CE CORNER

Helping children get a good night's sleep

Psychologists have many evidence-based interventions that can provide life-changing help

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Sleep Children

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Learning objectives: After reading this article, CE candidates will be able to:

1. Describe normal sleep in children across development, consequences of poor sleep and common sleep disorders in pediatric populations.
2. List several objective and self-report methods to assess pediatric sleep.
3. Understand how behavioral treatment strategies can be used to improve bedtime problems and night wakings in young children and address insomnia and delayed sleep-wake phase disorder in school-age children and adolescents.

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In adults, sleep is key for memory consolidation, mood regulation and general well-being. In children, it's also critical for developing healthy cognitive, behavioral and physical functioning.

But up to 30% of children ages 2 to 5 and 15% of school-age children have trouble falling asleep or sleeping through the night on a regular basis ("*Children and Sleep* (https://www.sleepfoundation.org/professionals/sleep-americar-polls/2004-children-and-sleep) ," National Sleep Foundation, 2004). And fewer than one-third of adolescents are getting enough sleep, according to a Centers for Disease Control and Prevention survey (Wheaton, A.G., et al., *Morbidity and Mortality Weekly Report*, Vol. 67, No. 3, 2018).

"Sleep is so important for children, but parents are often not aware of the amount of sleep their child needs and may not even recognize it as a problem," says behavioral sleep psychologist Kate Lyn Walsh, PsyD, an assistant professor of clinical pediatrics at Riley Hospital for Children in Indianapolis.

Among older children and teens, packed school and extracurricular activity schedules and early school start times often contribute to the sleep deficit. But among younger children, behavioral challenges that crop up around bedtime, such as "curtain calls"—when a child repeatedly gets out of bed—are often part of the problem, and can be so distressing for families that they seek advice from a psychologist. Fortunately, psychologists have a number of evidence-based interventions that can help.

"We have behavioral interventions that are effective for addressing these sleep challenges and can make a great difference in a child and family's overall functioning," says Terese Amble, PsyD, a pediatric sleep psychologist at Children's Minnesota Hospital in St. Paul.

The toll of sleep deprivation

The ideal amount of sleep for healthy functioning differs from one child to the next (see page 39). But research shows that maintaining a regular sleep-wake schedule is a part of good sleep hygiene regardless of age. Everything from light exposure to mealtimes can influence circadian rhythms and the release of hormones such as melatonin, and ultimately affect sleep.

Insufficient sleep can severely impair a child's functioning, causing daytime fatigue, poor health and weaker immune function. Sleep-deprived children can also suffer from mood disturbances and problems with emotion regulation.

"When adults are tired, it's pretty obvious—we're yawning all day, we want to sleep, we're dragging," Walsh says. "With kids, you tend to see more irritability, grouchiness and emotional dysregulation."

In school-age children, lack of sleep can mimic symptoms of attention-deficit hyperactivity disorder (ADHD). These kids often struggle to settle down, concentrate and listen to directions. Like children with ADHD, those who are consistently sleep deprived may show cognitive deficits such as poor memory and problem-solving abilities, as well as lowered academic performance. And a prospective study of more than 1,000 children found that those who lacked sufficient sleep during early childhood had more social and behavioral problems at age 7 (Taveras, E.M., et al., *Academic Pediatrics* (https://doi.org/10.1016/j.acap.2017.02.001) , Vol. 17, No. 6, 2017).

Research has also found that children prone to parasomnias—a group of disorders that includes sleepwalking and sleep terrors—are more likely to experience these disturbances when sleep deprived (Bollu, P.C., et al., *Missouri Medicine* (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6139852/) , Vol. 115, No. 2, 2018). More severe consequences of sleep deprivation include increased risk-taking behavior and

a higher risk of accidental injuries. Some researchers have also suggested that chronic sleep deprivation during childhood can increase a person's risk of developing anxiety and depressive disorders later in life (Palmer, C.A., & Alfano, C.A., *Sleep Medicine Reviews* (https://doi.org/10.1016/j.smrv.2015.12.006) , Vol. 31, 2017).

In adolescents, insufficient sleep has been linked to internalizing problems such as depressive symptoms, irritability and even suicidal thoughts and actions (Peltz, J.S., et al., *Sleep* (https://doi.org/10.1093/sleep/zsz287) , Vol. 43, No. 5, 2019).

On top of the emotional, cognitive, behavioral and physical toll of sleep deprivation, a child's sleep problems can disrupt family life and daily routines and prove difficult for parents to manage, sometimes resulting in marital conflict and strained parent-child interactions, Amble says.

Psychologists' tool kit

Pediatric sleep psychologists have several validated tools for assessing sleep problems. When screening for insufficient sleep, most providers begin with a clinical interview, which includes questions such as: Does the child wake on their own or need to be woken each morning? Does the child struggle for more than 15 minutes to get going each morning? Is the child sleeping several more hours per night on weekends or when on vacation? Does the child fall asleep during sedentary activities, such as sitting in class or watching television?

"We take into account the number of hours of sleep a child is getting—but what we really look for are daytime signs of insufficient sleep," Amble says. "If a child is falling asleep during the day or has significant weekend oversleep, these can be indicators that the child needs more sleep and that his or her functioning may be suffering."

Clinicians may rely on tools such as the Epworth Sleepiness Scale (https://epworthsleepinessscale.com/) , an eight-question evaluation that provides a "sleepiness score" (Janssen, K.C., et al., *Sleep Medicine* (https://doi.org/10.1016/j.sleep.2017.01.014) , Vol. 33, 2017). It's also standard to review risk factors, including a family history of sleep problems, child temperament, lifestyle factors and comorbid conditions such as ADHD or anxiety.

Such comorbidities can contribute to insomnia. For example, children who take stimulant medication for ADHD may struggle to settle their bodies and minds at bedtime (Owens, J.A., *Current Psychiatry* (https://www.mdedge.com/psychiatry/article/62088/when-child-cant-sleep-start-treating-parents) , Vol. 5, No. 3, 2006). Another psychological problem that children may present is post-traumatic stress disorder, which can trigger nightmares and other nighttime fears.

In many cases, behavioral sleep psychologists will ask children or parents to complete a sleep diary, logging what time the child goes to bed, falls asleep and wakes up in the morning, as well as any night awakenings or naps.

"Sleep diaries allow us to see patterns in sleep that parents may not be aware of," says Sarah Honaker, PhD, assistant professor of pediatrics at Indiana University's School of Medicine.

Some providers may also use an actigraph—a device typically attached to a wristband that measures motor activity, which is correlated with sleep-wake cycles—over a period of several weeks to obtain additional data. Medical sleep disorders with no behavioral component, such as sleep apnea, narcolepsy and restless-legs syndrome, are typically treated by a physician but may be discovered during a psychological evaluation. Snoring, for instance, is not typical in children and could be a sign of obstructive sleep apnea or allergies.

Insomnia interventions

Insomnia is the most common problem pediatric sleep psychologists treat, but its presentation differs dramatically across age groups. For infants and toddlers up to age 3, insomnia usually occurs because children learn to rely on particular stimuli (such as a parent rocking them to sleep) to fall asleep and then can't fall asleep on their own—a problem known as "sleep-onset association."

Psychologists consider a sleep-onset association "positive" if it doesn't require a parent to be present, such as a pacifier or a white noise machine. A "negative" sleep-onset association, on the other hand—though not necessarily harmful—involves parent-child interaction, including feeding, rocking or pushing the child in a stroller.

One role of behavioral sleep psychologists is to help parents understand the connection between sleep-onset associations and night wakings. Clinicians explain to parents that each night, people complete four to six sleep cycles—during which the brain and body progress through a series of discrete sleep stages—and that a partial waking or brief arousal is typical after each cycle.

"When a child has one of these normal wakings at night and can reach around in bed and grab their pacifier or start sucking their thumb to soothe, then they can easily return to sleep on their own and start the next sleep cycle," Amble says. "But when kids have a sleep-onset association that is not present following a night waking, they signal to a parent because they have trouble falling back asleep without help."

The first line of defense for insomnia is to establish consistent schedules and routines. Children should have appropriate and consistent bedtimes and wake times, a regular bedtime routine and a comfortable environment for sleep. When infants are at least 6 months old, psychologists can also help parents navigate the various forms of sleep training that lead children to self-soothe at bedtime and upon waking during the night

—though most families rely on a pediatrician, books or online resources to guide them through the sleep training process, says Honaker.

In the standard extinction approach, also known as the "cry it out" method, a parent leads the child through a healthy bedtime routine using positive sleep-onset associations, such as playing soothing music or providing a pacifier. The parent then places the child in the crib drowsy but awake, then leaves the room and does not respond to crying or protests until morning unless there is a concern for health or safety. This routine is followed nightly until the child can fall and stay asleep—which generally happens within three to five days.

The graduated extinction approach, while somewhat slower, is more popular because it allows more parent-child interaction. After completing the bedtime routine and placing the child in the crib, the parent leaves the room and checks in at set intervals until the child falls asleep, each time voicing a brief standard phrase such as "I love you, it's time to sleep." Each night, parents lengthen the time between check-ins—for instance, from five to 10 minutes.

"There's no magic number for check-in intervals. The pace of sleep training depends on what each family is comfortable with," Honaker says.

Parents who use graduated extinction are generally encouraged to respond to night wakings in whatever way they ordinarily would, for instance, by rocking or feeding the child. Once infants and toddlers learn to self-soothe at the beginning of the night, they may be able to apply that behavior to night wakings. If not, parents may choose to implement a second round of sleep training to target night wakings.

Though sleep training is highly effective, it can be controversial, Honaker says, because parents worry about potential negative consequences of prolonged crying. But two randomized trials found no significant differences in emotional or behavioral problems or attachment styles either one year (Gradisar, M., et al., *Pediatrics*

(https://doi.org/10.1542/peds.2015-1486), Vol. 137, No. 6, 2016) or five years following a sleep training intervention (Price, A.M.H., et al., *Pediatrics* (http://doi.org/10.1542/peds.2011-3467), Vol. 130, No. 4, 2012).

"The evidence suggests that sleep training is safe, but ultimately it's the family's decision," Honaker says. "Parents who are not comfortable with the approach may choose to simply wait and see if the child grows out of their sleep-onset associations."

Bedtime resistance

When children transition from a crib to a bed, behavioral insomnia can start to manifest as bedtime resistance. The child may refuse to get into bed, leave the bed frequently or throw tantrums. In other cases, a child may want to sleep and try to do so but can't easily settle his or her mind and body.

"This makes life really stressful for families in the evenings. And all of that disruptive behavior also results in the child not getting enough sleep," Amble says.

A simple and effective intervention is to help families create a healthy bedtime routine of three to five quiet activities that take a total of 20 to 45 minutes (Mindell, J.A., & Williamson, A.A., *Sleep Medicine Reviews* (http://doi.org/10.1016/j.smrv.2017.10.007), Vol. 40, 2018). Amble says the routine should start at the same time each night and should flow in one direction—for example, from the kitchen to the bathroom to the bedroom—and that the activities should occur in the same order each night.

Another approach, known as the bedtime pass program, is highly effective for reducing curtain calls (Moore, B.A., et al., *Journal of Pediatric Psychology* (https://doi.org/10.1093/jpepsy/jsl025), Vol. 32, No. 3, 2007). A child receives one to

three laminated passes permitting them to get out of bed for pre-approved activities such as a hug from a parent or a drink of water. When the passes are gone, the child is no longer permitted to leave the bedroom. The child is then rewarded in the morning for any unused passes.

"Kids respond really well to concrete limits, and the passes can help reduce anxiety at bedtime if they know they won't get in trouble for getting up," says Walsh. "It's also helpful for parents because they know when to put their foot down."

For example, one 4-year-old boy treated by Amble frequently left his room at bedtime and throughout the night and required a sippy cup of iced tea in order to fall asleep. By implementing the bedtime pass program and a structured bedtime routine—and removing the sippy cup of iced tea—Amble helped the child learn to soothe himself to sleep within 15 minutes and to sleep through the night after just a few weeks.

Some children also experience fears before bed, such as fear of the dark. Psychologists use cognitive strategies—such as teaching kids brave self-talk and coping statements—to address such worries. They can also teach parents creative games to play before bed, such as a flashlight treasure hunt, to help break a child's negative associations with a dark bedroom. For one 7-year-old who experienced nighttime fears and bedtime resistance after a tree fell through her bedroom window, Honaker promoted independent sleep by using cognitive strategies, implementing a reward system and gradually weaning the child from requiring her parents at her bedside.

For children with special needs, such as those with autism spectrum disorder, studies suggest that traditional behavioral sleep interventions tend to be effective (Papadopoulos, N., et al., *Journal of Attention Disorders* (https://doi.org/10.1177/1087054714568565) , Vol. 23, No. 4, 2019). Modifications may be necessary, says Danielle Graef, PhD, assistant professor and pediatric psychologist at

Cincinnati Children's Hospital Medical Center, and typically include a slower pace or increased use of visual cues—for instance, a chart that depicts the steps in a child's bedtime routine as cars on a train.

Teens and sleep

The most common sleep problems seen in adolescents are delayed sleep-wake phase disorder and insomnia. Teenagers with a delayed circadian rhythm can sleep well on a delayed schedule—for instance, from 2 a.m. to 11 a.m.—but struggle to sleep on a more traditional schedule that allows them to wake early enough to attend school.

When treating delayed sleep-wake phase disorder, Graef uses a two-week sleep diary and clinical interview to assess sleep-wake patterns. Then, using an approach called phase advance therapy, she instructs patients to go to bed at the time they would typically fall asleep, and then gradually shift their bedtimes earlier in 15-minute increments. One 17-year-old Graef treated had a 50% reduction in sleep problems after just three visits, thanks to a combination of phase advance therapy, improved sleep hygiene and relaxation strategies.

Cognitive-behavioral therapy for insomnia (CBTI) can also help adolescents and older children who have trouble settling their minds and bodies to fall asleep or return to sleep, says Graef.

CBTI involves stimulus control or sleep restriction, which reduces the time an individual can spend in bed, limits the activities that occur in bed and teaches basic relaxation techniques such as learning to manage ruminative thoughts. Psychologists also use cognitive restructuring to help their patients shift negative thoughts around sleep such as "I'll never fall asleep" or "Tomorrow's going to be miserable."

Nightmare disorder, which can affect school-age children, teens and adults, involves frequent and disturbing nightmares and is typically treated with imagery rehearsal therapy (Krakow, B., in Perlis, M., et al., Eds.,"Behavioral Treatments for Sleep Disorders (https://doi.org/10.1016/B978-0-12-381522-4.00035-3) ," Academic Press, 2011). In this treatment, the patient generates a new ending for the dream and repeatedly discusses and thinks about it. For example, an adolescent patient of Honaker's who frequently dreamed she was being chased imagined that the person chasing her was in fact her mother coming to tell her she had won the lottery. Her nightmares soon became less frequent and less distressing.

"The idea is to remove some of the negative emotions associated with those thoughts and images and replace them with neutral or positive emotions," Honaker says.

How much should a child sleep?

Sleep needs differ from one child to the next. Here are some guidelines on the number of hours per day:

Infants 4 months to 1 year
12 to 16

Ages 1 to 2
11 to 14

Ages 3 to 5
10 to 13

Ages 6 to 12
9 to 12

Adolescents
8 to 10