Chronic Medical Conditions and Sleep in the Older Adult

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KEYWORDS

• Sleep disturbance • Sleep apnea • Chronic disease • Medical condition • Falls • Pain • Cancer • Heart failure

KEY POINTS

- The older population with chronic medical conditions and sleep disturbances is clinically heterogeneous and complex, making the management of sleep disturbances challenging.
- Pain and medications to treat pain can disturb sleep. Sleep disturbances may adversely affect the course of chronic painful diseases in adults of advanced age.
- Cancer-related pain, fears, anxiety and depression, and cancer therapy are correlated with sleep complaints in older patients with cancer. Sleep disturbance may negatively affect cancer.
- Falls are prevalent in the older population with insomnia and those with sleep apnea; sedative hypnotics increase the risk of falls. Treating sleep disorders may help prevent falls.
- Chronic heart failure may contribute to sleep apnea and sleep apnea may impair cardiac function chronically.

INTRODUCTION

Demographic changes in the United States, Europe, and Asia are leading to an aging population with disability and chronic medical conditions. For example, 3 of 4 Americans aged 65 and over have at least 2 concurrent chronic conditions.[1] Chronic condition is a general term that includes chronic illnesses and impairments that last a year or more and require ongoing medical attention and/or limit activities of daily living.[2] A wide range of chronic medical conditions can have an impact on the structure and distribution of sleep in the older adult. However, in some cases sleep disturbance and its treatment may also trigger or worsen medical conditions. Sleep disturbance has been reported in as many as 40% to 50% of older Americans aged 65 years and over.[3] Sleep problems associated with other chronic medical conditions may have strong adverse effects on health status, function, and quality of life; and may require complex health care management, decision making, and/or coordination. Overall, the older population with chronic medical conditions and sleep disturbance is characterized by tremendous clinical heterogeneity and complexity (ie, number, severity, and type of medical conditions, and their treatments). Thus, the management of sleep disturbance in late life is challenging. This article reviews frequently encountered medical conditions in everyday practice and examines the consequences of these

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conditions on sleep in the older adult, and reviews the possible impact of sleep disturbance on these common medical conditions. Finally, strategies to improve sleep disturbance in older patients with comorbid medical conditions are formulated according to available data and our clinical experiences. These frequently encountered medical conditions include, but are not limited to, pain, falls, cancer, and congestive heart failure (CHF).

CHRONIC MEDICAL CONDITIONS AND SLEEP INTERACTIONS

Pain

Clinical aspects and dual relationship between pain and sleep disturbance

Pain is probably the most frequent and disabling symptom in medicine. It is an unpleasant sensory and emotional experience, and has close connections with consciousness or awareness as well as sleep.[4,5] Most cross-sectional epidemiologic studies have shown that the overall prevalence of pain increases with advancing age. In late life, pain is a very common problem, affecting more than 50% of older persons living in the community, and more than 80% of nursing home residents.[6,7] In the older population, pain is commonly a symptom of 1 or more existing health conditions. Cross-sectional research in clinical samples, as well as experimental studies in healthy adults, suggest that the relationship between pain and sleep are robust and bidirectionally connected under the influence of cognitive and neurobiological changes.[8–10]

The impact of pain on sleep and sleep disturbance is widely studied. Almost any painful illness, both in middle-aged[11–13] and older adults,[14] has been associated with sleep disturbance. Insomnia characterized by a difficulty in initiating or maintaining sleep is often associated with pain. Thus, among 50 community-dwelling older adults with insomnia (mean age, 69 years), Dzierzewski and colleagues[10] found that objectively measured nocturnal sleep and subjective report of morning pain show day-to-day associations and covary over time. In addition, a cross-sectional epidemiologic survey by means of questionnaires was conducted in 430 older Icelanders aged 65 and over.[15] The authors reported a significant relationship between difficulty initiating sleep, difficulty maintaining sleep and early morning awakening, and being awakened by pain. There was, however, no significant effect of pain on total sleep time. In another cross-sectional survey from Australia, insomnia was associated with frequent pain and poor physical health among 874 community-dwelling and 59 institutional residents aged 70 years and over.[16] Several cross-sectional studies have investigated the relationship between self-reported sleep disturbances and pain related to osteoarthritis (OA). OA is a common health condition affecting mainly older adults that causes chronic joint pain and sleep disturbance with deterioration of quality of life.[9] OA-related pain is the most common factor predicting sleep disturbance in up to 60% of patients.[17] Usually, this pain tends to be exacerbated in the evening and on awakening, and lasts 20 to 30 minutes. Among persons with knee OA, up to 31% report significant disturbances in initiating sleep and 81% have difficulties maintaining nighttime sleep.[8,18] In the same way, lumbar spine and hip OA with pain have also been reported to delay sleep onset and impair sleep maintenance. The findings of sleep fragmentation owing to an increased number of arousals[19] and periodic limb movements[20] may in part explain the fatigue and joint stiffness experienced upon awakening, which are frequently reported by these patients. One-year longitudinal relationships of sleep difficulties with pain, depression, and functional disability have been studied in 288 older adults (mean age at inclusion 67.9 years) with physician-diagnosed knee OA. Longitudinal analyses used baseline sleep disturbance to predict the 1-year change in pain, disability, and depression.[21] Cross-sectional analyses revealed a significant association of sleep disturbance with pain and depression, but not functional disability. The sleep–pain relationship was wholly explained by depressive symptoms; in contrast, depression was significantly and independently associated with both pain and sleep problems. Furthermore, sleep disturbance exacerbated effects of pain on depression, such that depressive symptoms were greatest among those with both significant sleep problems and higher than average pain. In 1-year longitudinal analyses, sleep problems predicted increases in depression and disability, but not pain.

Clinical investigations concerning the impact of sleep disturbance on pain perception and tolerance and painful illness are scarce. If patients with acute or chronic painful conditions often suffer from sleep disturbances, changes in sleep pattern could also influence pain tolerance.[22] Sleep is an important homeostatic feature and, when impaired, contributes to the development or worsening of painful conditions. According to experimental studies in both animals and humans, sleep deprivation produces hyperalgesic changes.[23] Furthermore, sleep rebound consecutive to experimental sleep deprivation induces an increase in the pain threshold (analgesic effect) in healthy volunteers and animals.[23] The relationship