs. 7.3%), which approached significance ($p = 0.07$).

Conclusions: The BEARS appears to be a user-friendly pediatric sleep screening tool which significantly increases the amount of sleep information recorded as well as the likelihood of identifying sleep problems in the primary care setting.

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Sleep disturbances are among the most common issues raised by parents during health supervision, and it is estimated that upwards of 25% of children experience a significant sleep problem at some point during childhood [1]. Snoring, for example, the most common symptom of sleep-disordered breathing, has a high prevalence in childhood, affecting some 3–12% of preschool-aged children [2], and obstructive sleep apnea syndrome is conservatively estimated to affect 1–3% of the pediatric population [3].

Other studies have reported an overall prevalence of a variety of parent-reported sleep problems ranging from 37% in a community sample of 4–10-year-olds [4] to 25–50% in pre-school aged samples [5]. Although many sleep problems in infants and children are transient and self-limited in nature, certain intrinsic and extrinsic risk factors such as difficult temperament [6], chronic illness [7], and maternal depression [8] may predispose some children to develop more chronic sleep disturbances. Inadequate or poor sleep in children may have negative consequences on a host of functional domains, including mood [9], behavior [10,11], school performance [12,13], and health outcomes [14].

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The impact of childhood sleep problems is further intensified by their direct effect on parents' sleep, resulting in parental daytime fatigue, mood disturbances, and a decreased level of effective parenting [15]. Furthermore, the financial burden of childhood sleep problems is considerable; it has been estimated that the economic cost of health professional contacts for infant crying and sleeping problems, for example, is the equivalent of 104 million US dollars per annum [16]. However, a number of empirically supported behavioral [17] and medical treatments for childhood sleep disorders exist and have been found to result in improved health-related and behavioral and academic outcomes [18,19].

It is clear from the above considerations, that pediatric sleep problems meet most if not all of the criteria for clinical conditions that warrant the implementation of screening procedures, including high prevalence, significant clinical impact, a natural history that may be affected by screening and intervention, and the availability of acceptable and effective treatments [20]. Therefore, it is especially important for pediatricians both to screen for and identify these treatable sleep disorders in children and adolescents during routine health encounters. The recent American Academy of Pediatrics clinical guidelines for the assessment and management of obstructive sleep apnea in children [21], for example, recommends that all children should be regularly screened for snoring in order to prevent and minimize the morbidity associated with sleep-disordered breathing. In addition, the screening process presents an opportunity during the well child visit to educate parents about normal sleep and the consequences of inadequate sleep in children, and to teach parents both primary and secondary prevention strategies. The recognition and evaluation of sleep problems in children by primary care providers requires not only familiarity with the developmentally appropriate differential diagnoses of common presenting sleep complaints (difficulty initiating and maintaining sleep, episodic nocturnal events, etc.), but also an understanding of the association between sleep disturbances and daytime consequences, such as irritability, inattention, and poor impulse control.

Despite the magnitude and clinical importance of sleep issues, several studies have documented that there is a low level of recognition of sleep disorders by primary care physicians in both adults [22–24] and children [25,26]. For example, in a recent survey of over 600 community-based pediatricians, over 20% of the respondents did not routinely screen for sleep problems in school-aged children in the context of the well-child visit, only about one quarter of routinely screened toddlers and preschoolers for snoring, and less than 40% questioned adolescents directly about their own sleep habits, despite the respondents' acknowledgement of the importance of sleep's impact on health, behavior, and school performance [25]. The supposition that parents would spontaneously volunteer the presence of any sleep problems and lack of time were cited as the primary

reasons for not screening by the sample. Another recent study [26] used a validated pediatric sleep questionnaire to identify a series of children with sleep-related symptoms at two community-based general pediatrics clinics and reviewed medical chart notes for the previous 2 years to determine how often sleep problems had been addressed. Fewer than 15% of patients had current chart notes that mentioned any of the questionnaire-defined sleep problems; diagnoses were mentioned for two of 86 patients and no treatments were discussed.

A number of studies have suggested that both education about screening [27] and the use of brief screening tools, including simple chart reminders, are cost-effective methods of increasing compliance with screening and preventive health care measures by health care providers [28,29]. Several studies have demonstrated that the use of simple screening tools, such as three question chart prompts and algorithms, was found to be associated with increased detection of obstructive sleep apnea in adults [24,30]. Because no similar pediatric sleep screening tools have been empirically tested, the purpose of the following study was to evaluate the effectiveness of a simple pediatric sleep screening instrument, the BEARS, in eliciting information and identifying sleep problems in a primary care setting. In order to be an effective screening tool, the instrument needed to be 'user-friendly', brief and easy to remember, acceptable to practitioners and parents, and had to screen for the most common pediatric sleep complaints across a range of ages in a diverse patient population. In this pilot study, we compared the amount and type of sleep information obtained and the likelihood of identifying sleep problems in a sample of pediatric primary care patients during the well child encounter, using both a standard, single, chart sleep prompt and the BEARS screening tool.

1. Methods

1.1. Subjects

This study was conducted in a pediatric residents' continuity clinic in a children's teaching hospital in Rhode Island, which serves a multi-ethnic, primarily low-income population. The clinic has approximately 21,000 primary care visits per year. Patients are primarily seen for clinic visits by pediatric residents, as well as by pediatric nurse practitioners on the clinic staff and occasionally by pediatric attending faculty. Because of resident turnover and scheduling considerations, patients may be seen by multiple different practitioners for well child care (WCC).

Study subjects were a convenience sample of patients between the ages of 2 and 12 years presenting for a routine WCC visit on designated study days over the 5-month study period between September and January. Subjects were included if there was a BEARS form (explained below) for that WCC visit ('BEARS visit') in the chart and if

the subject had had at least one previous WCC documented on the standard clinic form in the medical record ('pre-BEARS visit'). The subjects' most recent previous well child visits recorded on the standard clinic form was used as an historical control group.

1.2. Screening procedure

The standard WCC clinic form contained a series of brief one- or two-word prompts (such as 'School,' and 'Development') to direct residents in obtaining and recording medical information during the clinical interview. A single word prompt 'Sleep' was included as part of the standard clinic form. The standard form also included separate sections to record physical exam findings as well as an Impression and Plan section.

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; *Awakenings during the night*; *Regularity of sleep/wake 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 clinicians to ask parents an initial screening question about possible problems in each domain, eliciting a yes or no response. If the answer is 'yes' then the parents are asked to describe the problem. For example, if a parent responded 'yes' to snoring, the parents would be asked to describe how often the child snored and whether apnea accompanied the snoring.

During each clinic session in the 2 weeks preceding the study period, the investigators conducted brief (10 min) group orientation sessions with all the residents to explain the BEARS screen and inform them of placement of the BEARS forms in patient charts. No additional didactic information about sleep and/or sleep problems in children was included in these orientation sessions. Half-page forms with the BEARS screen were placed in the medical records of WCC visits in the appropriate age range by the certified nursing assistants at the time of the visit. Charts were collected after each visit of each clinic day. The medical record for the BEARS visit and the pre-BEARS visit were copied. The BEARS was initially test piloted by the investigators in several pediatric primary care settings to assess its adaptability to different age groups. The project was reviewed and approved by the hospital institutional review board.

1.3. Data collection

Charts were then reviewed and demographic information recorded. The professional status of the practitioner who

saw the patient at each visit (nurse practitioner, attending, resident) and, when applicable, the resident's training level was also recorded. The medical records for each BEARS and pre-BEARS WCC visit for each patient were then independently coded by two reviewers for the following information: (1) whether or not any sleep information was recorded for the visit in the five BEARS domains, and (2) whether the sleep information recorded for the visit indicated a definite sleep problem, a probable sleep problem, no problem, or insufficient information to make a determination. In order to assess whether the use of the BEARS screen was more likely to result in documentation of other sleep issues as well, additional sleep-related variables not included in the five BEARS domains, such as parasomnias, napping, co-sleeping, and presence of a TV in the bedroom, were also coded for each visit. In addition, the Impression and Plan section of the medical record for each visit was coded for (1) whether or not a sleep problem was mentioned and, if so, in what domain(s) and (2) whether a sleep-related diagnostic test (e.g., lateral neck radiograph, overnight sleep study) was ordered. In the event of a coding discrepancy between reviewers, each chart was re-reviewed and a consensus was reached. Visits were included even if the resident chose not to fill out the BEARS form.

1.4. Analyses

Data were entered into the SPSS version 9.0. Descriptive statistics were used to describe the sample as a whole including frequency counts and means. A McNemar test was used to compare the pre-BEARS and BEARS visits with respect to the following categorical variables: presence or absence of any sleep information, presence or absence of sleep information in each of the five BEARS domains, presence or absence of a definite or probable sleep problem (two problem categories combined) in each domain, and presence or absence of a sleep problem mentioned in the Impression and Plan section of the WCC. The total number of other sleep issues documented in the medical record for both the BEARS and pre-BEARS visits were also compared using a paired sample *t*-test.

Pearson correlations were used to examine the association between frequency of sleep problems and the age of the patient at the time of the WCC visit.

2. Results

A total of 195 children had both a documented pre-BEARS and BEARS WCC visit. As expected, the average age at the BEARS visit was significantly older at 5.60 SD 2.85 years than the average age at the pre-BEARS visit of 4.35 SD 2.77 years ($t = -20.586$, $P < 0.001$). Half (52%) of the sample was male, 44% was Hispanic, 27% was African-American, 16% Caucasian, 1% Asian, and 12% other.

Table 1

Comparison of percentage of medical records with sleep information recorded between Pre-BEARS and BEARS WCC Visits

	Pre-BEARS (%)	BEARS (%)	P value
General sleep	87.7	98.5	<0.001
Bedtime issues	7.7	93.3	<0.001
Excessive day sleepiness	5.6	93.9	<0.001
Awakenings at night	29.2	91.3	<0.001
Regularity/duration	31.5	65.3	<0.001
Snoring	7.2	92.8	<0.001
Parasomnias	3.1	7.7	0.035

Eighty percent was at poverty or low-income level, based on Rhode Island zip code information.

Table 1 compares pre-BEARS and BEARS visits with respect to whether any information was recorded about sleep in general, and whether there was any information recorded in each of the sleep domains. Significantly more BEARS visits had *any* sleep information in general recorded; BEARS WCC visits were over 10 times more likely than the pre-BEARS visits to have information recorded about bedtime issues and excessive daytime sleepiness, three times more likely to have had information recorded about nighttime awakenings, and twice as likely to have had information recorded about regularity and duration of sleep. Finally, over 10 times as many BEARS charts had information recorded about snoring.

In terms of other sleep-related information recorded, although parasomnias were not directly addressed in the BEARS screen, they were still twice as likely to be mentioned in the BEARS visits charts. Using a paired *t*-test comparison, the difference between the total number of sleep-related (non BEARS domains) variables recorded in the BEARS WCC visits (mean = 0.99 ± 0.95) compared to the pre-BEARS visits (mean = 0.59 ± 0.88) was highly significant ($t = 4.791$, $P < 0.001$).

Table 2 compares the presence of a probable or definite problem in each of the BEARS sleep domains and parasomnias between the pre-BEARS and BEARS WCC visits. Significantly more probable or definite problems were identified during the BEARS visits compared to the pre-BEARS visits in the domains of bedtime issues (four-fold), nighttime awakenings (almost three-fold), and snoring (more than twice the number). The BEARS visits were

Table 2

Comparison of percentage of medical records with identified sleep problems (definite or probable) between Pre-BEARS and BEARS WCC visits

	Pre-BEARS (%)	BEARS (%)	P value
Bedtime issues	4.1	16.3	<0.001
Excessive day sleepiness	4.1	5.6	0.629
Awakenings at night	6.8	18.4	<0.001
Regularity/duration	3.6	5.7	0.454
Snoring	4.6	10.7	0.012
Parasomnias	2.0	4.1	0.219
Sleep in impression/plan	7.3	13.1	0.071

not significantly more likely to identify a problem with excessive daytime sleepiness. A regular bedtime of later than 10 p.m. was recorded and used to define a probable or definite problem with sleep regularity and duration. Although the BEARS visits were more likely to identify a problem in this domain, this was not statistically significant ($P = 0.454$). Twice as many parasomnias were reported during the BEARS visits but this difference was also not significant ($P = 0.219$).

Table 2 also compares the percentage of pre-BEARS and BEARS visits that mention sleep-related issues in the Impression and Plan section of the medical record. Almost twice as many of all BEARS charts had sleep mentioned in the Impression and Plan (13.1 vs. 7.3%); this difference approached significance ($P = 0.071$). There was no difference in the likelihood of ordering a sleep diagnostic test (e.g. overnight sleep study, lateral neck film) between groups, but very few sleep-related diagnostic studies were ordered by either group. Behavioral interventions mentioned in the Plan section were largely general recommendations regarding behavior (setting limits, providing positive reinforcement), but also included some specific sleep strategies such as limiting television viewing, setting a bedtime routine, shifting the sleep-wake schedule, and limiting naps. One patient was referred to otolaryngology, but no patients were referred to a sleep clinic.

In order to assess the impact of potential confounding factors, the following additional analyses were conducted. Given that the BEARS sample was conducted when the group was older, it was possible that increasing age accounted for the increased likelihood of identifying a sleep problem. However, the number of sleep problems identified did not significantly correlate with age at either of the visits ($R = 0.011$, $P = -0.953$, pre-BEARS and $R = -0.072$, $P = 0.953$ BEARS). In order to assess the possible impact of resident training level (more experienced residents more likely to identify a sleep problem), training levels for resident-conducted visits were dichotomized into post-graduate level one (PL-1) or post-graduate level two or greater and compared using the McNemar test. The percentage of less experienced PL-1 residents conducting BEARS (34%) and pre-BEARS visits (31%) was not significantly different ($P = 0.724$). Finally, it was possible that the BEARS visits were more likely to have more medical information in general recorded that was not just limited to sleep-related information than the pre-BEARS visits. In order to further examine this possibility, we compared information recorded about another behavioral/developmental domain, school problems, between pre-BEARS and BEARS visits. As mentioned above, 'School' was another one of the single word prompts in the standard well child form. School problems were not significantly more likely to be documented during the BEARS vs. the pre-BEARS visits ($P = 0.115$).

3. Discussion

The results of this study suggest that the use of a simple 5-question screening tool for pediatric sleep problems is significantly more likely than the use of a standard single chart prompt to yield sleep information in general, as well to yield information about specific sleep domains. There was a 2–ten-fold difference in the amount of information recorded during the BEARS visits in each of the five sleep domains and parasomnias. In addition, the information obtained with the BEARS screen was significantly more likely to result in sleep problems being identified in the chart for bedtime issues, night wakings, and snoring. Increases in the percentage of problems in the individual sleep domains identified at the BEARS visits ranged from more than two-fold for snoring and almost three-fold for night wakings, to four-fold for bedtime issues. The finding that the BEARS was more effective in eliciting information is even more significant when consideration is given to the fact that, in most clinical settings, well child encounter forms do not include any sleep prompts at all and there was such a prompt included in the pre-BEARS visits. The BEARS is therefore likely to have even more impact when compared to usual clinical practice.

Furthermore, the percentage of patients identified as having sleep problems in the various domains during the BEARS visits was similar in many cases to the prevalence of those same problems cited in the literature. For example, a number of studies have suggested that the prevalence of bedtime resistance in early school-aged children, the same age group as the sample population, is in the range of 15% [4] to 27% [31], which is much higher than the 4% identified in the control visits and closer to the 16% prevalence identified at the BEARS visits. Similarly, the percentage of children identified by the BEARS as having significant snoring (11%) was very similar to the prevalence of frequent snoring for that age group reported in previous studies [2, 32]. This further supports the suggestion that the use of a standard single sleep question may fail to elicit adequate clinical information to determine the presence of a potentially serious sleep problem, particularly in the realm of sleep-disordered breathing.

The use of the BEARS screen was also more likely to result in documentation of additional sleep-related information, including sleeping arrangements, presence of a television in the child's bedroom, naps, and co-sleeping. Such information may not only be useful in elucidating the context of and factors contributing to existing sleep problems, but may be important in identifying potential intervention points to prevent future sleep problems from developing. For example, the use of prevention strategies, such as suggesting that parents begin to put infants to bed 'drowsy but awake' at around 4 months of age in order to avoid dependence on parental presence at sleep onset and to foster the infants' ability to 'self-soothe', have been shown to be highly effective in reducing the likelihood of

prolonged night wakings [33]. An increased focus during the well child encounter on sleep issues allows for the opportunity to provide additional anticipatory guidance, such as educating parents of newborns about normal sleep amounts and patterns, discussing the importance of regular bedtimes, bedtime routines, and transitional objects for toddlers, and providing parents and children with basic information about good 'sleep hygiene' and adequate sleep amounts.

Although sleep problems were more likely to be identified in the BEARS visits, this did not appear to have as significant an effect on the likelihood of having a specified diagnostic and/or treatment plan documented in the medical record. Previous chart review studies of sleep histories in adults have reported similar findings [30] regarding of lack of impact on patient management. One possible explanation for this finding is that residents may not feel comfortable and/or knowledgeable enough about sleep problems in their patients to appropriately address them. A recent survey study of community-based practicing pediatricians reported that less than a third of the respondents rated themselves as very confident or confident of their own ability to evaluate sleep problems in children and only one quarter rated themselves as very confident or confident in treating pediatric sleep disorders [25]. The relative lack of attention paid to sleep disorders in post-graduate pediatric education programs [34] may be in part responsible for this clinical knowledge gap.

There were a number of limitations in this pilot study, which should be addressed. First, because of the study design, we were unable to separate out the effectiveness of the BEARS instrument as a screening tool independent of several related factors, including the impact of incorporating the BEARS as a chart reminder into the medical record and the role played by instruction provided to residents on use of BEARS. Although residents were not explicitly informed of the purpose of the study, they may have been somewhat more likely to record information during the BEARS visits because of the attention focused on sleep issues by the orientation sessions. However, these sessions were felt to be necessary in order to provide uniform clarification on the use of the BEARS and specifically did not include any educational component regarding sleep issues in children. Due to logistical constraints in the clinic setting, we were unable to monitor on a daily basis if blank or incomplete BEARS forms were removed from the charts by residents; however, of the BEARS forms collected, only 5% had not been filled out, suggesting a high rate of compliance. Because of concern regarding possible contamination of information about the BEARS across residents, particularly given the fact that residents frequently saw their patients on continuity clinic days other than the one to which they were regularly assigned, we elected to use a design that incorporated historical rather than concurrent controls. We were also unable to follow the residents longitudinally after the study period was

concluded so that we could assess their continued use of the BEARS screen during subsequent well child encounters and thus cannot comment on the longer-term sustainability of the behavioral change. This would clearly be a key issue to study in the future. Finally, as with all chart review studies, the written documentation of the clinical encounter may not have been a complete record of the information actually obtained by the resident during the clinical interview, although this factor was unlikely to be substantially different across the two conditions.

The differences found in information and prevalence and types of sleep problems recorded between the BEARS and control visits may in part have been related to variables other than the sleep screening method employed, including provider- and patient-related factors [35]. For example, because of the study design, the patients were older at the time of the BEARS visit than at the control well child visit, and the increase in sleep problem prevalence may have been a factor of increasing age. However, studies have suggested that sleep problems in general are more prevalent in younger children than in school-aged children [36], and that parents are also more likely to both be aware of and to report sleep problems in younger children as well [4]. Furthermore, we did not find a significant correlation in our sample population between sleep problems and age. It is also possible that the BEARS visits were more likely to be conducted by upper level and thus more experienced residents who were more likely to note and record sleep problems in their patients. However, there was not a significant difference between the BEARS and control visits in the percentage of patients seen by a first-year compared to an upper-level resident.

In conclusion, this study suggests that the use of a simple brief screening tool for pediatric sleep problems is a cost-effective tool for identifying parents' concerns about their children's sleep, particularly in domains such as snoring that may not have been otherwise assessed. Future studies should evaluate the effectiveness of the BEARS screen with both experienced practitioners, such as community-based pediatricians, and with other types of health care professionals, such as family medicine practitioners, nurse practitioners, and mental health providers, in order to assess the generalizability of our results. The BEARS should also be compared to accepted 'gold standards' for the diagnosis of pediatric sleep disorders (International Classification of Sleep Disorders criteria, polysomnography, other pediatric sleep screening tools [37], etc.) in order to assess the validity as well as sensitivity and specificity of the instrument. Finally, combining the use of the BEARS with sleep curriculum materials and ongoing educational efforts may be necessary in order to more definitively impact physician behavior, including optimal management of sleep problems in the primary care setting, and is worthy of further study.

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Appendix A

The 'BEARS' is designed to provide a practical and user-friendly vehicle for teaching medical students and residents to incorporate a pediatric sleep history into the standard history and physical in both ambulatory and inpatient settings. The 'BEARS' instrument is divided into five major sleep domains, which provides a comprehensive screen for the major sleep disorders affecting children in the 2–18-year old age range. Each sleep domain has a set of age-appropriate 'trigger questions' for use in the clinical interview.

Examples of developmentally appropriate trigger questions:

	Preschool (2–5 years)	School-aged (6–12 years)	Adolescent (13–18 years)
Bedtime problems	Does your child have any problems going to bed? Falling asleep?	Does your child have any problems at bedtime? (P) Do you have any problems going to bed? (C)	Do you have any problems falling asleep at bedtime? (C)
Excessive day-time sleepiness	Does your child seem over tired or sleepy a lot during the day?	Does your child have difficulty waking in the morning, seem sleepy during the day or take naps? (P)	Do you feel sleepy a lot during the day? in school? while driving? (C)
Awakenings during the night	Does she still take naps? Does your child wake up a lot at night?	Do you feel tired a lot? (C) Does your child seem to wake up a lot at night? Any sleepwalking or nightmares? (P)	Do you wake up a lot at night? Have trouble getting back to sleep? (C)
Regularity and duration of sleep	Does your child have a regular bedtime and wake time? What are they?	What time does your child go to bed and get up on school days? weekends? Do you think he/she is getting enough sleep? (P)	What time do you usually go to bed on school nights? Weekends? How much sleep do you usually get? (C)

(continued on next page)

	Preschool (2–5 years)	School-aged (6–12 years)	Adolescent (13–18 years)
Sleep-disordered breathing	Does your child snore a lot or have difficulty breathing at night?	Does your child have loud or nightly snoring or any breathing difficulties at night? (P)	Does your teenager snore loudly or nightly? (P)

B, bedtime problems; E, excessive daytime sleepiness; A, awakenings during the night; R, regularity and duration of sleep; S, sleep-disordered breathing; P, Parent C, Child.

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