

Assessing and Managing Sleep Disturbance in Patients with Chronic Pain



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KEYWORDS

- Chronic pain • Insomnia • Cognitive behavior therapy • Sleep-disordered breathing
- Pharmacotherapy

KEY POINTS

- Sleep disturbance is common in patients with chronic pain (CP).
- Sleep and pain are bidirectional; pain can interfere with sleep and sleep disturbance can exacerbate pain.
- The presence of sleep-disordered breathing, including obstructive sleep apnea and central sleep apnea, increases the risk of significant harm associated with the use of opioids and other centrally sedating medications.
- Cognitive behavior therapy (CBT) has the potential to improve both pain and sleep quality.
- There are several pharmacologic agents used to improve sleep disturbance in the CP population.

INTRODUCTION

Patients with CP often present to clinicians with numerous medical and psychological comorbidities, including mood and anxiety disorders, secondary medical problems related to inactivity and weight gain, and sleep disturbance. Insomnia can be generally defined as the inability to acquire adequate sleep to feel rested in the morning. Insomnia can be due to difficulties initiating or maintaining sleep or both. Chronic insomnia (occurring at least 3 times per week for at least

3 months) usually leads to daytime consequences, such as fatigue, reduced mental acuity, and so forth.

It has been estimated that the prevalence of sleep disturbance in patients with CP ranges between 50% and 80%.^{1–5} For example, Tang and colleagues¹ evaluated 70 patients with chronic back pain and compared them to 70 gender-matched and age-matched pain-free control patients, measuring sleep disturbance, pain, and a variety of psychological variables, including health

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status anxiety and depression. Results indicated that 53% of the patients with CP demonstrated evidence of clinical insomnia, with only 3% of the pain-free controls meeting criteria for insomnia. Furthermore, insomnia severity was positively associated with pain intensity, sensory pain ratings, affective pain ratings, general anxiety, general depression, and health anxiety. Affective pain ratings and health status anxiety were the best predictors of insomnia severity, which suggests that emotional distress is strongly linked to sleep disturbance. In another study by McCracken and colleagues,² 159 patients undergoing evaluation at a pain management center were assessed for history of sleep disturbance. In this cohort, 79% met criteria for significant insomnia based on self-reported symptoms.

There is persuasive evidence to support the hypothesis that the association between pain and sleep are bidirectional in nature.^{6,7} Sivertsen and colleagues⁷ collected data on CP and sleep and assessed experimental pain sensitivity via cold pressor testing in 10,412 adults in Norway. The results of this study revealed that insomnia frequency and severity, sleep-onset problems, and sleep efficiency were positively associated with pain sensitivity. Results also revealed that pain tolerance was reduced further in a synergistic fashion in subjects who reported both CP and insomnia. Clinical studies have proved that CP patients who reported sleep disturbance also note increased pain, more fatigue, poor mood, and generally higher levels of stress and disability.^{8,9} Experimental studies in healthy controls demonstrate that sleep deprivation or disruption leads to an increase in pain via an increase in the release of proinflammatory cytokines¹⁰ and a decrease in pain tolerance.¹¹ There has also been some speculation that pain, sleep, and depression share underlying neurobiological mechanisms.¹²

Despite the burgeoning evidence for the bidirectional association between pain and sleep and the deleterious effects of sleep deprivation on mood, pain sensitivity, and disability, addressing sleep disturbance in patients with CP is often overlooked in the clinical encounter due to the many competing concerns. The aim of this article is to provide clinicians with a basic understanding of assessing sleep disturbance and the use of non-pharmacologic and pharmacologic treatment strategies to improve sleep quality in patients with CP. This article does not include a discussion of other sleep disorders, in particular, sleep-disordered breathing (obstructive sleep apnea and central sleep apnea). It is critical to assess and monitor obstructive sleep apnea and central sleep apnea in patients considered for opioid therapy or who

are receiving opioids, because a significant percentage of patients on opioid therapy has sleep-disordered breathing. A recently published article by Cheatle and Webster¹³ specifically addresses the topic of sleep-disordered breathing and opioids in patients with CP.

ASSESSMENT OF SLEEP DISTURBANCE

Polysomnography (PSG) and self-report measures of sleep disturbance are standard approaches used in insomnia research. More recently, actigraphy has been used as an objective measure of sleep quality in sleep research. There are also several commercially available activity-sleep monitors that can be used clinically in assessing and monitoring sleep duration. Self-report questionnaires are more commonly used because they

1. Are inexpensive
2. Are the primary assessment tool used by clinicians treating insomnia
3. Standardize methods across research studies given the lack of a biomarker for insomnia and a universally accepted definition of insomnia¹⁴

The selection of a self-report measure depends on a clinician's goals. These goals may vary from screening and diagnosis to monitoring of previously identified sleep disturbances to evaluating the efficacy of treatment interventions. There are several sleep assessment scales that evaluate multiple dimensions of sleep, including sleep quality, sleep onset, postsleep evaluation, and generic outcomes. Of these, sleep quality and postsleep evaluation measures are the most commonly used. Examples of various sleep instruments are outlined in [Table 1](#).^{15–20} Moul and colleagues¹⁴ also provide a comprehensive review of the different sleep scales.

Each measure has varying degrees of utility depending on the nature of the sleep disturbance, the level of severity, and the specific characteristics of sleep a clinician seeks to assess. It is important to select a sleep instrument that fits the dynamics of the clinical setting, such as time constraints, patient burden, and staff resources.

NONPHARMACOLOGIC INTERVENTIONS

Cognitive Behavior Therapy for Pain and Sleep

Medications are commonly used to manage both pain and insomnia; however, the use of medications can result in adverse effects, dependence, and poor treatment efficacy. The use of nonpharmacologic approaches for pain and insomnia may mitigate these negative effects, but clinicians seldom implement psychological strategies.

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