ENCYCLOPEDIA
on Early Childhood
Development

Early Childhood Parasomnias

Dominique Petit, PhD, Jacques Montplaisir, PhD

Center for Advanced Research in Sleep Medicine, Centre intégré universitaire de santé et de services sociaux du Nord-de-l'île-de-Montréal – Hôpital du Sacré-Coeur de Montréal and Université de Montréal, Canada

November 2020, Éd. rév.

Introduction

Sleep is one of the cornerstones of proper infant development. Recent studies show that insufficient sleep duration has extremely detrimental consequences on several developmental areas (for reviews, see references [1] and [2] and the article by Petit and Montplaisir in this Encyclopedia). When we think of childhood sleep problems, we immediately imagine nights frequently interrupted by multiple awakenings; but the child's sleep can also be disturbed by a variety of parasomnias.

Subject

The American Academy of Sleep Medicine defines parasomnias as undesirable physical events or experiences that occur during entry into sleep, within sleep, or during arousal from sleep.[3] Sleepwalking and sleep terrors are examples of the latter. In the third edition of the International Classification of Sleep Disorders, sleepwalking is defined as "complex behaviors that are usually initiated during partial arousals from slow-wave sleep".[3] Sleepwalking typically starts during the school years. Sleep terrors are an early childhood parasomnia which can start as early as 18 months of age. This parasomnia also consists of partial arousals from slow-wave

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sleep “often accompanied by a cry or piercing scream, accompanied by autonomic nervous system and behavioral manifestations of intense fear…. Sometimes there is prolonged inconsolability associated with a sleep terror.”[3] The child’s resistance to consolation, the sudden end of the episode and its occurrence at the beginning of the night distinguish sleep terrors from nightmares, which are a REM sleep parasomnia that fully awaken the dreamer. The next morning the child usually has no recollection of the sleepwalking or sleep terror episode, whereas the memory of a nightmare is generally retained. For most children, sleepwalking and sleep terrors episodes are benign and do not affect the sleep quality or quantity. However, in a small proportion of cases, they are more disruptive and present a potential for injury.

Sleep talking (somniloquy) is defined as the condition of talking in one’s sleep, with varying degrees of comprehensibility.[3] It can occur during periods of slow-wave sleep or REM sleep. Rhythmic movement disorders are characterized by standard repetitive motor behaviours that occur particularly (but not exclusively) when falling asleep and include rocking the entire body from one side to another, rolling the head or banging it, generally against the pillow or the head of the bed.[3] Bedwetting (enuresis) is involuntary voiding (urination) during sleep. A diagnosis of bedwetting is made after the age of 5 when a child still wets his bed during sleep at least twice a week.[3] Bruxism is characterized by grinding or clenching the teeth during sleep.[3] It is generally associated with brief arousals and may cause jaw pain and tooth wear.

Recent Research Results

Parasomnias are extremely common in early childhood. It is a rare child who does not display any. However, few prospective studies have been done on a large sample of preschool children. A longitudinal infant-development study of approximately 2000 children born in 1997-1998 in the province of Quebec (Canada) studied the prevalence as well as the appearance and disappearance of early childhood parasomnias. The study concluded that for the period from 2½ to 6 years of age, parasomnia prevalence was distributed as follows: sleep talking = 84.4%; bruxism = 45.6%; sleep terrors = 39.8%; sleepwalking = 14.5%; rhythmic movement disorders = 9.2%.[4] The prevalence of enuresis (bedwetting), which is only diagnosed after the age of 5, was 21.4% at 5 years and 16.1% at 6 years. For both bedwetting and sleepwalking a boy-girl gender difference of two to one was observed.[4] On the other hand, girls experienced more nightmares.[5] There did not appear to be a boy-girl difference in the prevalence of sleep terrors, sleep talking, bruxism or rhythmic movement disorders.

Some parasomnias appear early in infancy, while others manifest later.[4,6-9] Sleep terrors and rhythmic movement disorders are recognized as early childhood parasomnias, and few new cases are reported after the age of 4 years. Unlike these conditions, however, the prevalence of bruxism and sleepwalking is fairly low in early childhood and increases gradually with age. Interestingly, children who experience sleep terrors in early childhood are more likely to sleepwalk later in childhood than children who did not have sleep terrors.[10] One-third of the children who had sleep terrors will develop sleepwalking later in childhood.[10]

Genetic factors are involved in some parasomnias, such as sleepwalking, sleep terrors, restless legs syndrome, bruxism, bedwetting and nightmares.[11-13] To illustrate, children with one parent with a history of sleepwalking had 3 times the odds of becoming a sleepwalker, and children with both parents with a history had 7 times the odds of becoming a sleepwalker compared with children with no parental history of sleepwalking.[10] The same is true for restless legs syndrome: the prevalence in children is twice as high when there is at least one parent affected with the syndrome (13.0%) compared to children without a parental history (6.9%).[14] Moreover, some parasomnias have been observed to coexist. Persistent sleepwalking often coexists with sleep terrors or sleep talking in the same individual.[4,8] A genetic predisposition to partial arousal in slow-wave sleep (dissociated state) explains this relationship. Genetics produce a predisposition that external factors will accentuate. Factors that can precipitate sleep terrors or sleepwalking are fatigue, sleep deprivation, noisy sleep environment,[15,16] fever,[17] certain medications affecting the central nervous system[18] and other sleep disorders such as sleep apnea syndrome.[19] Other parasomnias, such as nightmares and bruxism, can be triggered by occasional stress. Generally, studies show that sociodemographic factors and family adversity have little or no effect or influence on the appearance of parasomnias.[4,7,8,20,21]

To summarize, the experience of an early childhood parasomnia is common and normal and often has a genetic component. In most cases, it is a benign and temporary phenomenon that requires no intervention other than to reassure the child and its parents. Most parasomnias tend to disappear in adolescence.[8,22] However, there are some more persistent or more severe parasomnias that can come to disturb the sleep not only of the child but also the family, entail injury or a high risk of injury (in the case of rhythmic movement disorder, sleepwalking, or intense sleep terrors) or produce psychological distress (especially in the case of enuresis and frequent nightmares).[23,24]

The treatment of problematic parasomnias differs according to the specific type of parasomnia. In most cases, non-pharmacological methods should be explored before medication is tried.

- With sleepwalking and sleep terrors, for example, the usual therapeutic approach, especially with young children, is scheduled awakenings.[23] This method consists of keeping a record of the onset of episodes for about 2-3 weeks, to establish the usual time that the episodes occur. Then the child is pre-emptively awakened every night 15 to 30 minutes before the usual time of the episode, for a period of about one month; the child must be kept fully awake for about 5 minutes and then allowed to go back to sleep.[25] The episodes cease to recur after the scheduled awakenings stop.
- For severe bruxism an acrylic dental guard is usually recommended. A dental guard not only prevents tooth wear, it also really helps to reduce the number of episodes of muscular activity related to grinding of teeth.[26]
- Several interventions are available for bedwetting according to the specific cause of the problem: excessive production of urine, a bladder that is hyper-reactive or has a small capacity, or difficulty in awakening in response to sensations of a full bladder. For the latter, a bedwetting alarm with a sensor that is placed under the child's undergarment or pyjama is often used for children of six years and over. The device emits a sound or a vibration when the child starts to urinate and the child must get up and finish his micturition in the toilet. The child progressively learns to wake himself up when he feels his bladder is full. Pharmacological treatments, such as desmopressin and oxybutynin, are more often used to treat excessive urine production and hyper-reactive bladder respectively. These treatments can also be used in combination (for review, see reference[27]).
- An effective technique for controlling recurring or especially terrifying nightmares in young children consists of going back over or rehearsing the nightmare in the imagination or on paper to invent a different ending.[28]
- Young children who manifest a rhythmic movement disorder, such as head banging, head rolling or body rocking, must simply be watched to ensure they do not injure themselves by making changes in the sleep environment. For most children, this form of self-soothing does not entail risk of harm. However, it is possible through conditioning to replace this falling-asleep ritual with something more acceptable to the parents.

Some parasomnias can serve as indicators to the parents that the child is experiencing a problem or insecurity. Parasomnias that persist for years (such as sleepwalking, night terrors, bruxism) have been associated with separation anxiety or just plain anxiety.[4,8] It is important to note that the problem of frequent night wakings has been associated with separation anxiety.[4] Similarly, frequent nightmares are often a sign of anxiety or emotional distress, even sometimes of traumatism. Bedwetting has also been shown to be associated with delays in acquiring certain motor and language development milestones.[29] This association is probably the indicator of an underlying problem in central nervous system development and not a result of the parasomnia.

Key questions for further research

There are still very few studies on the potential consequences of early childhood parasomnias. Do these children have similar development difficulties in certain areas as children who chronically lack adequate sleep? It has been shown that children who regularly slept less than 9 hours a night had a lower cognitive performance, more hyperactive behaviour and a higher risk of overweight or obesity at school entry than children who regularly slept at least 10 hours a night.[2,30,31] Conditions that shorten sleep duration have a higher probability of affecting the child's development. Very little is known yet about the relationships between early childhood dyssomnias (frequent night wakings or sleep-onset difficulties) and parasomnias. Do children who sleep less well have more parasomnias?

There is also a glaring lack of controlled studies on the effectiveness of therapeutic interventions, pharmacological and non-pharmacological, for problematic parasomnias, especially for young children. Reports on effectiveness are often anecdotal.

Why are parasomnias more common in early childhood and why do they fade away later on? The physiopathology of most parasomnias has yet to be clarified. Better understanding of the neural mechanisms underlying these disorders might lead to better therapeutic approaches. From studies of twins, we do know that some parasomnias have a genetic basis. However, we have not yet been able to identify the specific genes that are in question in the appearance of various parasomnias.

Conclusions

It is now better understood that sound sleep is the basis of normal biological, social and emotional development; thus, it is vital that severe dyssomnias and parasomnias be treated as

early as possible. On the other hand, the handful of studies that have been conducted on early childhood parasomnias show that they have, for the most part, few serious repercussions. Most do not seem to have a major impact on sleep duration.[4] This is worth mentioning because we now known that short sleep durations do have significant repercussions on several areas of early childhood development. However, when the parasomnia proves more serious or very disturbing, or when it entails risk of injury, intervention is desirable.

Implications for policies and services

To meet an ever more pressing need for the treatment of sleep disorders, intervention programs must be developed and offered at different levels and spread geographically so that they are easily accessible.

Parents need to receive detailed information on infant and child sleep, ideally in prenatal courses, to promote from the outset good sleep habits and age-appropriate sleep duration for the child, and to prepare them for the possibility of parasomnias.

Comprehensive training should be initiated for pediatricians on the characteristics of children's sleep (and its importance in development). As front-line healthcare providers, they need to be brought up to speed on behavioural as well as pharmacological approaches. They will then be in a better position to reassure the parents in cases where a parasomnia is not serious, or to offer treatment solutions (including referral to an appropriate specialist) where parasomnias are problematic or entail risk of injury.

Finally, given the prevalence of sleep disturbances and their effects, knowledge transfer should be extended to include government bodies and the general public. To this end, a bilingual Canadian public health campaign on sleep was launched in September 2019. The goal of this awareness campaign is to demystify sleep for the public, promote its importance, offer solutions to deal with sleep disorders and make healthy sleep a public health priority. The campaign website32 presents, in a simple and original way, scientifically valid knowledge. Finally, a group of specialists in early childhood sleep medicine should be set up to formulate public health policies based on empirical data.

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