[Archived] Sleeping Behaviour and Its Impact on Psychosocial Child Development

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Introduction

Sleep in infants and children has been described as a quiescent, passive time, often noted to be desirable for parents because it gives them moments of peace. Getting a child to sleep, coping with waking periods during the night, and their own sleep loss are stressful for many parents. These problems may be temporary or lasting but in either case, they play a role in family dynamics and the child's psychosocial and neurobehavioural development.

Subject

Newborn infants spend about 16 of the 24 hours of the day asleep; then their sleep time diminishes with age until by the age of five, they are sleeping 10 to 12 hours daily.

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A brief overview of the sleep process can provide a context for considering parents' challenges with respect to sleep problems as they may appear and resolve, or not resolve, over age. A child’s sleep emerges from extremely complex physiological interactions involving many areas of the brain; cardiovascular function; respiratory function; temperature regulation; cerebral metabolism and blood flow; renal, alimentary and endocrine function; as well as the immune system. These processes control and regulate the onset, maintenance and duration of sleep periods – the observable behavioural aspects of sleep that parents cope with and respond to.

Not generally seen by parents are constituents of the general state of sleep, REM sleep and non-REM sleep. During REM sleep, respiration is relatively rapid and irregular, with alternating periods of no activity and squirming, stretching, grunting or brief cries, and “rapid eye movements” (REMs) seen as fluttering of the eyelids. Quiet sleep, by contrast, is a period of slower, very regular breathing, with little movement and no REMs. This is the state when the baby is so quiet a parent may look closely and touch the baby gently to elicit a slight movement as assurance that the baby is actually breathing. Over age, with the decrease in total amount of sleep, there is a reversal in the relative amounts of the two sleep states, with Active Sleep decreasing and a greater percent of sleep time spent in Quiet Sleep.

Problems

As a function of the ongoing interaction between parent and child, a child's developing sleep patterns and associated psychosocial behaviours reflect the ongoing mutual modification of behaviour in the relationship. A sleepless child can cause significant stress within the family; if the situation is not resolved, it can have a detrimental effect on the child's physical and emotional well-being.[1]

How a child will sleep is affected by sounds and temperature while asleep, and also modified by events of the previous day, especially stressful experiences, such as a visit to the well-baby clinic or a skinned knee from a fall. Thus, social and emotional events during the day can be organizing or disorganizing, with consequences for the child's developmental course.

Parents can miss subtle clues to sleep disorders. For example, snoring, an indicator of obstructive sleep apnea (OSA), is associated with oxygen deprivation of the brain. Some children being treated for attention deficit/hyperactivity disorder (ADHD) were found to be snorers with symptoms that were a result of OSA.[2]

Research Context

Developmental researchers, medical researchers and clinicians have focused on continuity of sleep problems over age, on the consequences of these difficulties for the child and the parent-child relationship, and on the nature of interventions that may prevent or provide therapeutic intervention for persisting problems.

Key Research Questions

The complexities of factors affecting and affected by sleep during development have been acknowledged and investigated over the years; however, a number of major issues have not been fully resolved, and research continues to seek understanding of sleep as a biobehavioural process.[3] Special focus has been on sleep-related breathing abnormalities such as snoring and obstructive sleep apnea (OSA);[4,5] and sleep fragmentation[6] — as well as the developmental sequellae of these disorders;[7] ultradian and circadian rhythms;[8-12] and even the occurrence of Sudden Infant Death Syndrome (SIDS) during sleep.

In the behavioural realm, determination of optimal timing and appropriate forms of intervention remains a broad field in need of serious interest. Further is the issue of parent-infant relationships and identifying sleep problems as they may have consequences for the child's psychosocial development.[13] Part of this challenge is determining cut-off points for the seriousness and potential for persistence of sleep problems: for example, whether many night-time arousals indicate brain immaturity that will resolve with age, whether it is a "relationship problem," or whether it is an expression of a sleep fragmentation disorder that calls for medical attention.

Research Results

A number of studies indicate convergence on these issues. Ungerer and collaborators report an association between social interactions and sleep in three-year-old children.[14] A relationship between diurnal sleep regularity and development of attention has been demonstrated.[15] Lester and collaborators addressed the importance of "goodness of fit" between infant behaviours and mothers' perceptions of their infants.[16] Benhamou[17] reviewed the literature indicating an association between sleep patterns in children and psychopathology of the mother. A number of studies indicate an association of early, even minor, sleep problems and more negative temperament ratings by mothers.[18-19] Further, developmental continuity of early sleep problems

has been found, as well as other behavioural sequellae.[20-21] Studies have also indicated that multiple sleep problems can “disappear” at later ages.[22] With respect to primary sleep problems, research has indicated that early education of parents can serve as a preventive intervention.[1]

A novel intervention for infants, the “Breathing Bear,” is designed to provide rhythmic stimulation that is optional for the infant; and the intervention has been found to facilitate development of sleep and breathing in premature infants and to reduce stress in mothers at infants’ later ages.[21,23-26]

Conclusions

Major research advances have been made in exposing the complex interrelationships between developmental neurobiology, sleep disorders and behaviour. Further investigation is needed to advance our understanding of the pathophysiology of sleep problems, as well as the psychosocial and other developmental consequences of sleep problems and sleep disorders.[27]

Assessment procedures have not been readily available for identifying sleep disorders other than those that can be seen directly by parents: delayed sleep onset, disrupted sleep and other conditions such as sleep walking and sleep terrors. More refined assessment of the social environment that may be perpetuating these disorders, as well as exposing the more behaviourally subtle but physiologically determined problems, is needed. Assessment at successive ages is not generally available, but is certainly needed. For this purpose, it is now possible to use non-intrusive procedures for such sleep assessment.[28-30]

There is a continuing need for development of creative interventions designed to promote parent-child interactions that facilitate healthy sleep habits in children whose sleep does not reflect serious dysfunction.[31]

Implications for Policy and Service Perspectives

Clearly, healthy sleep is essential to the growth of a child’s body and the development of the brain. Disorganization or disorder in these basic functions can place the child at risk for serious developmental consequences, emotionally, socially and cognitively.

While the literature provides evidence that behavioural and supportive methods of treatment are highly useful methods for treating primary sleep disorders in childhood,[32-34] it is apparent that further programs of study relating specific sleep patterns with sleep changes and their

consequences for developmental outcome are needed. Such research would make it possible to develop more reliable diagnostic assessment procedures as the basis for developing novel approaches to treatment of children with sleep problems and associated parent-infant difficulties. Interdisciplinary training is the key to such a program, to promote interaction among behavioural experts, pediatric neurologists, clinical neurophysiologists, medical sleep experts and family doctors. From this perspective, increased attention to child development and sleep and related disorders could be a meaningful addition to medical school training.

With more expertise available for providing preventive intervention, approaches to primary sleep disorders could be highly effective and serious sleep problems could be more readily recognized and addressed. The benefits would extend to parent-child relationships, potentially facilitating the cognitive, emotional and psychosocial development of children.

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