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Behavioral sleep medicine
An emerging subspecialty in health psychology and sleep medicine

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Abstract

As the knowledge base in sleep disorders medicine has broadened, a subspecialty that we will refer to as "behavioral sleep medicine" area is emerging. This article will define this subspecialty area, provide some historical context for its emergence, review issues related to specialty training and clinical practice, and suggest needs for future research. The term "behavioral sleep medicine" was selected because it clearly denoted the two fields from which our subspecialty emerged (health psychology/behavioral medicine and sleep disorders medicine). It suggests much about our approach to training, clinical practice, and research, and it appropriately implies that the field is open to PhD sleep specialists, MD sleep specialists, and other health care providers with the relevant training. Formally, behavioral sleep medicine refers to the branch of clinical sleep medicine and health psychology that: (1) focuses on the identification of the psychological (e.g. cognitive and/or behavioral) factors that contribute to the development and/or maintenance of sleep disorders and (2) specializes in developing and providing empirically validated cognitive, behavioral, and/or other nonpharmacologic interventions for the entire spectrum of sleep disorders.

Keywords: Sleep disorders; Health psychology; Sleep medicine

A historical context

It can be argued that clinical polysomnography and early sleep medicine evolved out of a branch of psychological science known as psychophysiology. In the late 1950s, a major effort was underway to explore and define cognitive, emotional, and behavioral processes using electrophysiologic techniques. The promise of this approach resided in the objectivity and replicability of the measurement strategy as well as the potential tie to the biologically based exploration of human behavior via medicine and the fledgling discipline of neuroscience. Many of these psychophysiology laboratories naturally gravitated toward the electrophysiologic study of sleep as the equipment was already available and the interest in altered states was strong. Examples of prominent early sleep researchers that have their historical origins in psychophysiology include Allan Rechtshaffen (University of Chicago), Wilse Webb (University of Florida), Harold Williams, Ardie Lubin (Walter Reed Army Institute of Research), and Laverne Johnson (Naval Health Research Center, San Diego). A further testament to the concept that sleep medicine is an outgrowth of psychophysiology resides in the very name selected for the first scientific sleep society: the "Association for the Psychophysiological Study of Sleep."

Beginning in the 1970s, sleep disorder centers were established as specialty clinics, generally in departments of psychiatry and neurology. These programs evaluated patients with a variety of sleep-related complaints, with 23.9% of all patients receiving a diagnosis obstructive sleep apnea (OSA) syndrome in 1978–1980 [1]. This pattern has changed over the past 17 years, and the proportion of patients evaluated in sleep disorders centers now diagnosed with OSA has nearly tripled to 67.8% in 1998 [2]. This shift is due primarily to the increased referrals of patients with suspected sleep-disordered breathing. How this shift in referral patterns has come to be is a matter of debate. Some may argue that OSA constitutes the

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bulk of routine sleep medicine practice because it is the most prevalent and disabling of the intrinsic sleep disorders. Others may, more cynically, point out that OSA alone is fully reimbursable by third party payers. Regardless of "why," new sleep programs are now more often associated with internal medicine and pulmonology rather than neurology or psychiatry, and pulmonary physicians are entering the field at higher rates than any other specialty [3]. A positive outcome of the focus on sleep-disordered breathing has been that the field of medicine, in general, as well as the public, is much more aware of the importance of sleep disorders. An unfortunate consequence of this emphasis is that other aspects of sleep disorders have been neglected, both in terms of research support and in clinical training. Despite the neglect, there is still general agreement among sleep specialists that the field has benefited from the multidisciplinary nature of our field and it is acknowledged that sleep medicine and sleep research will be stronger if we continue to attract specialists from a wide range of areas. Thus, it is time to revisit our multidisciplinary heritage and to nurture the growth of subspecialty areas within field of sleep medicine. It is with this in mind that we provide the following information regarding how psychologists and behavioral sleep medicine specialists may contribute to the larger discipline of sleep medicine.

Behavioral sleep medicine — clinical practice

Psychologists specializing in sleep disorders provide a wide array of services to patients undergoing evaluation and treatment in the sleep disorders center setting. Psychological services in a sleep disorders center range from administering cognitive/neuropsychological testing, personality testing, and other psychiatric assessment procedures to the provision of cognitive and behavioral treatments for insomnia, circadian rhythm disorders, parasomnias, and pediatric sleep disorders. In addition, behavioral sleep medicine specialists may provide adjunctive treatment to standard medical interventions and assist with patient compliance.

Insomnia

Epidemiological studies have demonstrated that insomnia is the most common sleep complaint, and that it affects tens of millions of people annually [4,5]. Given the prevalence of this problem, the limitations of long-term pharmacological treatment of insomnia, and the clear evidence of the short- and long-term clinical efficacy of behavioral interventions, it is somewhat surprising that there has not been more demand and support for behavioral sleep medicine interventions for insomnia.

Specific behavioral treatments for primary insomnia include stimulus control therapy [6], sleep restriction therapy [7], various relaxation procedures (e.g. biofeedback, progressive muscle relaxation, and guided imagery techniques [8,9]), and cognitive therapy. Stimulus control and sleep restriction procedures are geared toward eliminating the behavioral contingencies that are thought to perpetuate or maintain chronic insomnia. Relaxation therapies are geared toward diminishing the "somatic hyperarousal" that is thought to be characteristic of, and etiologically related to, chronic insomnia. Cognitive therapy is aimed at eradicating irrational beliefs and fears about the consequences of poor sleep, both of which are thought to be related to the "cognitive hyperarousal" that is thought to be characteristic of, and etiologically related to, chronic insomnia. In clinical practice, these treatment strategies are generally delivered as part of a comprehensive treatment program [10,11] that is provided individually, or in a group format.

Over the last decade, there has been substantial progress in establishing empirical support for, and the standardization of, the cognitive–behavioral treatment of insomnia. In particular, a large number of clinical efficacy studies have been undertaken; these studies have twice been summarized meta-analytically [12,13] and a first-rate text book exists that lays out the fundamentals of a CBT program for insomnia [10]. In addition, there is now evidence that CBT produces treatment outcomes that are equivalent in the short term, and better in the long term, than pharmacological treatment [14].

The combination of these efforts has brought us to a pass where we have well-defined treatment interventions for insomnia that have been shown to produce significant and durable improvements. The efficacy of these treatments has been demonstrated mainly in patients with primary insomnia, although other diagnostic groups may benefit. For example, patients with periodic limb movement disorder and insomnia have been shown to improve with CBT [15]. Also, patients with insomnia secondary to psychiatric illness or chronic pain have been shown to improve with behavioral treatment [16,17]. Additional studies to demonstrate efficacy of these treatments in other populations are needed.

Despite these advances, many important issues related to insomnia remain to be explored. What are the mechanisms underlying (or predisposing to) insomnia? Is insomnia a risk factor for the onset of psychiatric illness? How is successful treatment related to daytime function? Does treatment result in better quality of life, enhanced work productivity, and/or decreased health care cost? Progress is being made in these areas; recent studies have addressed mechanisms for insomnia [18,19], quality of life [20], medical morbidity [21,22], psychiatric morbidity [23], and health care cost [24]. However, greater advancement in these areas is needed to achieve the level of clarity that dictates clinical practice guidelines and establishes a consensus in the field.

Pediatric sleep disorders

Although treatments for insomnia have been the most extensively researched, other sleep disorders have also