Paediatric Respiratory Reviews 15 (2014) 333–339

Contents lists available at ScienceDirect

Paediatric Respiratory Reviews

CME Review

Bedtime Problems and Night Wakings in Young Children: An Update of the Evidence

Sarah Morsbach Honaker [a,*], Lisa J. Meltzer [b,1]

[a] Department of Pediatrics, Indiana University School of Medicine, 705 Riley Hospital Drive, Indianapolis, IN 46202
[b] Department of Pediatrics, National Jewish Health, 1400 Jackson Street, G311, Denver, CO 80206

EDUCATIONAL AIMS

- To present the conceptualisation, prevalence, persistence, etiology, and impact of bedtime problems and night wakings in infants and young children
- To describe assessment methods for evaluating bedtime problems and night wakings
- To review the recent literature on the efficacy of a variety of behavioral treatment approaches for bedtime problems and night wakings

ARTICLE INFO

Keywords:
Insomnia
Infants
Children

SUMMARY

Bedtime problems and night wakings in infants and young children are prevalent, persistent, and associated with a variety of impairments in youth and their families. Assessment strategies include clinical interview, sleep diaries, actigraphy, and subjective measures. A number of treatment approaches with varying degrees of empirical support are available, and several novel strategies have been evaluated in recent years. Appropriate sleep scheduling and a bedtime routine are important components of any treatment program.

INTRODUCTION

Difficulties with bedtime problems and night wakings in infants and young children are highly prevalent [1], present frequently in primary care settings [2], and can be quite distressing and disruptive to families. Though these types of sleep difficulties resolve without treatment in a proportion of families, the impairment in child and parent daytime functioning can be severe. In addition, a sizeable minority of children may continue to show symptoms for months or years [3]. A variety of behavioural intervention strategies for night wakings and bedtime problems have strong empirical support, and several newer approaches have been evaluated in recent years. The impact of successful treatment often goes beyond improvements in child sleep, extending to better overall child and family functioning. This paper provides an overview of conceptualisation, assessment, and treatment options, focusing on findings published since the 2006 American Academy of Sleep Medicine Review and Standards Practice Parameters papers [4,5].

CLASSIFICATION

Under the current International Classification of Sleep Disorders, Second Edition (ICSD-2), symptoms of bedtime problems and night wakings fall into the diagnostic category of Behavioral Insomnia of Childhood (BIC). The ICSD-2 describes three types of BIC: Sleep onset association type, limit-setting type, and combined type. The third edition of the ICSD includes all three types under the broad category of "insomnia," with factors unique to paediatrics, such as the use of a parent/caregiver report (vs. self-report), difficulties initiating sleep without parental intervention, and daytime difficulties with academics/behaviour. As all research cited in this paper was conducted prior to the recent release of the ICSD-3, we will use the ICSD-2 nosology in this paper.

Sleep Onset Association Type:

Sleep onset association type is seen most frequently in infants and toddlers (6-36 months), and presents as difficulties initiating

* Corresponding author. Tel.: +317-944-1345.
E-mail addresses: smhonake@iupui.edu (S.M. Honaker), meltzerl@njhealth.org (L.J. Meltzer).
[1] 303-398-1837 (phone); 303-270-2141 (fax).

http://dx.doi.org/10.1016/j.prrv.2014.04.011
1526-0542/

or maintaining sleep without caregiver intervention. Sleep onset associations, such as rocking or feeding an infant to sleep, are considered "negative" or problematic if they require parental intervention. Young children will fall asleep and return to sleep quickly when the sleep association is available. In the absence of the association however, sleep onset is delayed or disrupted, and night wakings may be prolonged. Falling asleep with parental presence is associated with night wakings in later years, which may explain why these types of problems tend to persist if not addressed.

Limit-setting Type

Limit-setting type presents more frequently in toddlers and preschoolers (2-5 years), though can also occur in older children. Criteria include bedtime stalling or refusal due to caregiver difficulty setting limits effectively. Coloumbe & Reid (2013) examined night wakings in a community sample of preschoolers and found the most common behaviours to be calling out, getting out of bed, and requests for comfort [6]. Occurring less frequently were requests to engage in an activity, reports of fears or nightmares, or instrumental requests.

Combined Type

Combined type involves both limit-setting difficulties and sleep-onset associations. For example, a child might resist bedtime, and after a prolonged bedtime struggle ultimately falls asleep with a parent present.

PREVALENCE AND PERSISTENCE

Cross-sectional studies across a variety of cultures have consistently found 20-30% prevalence rates for bedtime problems and night wakings in community samples of infants, toddlers, and preschoolers [1,7,8]. Due to considerable overlap in bedtime problems and night wakings, individual prevalence rates are generally unknown. Recent studies in the United States [9] and around the world [10] have shown ethnic and cultural differences in the perception of difficulties falling asleep and whether children have a sleep problem.

Though sometimes conceptualised by families as normal developmental difficulties that will be "outgrown," bedtime problems and night wakings persist in many young children. Byars et al. (2012) found that 21% of children with sleep problems as infants continued to present with difficulties at age 3 [3]. Similarly, Lam et al. (2003) found that sleep problems persisted for 12% of preschoolers with identified sleep problems as infants, with recurrence for an additional 19% [9]. Others studies have also identified sleep problems in young children as predictive of sleep problems in preschool or later [10–12].

ETIOLOGY

A number of factors help predict which children are more likely to have bedtime problems and night wakings. In toddler twin pairs, genetic factors were contributory to the occurrence and stability of sleep problems[13]. Child temperament (in particular difficulties self-soothing) has also been associated with concurrent and future sleep difficulties [10,14]. Not surprisingly, children with more persistent nighttime fears are more likely to have sleep problems [15].

Parental presence at bedtime is a consistent predictor of sleep disturbance, particularly when a child falls asleep during feeding [1,7,16], except in predominantly Asian countries, where the majority of young children fall asleep with parental presence [17]. Breastfeeding often leads to increased night wakings in young infants, in part because breast milk is more quickly digested than formula. In older infants (e.g. 6-12 months), the relationship between breastfeeding and night wakings appears to be largely mediated by parental presence at sleep onset or nursing to sleep, rather than breastfeeding per se [18,19]. A later bedtime (after 9pm), caffeine usage, and a television in the bedroom have been linked to sleep disturbance across youth of all ages [1]. Finally, there is some emerging evidence that regular daytime routines are predictive of longer sleep duration in preschoolers and early school-aged children [20].

While the role of parenting cannot be disputed, it is important for practitioners to recognise the contributing child factors and the transactional nature of sleep difficulties, avoiding the unhelpful and often inaccurate assumption that parents have "caused" their child's sleep problem. Indeed, Simard et al. (2008) found prior sleep disturbance to be more predictive of future sleep difficulties than intervening parenting practices [14].

IMPACT

Outcomes associated with sleep difficulties in young children are myriad and varied. Night wakings, bedtime problems, and insufficient sleep have been associated with childhood injuries, [8,21,22] daytime behavior difficulties, [8,23] higher BMI and likelihood of overweight [24], and reduced health-related quality of life [8]. Parents of children with sleep difficulties are more likely to have poorer physical and mental health, particularly with infant sleep problems [25]. In families of children referred to an insomnia clinic, almost half had clinically significant levels of parenting stress [26]. An experimental study examining nap deprivation in 30-36 month old children found less effective emotion regulation in sleep-restricted preschoolers [27]. Additionally, studies demonstrating improvements in family and child functioning following behavioural sleep intervention suggest that poor child sleep is at least partially causal [4]. On a societal level, childhood sleep problems are associated with additional healthcare costs [28]. Given the high prevalence, persistence, and impairment caused by night wakings and bedtime problems, assessment and treatment are of critical importance.

ASSESSMENT

Strategies for assessing bedtime problems and night wakings include a clinical interview, sleep diaries, objective sleep measures, and actigraphy. A polysomnogram is generally not indicated unless sleep-disordered breathing is suspected.

Clinical Interview

Validated as a screening tool in primary care, the BEARS measure [29] provides a helpful algorithm, assessing the domains of 1) Bedtime Issues, 2) Excessive Daytime Sleepiness, 3) Awakenings at Night, 4) Regularity and Duration of Sleep, and 5) Snoring. For sleep complaints, additional areas of assessment may include a physical exam to rule out medical difficulties impacting sleep (e.g, G.I. difficulties), an analysis of the sleep environment including any sleep onset associations, bedtime routine and processes, specific behaviours and parental response during night wakings, and morning and daytime functioning. An important rule-out is Restless Legs Syndrome, as leg discomfort at bedtime can prolong sleep onset due to discomfort. Excluding medical causes for sleep difficulty is often perceived by parents as one of the most helpful components of a sleep consultation [30].

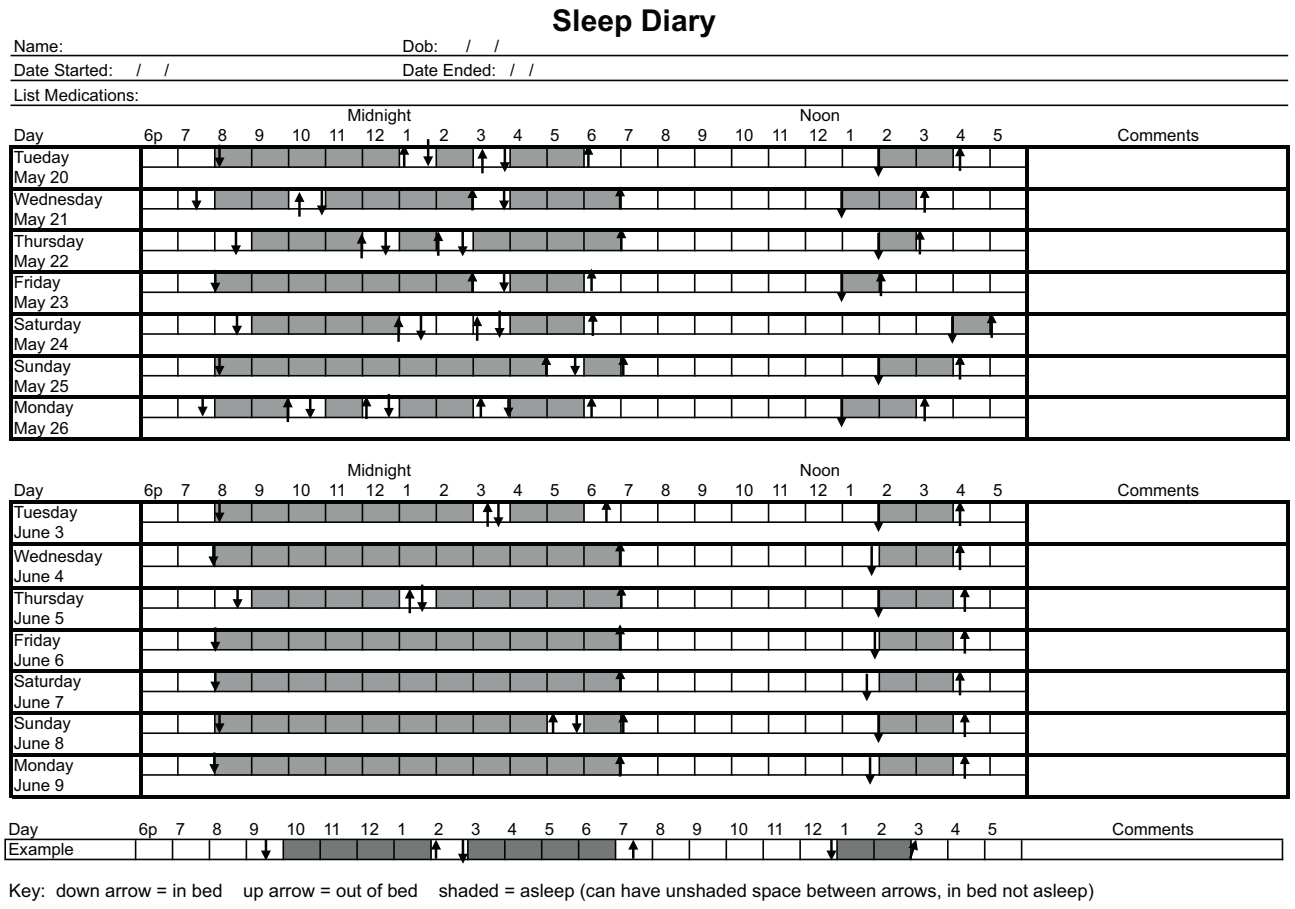

Figure 1. Sleep Onset Association Difficulties Sleep Diary

Sleep Diaries

Sleep diaries are an extremely helpful and widely-used tool for assessment and treatment-monitoring, providing a quantitative summary of sleep indices as well as patterns and trends. Quantitative indices include bedtime, sleep onset latency (SOL), number of night wakings, wake after sleep onset (WASO), waketime, total sleep time at night, and nap timing/duration. Figure 1 shows a sleep diary for a 17-month old female, suggesting a pattern of sleep onset association difficulties. Sleep onset is relatively quick with multiple night wakings but no prolonged WASO. Following a week of intervention (not shown) in which the sleep onset association is removed and naps are scheduled, the sleep diary shows a significant reduction in night wakings and a more regular nap schedule. Figure 2, a sleep diary for a 5 year-old male, shows a pattern more suggestive of limit-setting type, with a prolonged SOL most nights, getting out of bed following night wakings, and prolonged WASO.

Actigraphy

Actigraphy, an objective estimate of sleep-wake patterns, may be helpful in situations in which there is poor compliance with a sleep diary, parental uncertainty about night wakings, or reports of nighttime sleep not consistent with daytime functioning. Actigraphy has been demonstrated to be reliable for use in young children [31]. Actigraphy tends to have less clinical utility in assessing sleep-onset association difficulties, as night wakings requiring parental intervention may be of short duration and thus not reliably detectable via actigraphy.

Subjective Measures

A number of subjective sleep measures can be used to assess night wakings and bedtime problems. For young children, the most commonly used measures include the Brief Infant Sleep Questionnaire (BISQ) [32] and the Children's Sleep Habits Questionnaire (CSHQ) [33]. Two papers published in 2011 provide detailed reviews of pediatric sleep questionnaires [34,53]. The Children's Night-waking Behavioral Scale [6] is a more recent measure that identifies behaviours that occur during night wakings in preschool-aged children.

TREATMENT

Overview

Behavioural treatment for bedtime problems and night wakings is highly effective in improving child sleep, with large treatment effect sizes [35]. In a 2006 review of 52 treatment studies, 94% demonstrated clinically significant improvement in symptoms, with improvement in 82% of study participants [4]. A companion AASM Practice Parameter paper [5] evaluated treatment approaches using modified Sackett criteria, classifying specific therapies as standard or guideline. Since this review, a number of additional treatment studies have been added to the literature

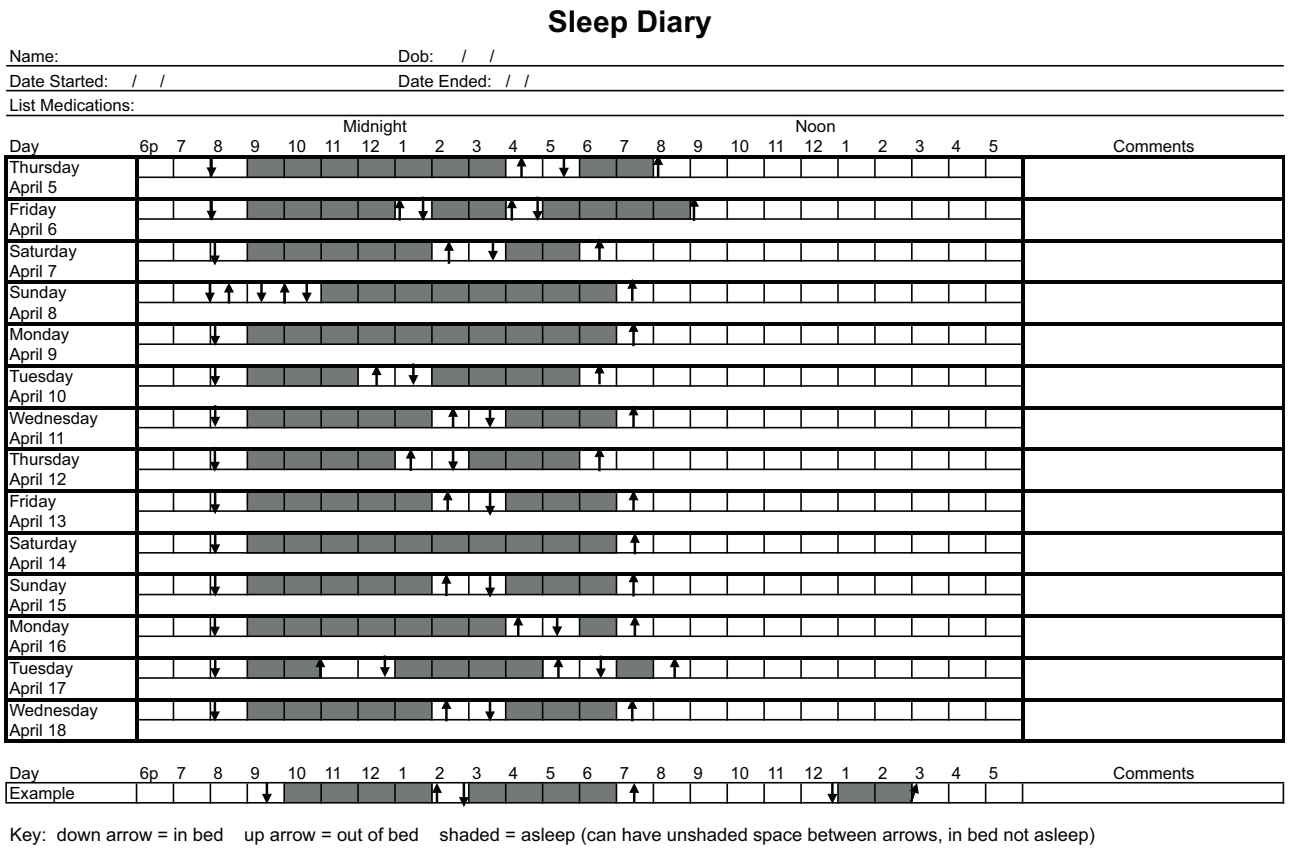

Figure 2. Sleep Diary Suggestive of Bedtime Problems/Limit-Setting Difficulties

supporting the efficacy of behavioural treatment for bedtime problems and night wakings.

Parent Education/Prevention

Parent education and prevention was identified as a standard recommendation [5]. This cost-effective approach provides preventive guidance to encourage positive sleep habits in young infants. Guidance most frequently involves education around normal sleep patterns, timing of bedtime and naps, implementing a bedtime routine, and minimising parental interaction during night wakings to decrease the likelihood of developing negative sleep associations.

Recent studies have continued to show parent education to be efficacious. A ten minute group intervention delivered in primary care when infants were four months resulted in reductions in parental behaviours associated with developing negative sleep associations [36]. Two recent studies have evaluated an internet-based psychoeducation and tailored sleep recommendations program, including behavioural intervention to address identified sleep difficulties. Improvements in night wakings, longest sleep period, and difficulty with sleep onset were reported for infants and toddlers, with gains maintained at one year [37,38]. For children with autism, a parent education program resulted in improvements to sleep onset latency and symptoms of insomnia [39]. Education/prevention strategies are a cost effective way to provide large-scale intervention.

Strategies to Encourage Independent Sleep Onset

Unmodified Extinction

Unmodified Extinction (including Extinction with Parental Presence) was classified as a standard recommendation [5]. Unmodified extinction (also known as "cry it out") involves placing a young child in the sleeping place awake at bedtime and leaving the room, monitoring for safety, but not returning to the infant until morning. The intended goal is to remove parental interaction as a reinforcer for undesired behaviours such as crying and to allow the child opportunity to self-soothe. Though empirical support is strong, implementation is often difficult for families who cannot tolerate crying for extended periods of time. Some families prefer extinction with parental presence, a strategy in which the parents stays in the room with the infant to provide a comforting presence, but without interacting with the infant.

Graduated Extinction

Graduated Extinction involves placing the young child in bed awake and then leaving and ignoring crying for a period before checking on the child. Checks can be progressive (e.g., 5, 10, 15 minutes), fixed (e.g. every 10 minutes), or variable based on parental perception of need. Although classified as a guideline recommendation [5], subsequent studies have offered additional support. One study found reduced night crying, fewer night wakings, and longer nighttime sleep periods in 6-12 month infants, with effects maintained three months post-treatment [40]. Another study found benefits of both graduated extinction ("controlled crying") and a parental fading approach ("camping out") for infants ages 8-10 months [41]. Notably, benefits were maintained at three months and approximately one year post-treatment, with parents who received treatment less likely to perceive a sleep problem compared to controls. Finally, reduced night wakings were found for infants 6-18 months who were treated by parental presence with minimal check, another variation of unmodified extinction [42].

The frequency and duration of checks for any form of modified extinction should consider both the parents' tolerance for infant crying, as well as the infant's temperament and response to checks.

Some infants seem to become more agitated during or after parental checks, in which case another approach (e.g. unmodified extinction, fading parental presence) may be preferable.

Fading Parental Presence

Fading parental presence, sometimes called camping out, is a variant of graduated extinction in which the parent gradually moves away from the child every 3 to 7 nights. For example a parent may start in a chair next to the child's bed, then move the chair incrementally further away until he/she is sitting outside the door. This strategy can be combined with the "Excuse-Me Drill," in which a parent makes excuses to be away for short periods, then returns and praises the child for tolerating the absence [43]. Each night the break gets longer with the ultimate goal of the child falling asleep independently. Another variation evaluated by Blunden (2011) involves fading parental presence, but parents are allowed to pick up and comfort their child prior to the infant becoming distressed with gradual reduction of the interaction over time [44]. Blunden found parent-rated improvements in negative sleep associations, SOL, WASO, and family stress. Though parental satisfaction with quite high, results occurred over a period of weeks rather than days.

Scheduled Awakenings

This approach to treating night wakings involves waking and soothing an infant prior to the time of a typical awakening, and is classified as a guideline recommendation [5]. However, as night wakings do not occur at consistent times in many children and implementation requires parents to wake to an alarm clock at least once per night, this strategy is not frequently recommended by behavioural sleep specialists in clinical practice.

Delayed Bedtime with Removal from Bed/Positive Routines

This guideline was based on studies demonstrating the effectiveness of these combined strategies in children with developmental disorders [5]. Delayed bedtime, sometimes referred to as bedtime fading, involves delaying bedtime to match the time that the child typically falls asleep. The bedtime can then be gradually faded earlier (e.g. 15 minutes per night). Based on the principle of stimulus control, the goal of delayed bedtime is to reduce time awake in bed and ensure a quick, smooth, bedtime process. Removal from bed, or response cost, involves temporarily taking a child out of bed and returning them when sleepy, again with the goal of avoiding time awake in bed. Faded bedtime and response cost works with positive routines, which involves creating a consistent bedtime routine with one or two pleasurable activities for the child. If there is bedtime resistance during or before the routine, the routine is ended and the child is put to bed.

In clinical practice bedtime fading is frequently recommended for children older than 3, as infants and toddlers may become overtired and have more difficulty settling with a later bedtime. Response cost can be challenging to implement clinically, as removal from bed can lead to the development of positive reinforcement for wakeful behaviour in bed.

While almost universally recommended, surprisingly only one study has examined the bedtime routine as an independent intervention. Mindell et al. (2009) found that adding a bedtime routine in young children ages 7-36 months resulted in a shorter average SOL and reduced number and duration of night wakings [45]. A consistent bedtime routine that is short and sweet (30-45 minutes) and includes 3-4 soothing activities is recommended. For younger children or those with developmental disorders, a visual bedtime schedule can help with comprehension and compliance. Hale et al. (2011) found an association between increased nighttime sleep duration and language-based bedtime routines (e.g. singing, reading, story telling), suggesting that this component may be particularly important [54].

Positive Reinforcement Strategies

Despite insufficient evidence to classify these strategies as a guideline or standard, positive reinforcement is frequently recommended in clinical practice. With the Bedtime Pass intervention, one or more bedtime passes (e.g., notecard or token) are given to young children at bedtime, with instructions that each pass can be exchanged for a request or parental visit (e.g. drink of water, brief visit from parent). When the passes are gone, parents ignore additional requests. However, if the child still has passes left in the morning they can be exchanged for immediate small rewards. The number of passes allowed a child each night can be gradually reduced. Two more recent studies have found the Bedtime Pass effective[46,47], leading to reductions in bedtime resistance in 3-6 year olds, with gains maintained at 3 months.

Other positive reinforcement strategies include sticker charts and visits from the sleep fairy. Sticker charts are helpful to reinforce each step of the bedtime routine (e.g. putting on pajamas). For preschoolers and young school-aged children, the sleep fairy can visit once the child falls asleep, leaving a small treat under the pillow, encouraging the child to fall asleep quickly and stay in bed [48]. Positive reinforcement strategies may not be effective in infants, young toddlers, or those who struggle to delay gratification.

Treatment for Nighttime Fears

Though fears are not a part of the diagnostic criteria for BIC, they can contribute to difficulty with sleep onset, bedtime resistance, and difficulties returning to sleep following night wakings. Fears can lead to the development of a sleep association (e.g., because child is afraid at bedtime, the parent stays in the room until the child is asleep). Introduced initially as a strategy to reduce stress reactions in young children exposed to war, Kushnir and Sadeh (2012) recently evaluated the "Huggy Puppy" intervention as a treatment for nighttime fears [15]. Young children with nighttime fears were given a stuffed puppy to sleep with and were instructed to take care of the puppy, or told that the puppy would protect them during the night. Both scenarios resulted in reduced nighttime fears and improvements in sleep compared to waitlist controls, with gains maintained at six months. For a review of strategies commonly used in treating nighttime fears, see Gordon et al., 2007 [49].

Summary and Implementation Tips

There is no evidence to suggest any one approach is more effective than another. Thus parents should be presented with different options and select an approach that matches the infant's temperament and family's preferences. With any strategy, it is important to problem solve with parents how to handle child distress (e.g., parent engages in a distracting activity during infant crying or contact with another supportive adult during the process). With all behavioral interventions, it is important to explain to parents that although the first night will be challenging, the second night will be worse, and that the parents must persist and remain consistent.

Night wakings may also benefit from treatment that is initiated at bedtime only [50]. For example, a parent could implement an unmodified extinction protocol at bedtime yet provide a consistent response to the child following night wakings. In many cases the infant will generalise the self-soothing behaviour at bedtime to night wakings without additional intervention [50]. Intervening only at bedtime prevents infants from becoming over-tired. In addition, changes only at bedtime are less disruptive and more

acceptable to parents who struggle to tolerate extensive crying in the middle of the night. Finally, a soothing bedtime routine and consistent bedtime is essential to ensure an infant is drowsy but not over-tired.

SECONDARY TREATMENT OUTCOMES

Along with child sleep, behavioural sleep interventions also result in improved child and family functioning. Beneficial outcomes have been described for child daytime functioning (e.g. crying, emotional well-being), parent mood and stress, parent sleep, and enhanced marital satisfaction [4]. More recent studies have supported and expanded these findings, demonstrating better prosocial skills in school-aged children compared to controls who did not receive intervention [51] and improvements in maternal mood and sleep [37,40–42,45].

No published studies have shown any adverse effects from behavioural interventions for bedtime problems and night waking in young children, including interventions involving period of crying in infants and toddlers. Studies have consistently shown no negative effects on attachment, [11] changes in general parenting behaviour, [11,52] or infant emotional health [42]. Two recent studies have examined child functioning several years post-intervention and found no differences in externalising and internalising behaviour difficulties [52] or overall health [11] compared to controls.

CONCLUSION

Bedtime problems and night wakings in young children are prevalent and disruptive to families. Presentation and etiology are varied, and a number of screening and assessment tools are available. Behavioural treatments for sleep difficulties are brief and highly effective, with many options available. Families will benefit from guidance in choosing a strategy that fits parental preferences and child temperament. An appropriate bedtime, nap schedule, and an effective bedtime routine should be included in any treatment. Behavioral interventions improves not only child sleep, but also overall child and parent functioning. More research is needed to evaluate newer strategies, compare treatment approaches, and identify variables that predict treatment outcomes.

RESEARCH DIRECTIONS

- Further evaluation of behavioral sleep interventions to address bedtime problems and night wakings
- Applicability of behavioral sleep interventions to specific patient populations
- Examination of the generaliseability of interventions used at bedtime only to improvement in night wakings

PRACTICE POINTS

- Bedtime problems and night wakings in young children are prevalent and disruptive for children and their families
- Assessment tools include the clinical interview, sleep diaries, actigraphy, and subjective questionnaires
- A variety of effective behavioural interventions are available to address bedtime problems and night wakings
- In addition to improved sleep, behavioral treatment positively impacts child and family functioning

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EDUCATIONAL QUESTION

1. A toddler who wakes several times a night but returns to sleep quickly after being rocked by a parent likely meets criteria for which diagnosis:
   a. Behavioral Insomnia of Childhood – Limit Setting Type
   b. Behavioral insomnia of Childhood – Sleep Onset Association Type
   c. Behavioral Insomnia of Childhood – Combined Type
   d. None of the above
2. Which of the following outcomes have been associated with problems with night wakings and bedtime problems?
   a. Injuries
   b. Externalising behavior difficulties
   c. Parental stress
   d. All of the above
3. Which of the following is NOT a recommended assessment method for bedtime problems and night wakings in children?
   a. Sleep diary
   b. Actigraphy
   c. Polysomnogram
   d. Clinical interview
4. The AASM considers which of these treatment approaches as standard for the treatment of night wakings and bedtime problems?
   a. Unmodified extinction
   b. Graduated extinction
   c. Scheduled awakenings
   d. A & B
5. Studies have demonstrated the following negative effects of behavioural interventions that involve infant crying:
   a. Mental health
   b. Temporary disruption in attachment
   c. Physical health
   d. No negative effects have been found