

# Managing patients' pain while preserving sleep quality and efficiency

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## Implications for practice and research

- ▶ Individualised factors contributing to pain and its management in relation to sleep problems should be explored to provide tailored pain management treatments.
- ▶ Further research is needed to reveal interconnection patterns of pain medications and sleep problems.

## Context

Pain and insomnia are independent major life challenges for many and are interconnected, yet poorly understood. Additionally, the complexity of how pain medications influence sleep requires further investigation. Pain can be physically discomforting, emotionally disturbing and debilitating. Lack of sleep impedes normal functioning including physical and emotional well-being. Insomnia may enhance irritability and pain sensitisation. Conversely, pain may result in insomnia and other sleep problems, which may intensify pre-existing or trigger new pain.<sup>1</sup> Pharmacology is the frequent intervention used in pain management, which could alter neurochemistry risking interference with sleep.<sup>2</sup> However, there is a lack of synthesised knowledge describing an optimal pharmacological strategy to manage pain and sleep, which Mlíchová *et al*<sup>3</sup> strive to identify and present in their systematic review.

## Methods

Mlíchová *et al*<sup>3</sup> used Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines and included 37 studies (from years 2000 to 2020 in the PubMed database and Cochrane Library) in their review out of which 15 examined the effects of opioids, 6 analysed the effects of non-opioids and 16 investigated the effects of adjuvants.<sup>3</sup> The terms used in the inclusion criteria were chronic pain, pain, sleep disturbance, insomnia, analgesic, analgesic medication, antidepressants, antiepileptic drugs, non-steroidal drugs, opioids and quality of life. Two independent reviewers screened the data, extracted it, completed the risk of bias assessment and achieved conflict resolution by discussion.

## Findings

Sleep problems were frequently found to be associated with pain, which is often managed by the administration of opioids, non-opioid analgesics and adjuvants. The sleep effects of various pain medications were mixed and complex. For example, opioids such as morphine and methadone worsened sleep problems, yet hydromorphone and oxycodone managed pain along with improving the duration and quality of sleep. While buprenorphine

increased awake time, sleep onset latency and decreased non-Rapid Eye Moment(REM) sleep duration in a study involving 26 rats, yet it improved sleep quality in human trials. This trend continued with non-opioid pain medications and adjuvants. While acetaminophen had no effect on sleep disturbances, ibuprofen and aspirin decreased sleep efficiency such as a relatively increased number of disturbances during sleep sessions. Adjuvants like gabapentin helped improve sleep, yet bupropion had no effect on sleep continuity. Duloxetine caused latent REM sleep onset and decreased its duration and carbamazepine was found to improve sleep, yet caused drowsiness. Overall, sleep quality and efficiency can improve or worsen with pain medications, however, their impact patterns are complex and need further investigation.

## Commentary

Sleep and pain frequently coexist and their management is interconnected. Yet, we have a poor understanding of how pain medications impact sleep. Mlíchová *et al*<sup>3</sup> conducted a comprehensive literature review to map out the effects of pain medications on sleep quality and efficiency. They described three broad categories of pain medications: opioids, non-opioids analgesics and adjuvants such as antidepressants gabapentin and pregabalin.<sup>3</sup> Pain medications had varied impacts on sleep and its various elements such as sleep duration, balance in the ratio of the sleep stages and continuity of sleep versus disturbances. Although some pain medications showed a positive impact or no negative influence on some aspects of sleep in a few of the studies included in the review, analgesics generally had a negative impact on sleep quality and efficiency. This effect was relatively more prominent with opioids resulting in the worst sleep outcomes.

People with both insomnia and pain report diminished functional skills, reduced daily living activities, quality of life and experience anxiety and depression.<sup>4</sup> Clinicians should aim for managing patients' pain while preserving sleep quality and efficiency. Additionally, individualised factors contributing to pain and its management in relation to sleep problems should be explored to provide tailored pain management treatments. Incorporating non-pharmacological measures to manage pain and preserve sleep quality and efficiency should be investigated prior to or in conjunction with pharmacological interventions. Personalised patient education about analgesics and sleep hygiene may help patients to make an informed choice about analgesics. Further research is needed to reveal interconnection patterns of pain medications and sleep problems in large populations.

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