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Editorial

Sleep, More Than Just a Good Habit in Children and Adolescents

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Editorial

Sleep has been part of human life since the beginning of evolutionary time. Nevertheless, sleep patterns have changed over the centuries according to the needs, the environmental factors and the social life of each new generation. Between 70,000- 40,000 BC Homo sapiens adopted the monophasic sleep pattern that concentrated sleep at night. Since then, remedies and questions about sleep have accompanied human evolution. Although ancient civilizations became aware of the benefits of an adequate sleep, the knowledge about this physiological function in humans has been limited until recently. Indeed, sleep was considered over the centuries an inactive stage of the brain caused by a lack of blood flow. In 1180 the philosopher-physician Moses Maimonides stated that sleep duration of eight hours was adequate for adults. But specific recommendations of sleep for children and adolescents, and consequences of inadequate sleep came up some centuries later. In 1921 the California State Journal of Medicine published this short manuscript by Mead Johnson Company: "No child nutrition worker, says the U. S. Public Health Service, can hope to get satisfactory results without insisting on enough sleep for her charges. Besides damaging the nervous system, late hours cause 'sleep hunger' and make children nervous and fidgety. The Service commends the following precepts just issued by the London County Council: School children aged four years need twelve hours' sleep a day; aged five to seven, eleven to twelve hours; eight to eleven, ten to eleven hours; and twelve to fourteen, nine to ten hours. Children grow mainly while sleeping or resting; do you want yours to grow up stunted? Tired children learn badly and often drift to the bottom of the class; do you want yours to grow up stupid? When children go to bed late their sleep is often disturbed by dreams and they do not get complete rest; do you want yours to sleep badly and become nervous? Sufficient sleep draws a child onward and upward in school and in home life; insufficient sleep drags it backward and downward. Which way do you want your child to go? Tiresome children are often only tired children; test the truth of this" [1]. Nearly one century later sleep societies continue trying to convince pediatric health providers and families about the benefits of a good sleep during childhood [2,3]. Nevertheless, the 24-h lifestyle and new technologies do not make things easy for sleep physicians.

Compared with other mammals, sexual and neurological maturity takes a long time in Homo sapiens. Indeed, the brain is not considered fully developed until at least age 25. Moreover, it is known that the brain does not develop normally in the absence of critical genetic signaling, or in the absence of essential environmental input. Joan Stiles in a recent manuscript states that the key to understanding the origins and emergence of both the brain and behavior lies in understanding how inherited and environmental factors are engaged in the dynamic and interactive processes that define and guide development of the neurobehavioral system [4].

Sleep is the primary activity of the brain during early development. From the newborn period until three years of age, children spend more than 50% of the day sleeping. Although sleep duration decreases throughout childhood, even in adolescents sleep represents about 40% of daytime [3]. It is not surprising that disrupted or inadequate sleep affects every aspect of a child's life from physical to cognitive or psychological development. It is estimated that around 70% of children experience sleep-related problems more than once a week and approximately 25% of children report some type of sleep problems from insufficient sleep to obstructive sleep apnea [5]. Chronic sleep problems act as stress factors that alter brain development. Sleep architecture (latencies and percentages of sleep stages, and sleep duration) changes throughout childhood. REM sleep, involved in memory and complex learning tasks, is predominant in newborns (50% of sleep) and decreases from birth through early childhood. While slow wave sleep, involved in restoring the body, has a peak in early childhood it then drops off after puberty (40% to 60% decline). Nevertheless, when chronic sleep problems occur, sleep architecture, as well as main functions of sleep may be affected. Independently of the sleep problem involved, sleep disorders have been associated with significant long-term morbidity including cardiovascular and neurocognitive dysfunction likely due to oxidative stress and increased inflammatory process activity [6].

In the last decades, the concern about pediatric sleep problems has risen due to the increased impact of sleep disturbance on children's daytime functioning. Although the reasons for this are multifactorial, the 24-h lifestyle is thought to play a significant role in sleep disturbance in children and adolescents. Later bedtimes, demanding after-school activities, television viewing, and use of electronic devices at bedtime are some of the factors that contribute to reduced sleep time [7]. This sleep curtailment could have a significant impact on daytime function in young and older children, for example, increased daytime sleepiness, fatigue, depressed mood, and cognitive impairment [8]. Therefore, it appears that secondary prevention could be a good strategy to reduce sleep-related comorbidity. Nevertheless, two studies have suggested that there are significant gaps both in basic knowledge about pediatric sleep and sleep disorders among pediatrics, and in the translation of the knowledge into the clinical practice [9,10]. Both groups concluded that additional efforts regarding pediatric sleep medicine are needed to improve education of public and health care providers in order to better impact pediatric sleep diagnosis and treatment practices.

In conclusion, sleep problems are common in children and adolescents. According to the accumulating evidence about the association between sleep problems and brain development, sleep should be considered something other than a bad habit to address, a key factor for promoting healthy neurodevelopment during childhood that should be screened by all the pediatric health care providers. Additional efforts are needed to increase general knowledge of sleep by families, pediatricians, and health care providers in order to improve diagnosis of sleep problems.

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