Addressing Sleep in Children with Anxiety Disorders

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KEYWORDS

• Sleep • Anxiety • Children • Sleep problems • Anxiety disorders • Risk factors • Treatment

KEY POINTS

- The prevalence of sleep problems is more than 90% in some childhood anxiety disorders; however, most data are based on subjective reports, and the specific nature of such problems requires further elucidation.
- A bidirectional relationship between sleep disturbances and anxiety is established, and emerging research is suggestive of numerous pathways and mechanisms through which these problems are interrelated.
- Several theoretically modifiable risk mechanisms, including emotional processing, parenting behaviors, and cognitive factors, hold promise as viable treatment targets.
- Randomized controlled treatment trials for anxious youth have thus far not explored sleep as a potential mediator or outcome of interest. Given the concern that poor sleep may undermine treatment effectiveness by interfering with core treatment components, additional research is clearly needed.

INTRODUCTION

Recognition of the common occurrence of sleep problems in anxious children is not new. Almost a century ago, Denney's[1] description of "The Nervous Child" included acknowledgment of frequent sleep-wake disruption in this population: "*Tiring easily, these children are often so worked up at night by the events of the day that they obtain sleep with difficulty. In the morning they are not refreshed, and are apt to be irritable and peevish during the early hours.*" Decades later, the topic of excessive nighttime fears in children received considerable attention, with multiple studies documenting that symptoms of nighttime disturbances are frequently identified in children with phobias, separation anxiety disorder (SAD), and generalized anxiety disorder (GAD).[2–4] In more recent years, and in conjunction with the development of more reliable measures for evaluating the sleep behaviors of children, sleep-related problems have been reported in up to 90% of children with anxiety disorders.[5–10] Moreover, anxious children who report problems sleeping experience more severe and more impairing anxiety symptoms than do their "good sleeper" counterparts.[6,8]

These important advancements in knowledge notwithstanding, much remains to be learned about the connection between early clinical levels of anxiety and disturbances in the sleep-wake

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cycle. For example, high rates of sleep problems among anxious youth have not yet served to generate systematic research on how sleep might affect treatment, even in the face of experimental findings showing that restricted sleep patterns attenuate reductions in anxiety during treatment.[11–13] Furthermore, although the "sleep problems" of anxious youth have been examined in several investigations, this broad, catch-all term in fact encompasses a diverse range of possible nighttime disturbances ranging from problems initiating sleep, middle-of-the-night awakenings, resistance to or avoidance of getting into bed, and refusal to sleep independently, to shifts in circadian rhythm and parasomnias (eg, sleepwalking, night terrors, enuresis). Understanding of how distinct types of sleep difficulties relate to different forms of anxiety during early development may advance our understanding of mechanisms and dysfunctions of arousal regulation, and contribute to the search for modifiable risk factors.

Sleep disruption is a core feature of anxiety disorders, but the reciprocal nature of these problems must also be emphasized. A host of longitudinal studies highlight childhood sleep problems as an independent prognosticator for the later development of anxiety.[14–16] In one epidemiologic study, for example, close to one-half of school-aged children with persistent sleep problems developed an anxiety diagnosis by the age of 21 years.[15] These data concur with adult-based findings revealing bidirectional temporal relationships between insomnia and anxiety disorders.[17] These types of reciprocal associations are also consistent with results of experimental studies. Specifically, in diverse samples ranging from preschoolers to adults, even modest amounts of experimentally induced sleep restriction reliably produce decreases in positive affect and increases in anxiety/fear.[18–21] Precise mechanisms underlying these relationships are not yet known, but several promising areas of investigation are emerging.

This article provides an overview of the current state of research focused on the sleep of children with anxiety disorders, with an eye toward informing clinical research and prescriptive interventions. The authors begin with an overview of anxiety disorders in youth as described in the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition (DSM-5), followed by a review of what is known about the sleep patterns and problems of clinically anxious children. This article focuses closely on 2 specific disorders, in line with available empiric evidence: GAD and SAD. Building on findings from several related lines of research, a few modifiable factors that theoretically could lead to novel ways of addressing these commonly co-occurring problems in children are outlined. Lastly, a newly developed behavioral intervention for anxious children with sleep problems, Targeted Behavioral Therapy or TBT, is described.

OVERVIEW OF CHILDHOOD ANXIETY DISORDERS

Affecting between 8% and 27% of the child population, anxiety disorders are collectively the most prevalent psychiatric conditions in youth.[22] DSM-5[23] includes 7 individual anxiety diagnoses: SAD, GAD, social anxiety disorder, specific phobia, panic disorder, agoraphobia, and selective mutism. Of note, obsessive compulsive disorder (OCD) and posttraumatic stress disorder (PTSD), previously considered anxiety disorders in DSM-IV (text revised), have been reclassified within the newest version of the manual.

A core feature across all anxiety disorders is the presence of excessive fear,[23] which is commonly manifested in the form of heightened physiologic (sympathetic) arousal.[24] Behavioral avoidance and cognitive factors are also central features that cause significant distress. Unlike "normal" childhood fears, clinical levels of worry and anxiety are more severe, more pervasive, and chronic, and are associated with significant impairments in daily life including (but not limited to) increased peer-related problems,[25,26] academic difficulties,[25,27] motor and coordination problems,[28] and family dysfunction.[29] Because anxiety disorders often have a familial component, in terms of both hereditability and exposure to parental anxiety, the impact of a diagnosis of child anxiety on the family unit may be particularly heightened. The total direct and indirect cost of medical and mental health care for anxious children is 20 times greater than costs experienced by families with nonanxious children,[30] which may in turn contribute to increased levels of family stress.

Anxiety disorders also rarely occur in isolation,[22] and diagnostic criteria for more than 1 other anxiety or mental health disorder, such as depression, are often met. Moreover, these conditions tend to be chronic, with diagnostic retention rates ranging from 20% to 50% depending on a child's age at the time of the diagnosis and the specific anxiety disorder.[31] For example, childhood social anxiety disorder is frequently associated with continuation of symptoms into adolescence.[32] The presence of childhood anxiety not only increases the risk for anxiety and mood disorders[33,34] in adolescence and adulthood, but is also predictive of other mental health problems such as substance use disorder,[32] conduct disorder, and educational underachievement.[35]