

Sleep in the Aging Population

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KEYWORDS

• Aging • Insomnia • Sleep disorders • Multimorbidity • Polypharmacy • Geriatric syndromes

KEY POINTS

- Changes to sleep architecture with normal aging include decreases in total sleep time, sleep efficiency, slow wave sleep, and REM sleep, and an increase in wake after sleep onset.
- Although sleep disturbance is common with aging, it is not an inherent part of the aging process; medical, psychiatric, and psychosocial factors overshadow age as risk factors.
- Sleep disturbance in older adults is associated with increased morbidity and mortality.
- The evaluation and management of sleep disturbances in older adults is best approached as a multifactorial geriatric health condition, arising from impairments in multiple domains.

INTRODUCTION

Sleep is an important component for health and wellness across the lifespan. The number of people in the United States who are 65 years or older is steadily increasing, and is expected to double over the next 25 years to about 72 million. By 2030, roughly 1 in 5 people in this country will be over the age of 65.¹ Sleep complaints are common among older adults, and as this segment of the population grows, so too will the prevalence of sleep disturbances. However, sleep problems are not an inherent part of the aging process. There are changes to sleep architecture over the lifespan that are not, in themselves, pathologic, but can be viewed as making older adults more vulnerable to sleep disturbances.² It is the consequences of aging, in the form of medical and psychiatric comorbidity, medication and substance use, psychosocial factors, and primary sleep disorders that put older adults at risk for sleep

disturbance. The increasing prevalence of multimorbidity (ie, having at least 2 concurrent diseases in the same individual)³ among older adults means that sleep disorders might arise from multiple different domains. Thus, sleep disturbance in this age group should be considered a multifactorial geriatric health condition (previously referred to as a geriatric syndrome),⁴ requiring consideration of multiple risk factors and a comprehensive treatment approach.

NORMAL AGE-RELATED CHANGES TO SLEEP-WAKE PHYSIOLOGY

Physicians addressing sleep complaints in older adults are commonly asked about how much sleep is enough. The National Sleep Foundation recommends 7 to 8 hours of sleep for adults aged 65 and older.⁵ This recommendation is supported by evidence that older adults sleeping anywhere from 6 to 9 hours have better cognition, mental

Funding Sources: Dr B. Miner is supported by T32AG1934, the John A. Hartford Center of Excellence at Yale and the Yale Claude D. Pepper Older Americans Independence Center (P30AG021342).

Disclosure Statement: Drs B. Miner and M.H. Kryger have no commercial or financial conflicts of interest to disclose.

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Sleep Med Clin ■ (2016) ■-■

<http://dx.doi.org/10.1016/j.jsmc.2016.10.008>

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and physical health, and quality of life compared with older adults with shorter or longer sleep durations. Thus, the need for sleep is not reduced in older adults, but the ability to get the required sleep may be decreased owing to normal changes in sleep architecture through the lifespan.⁶

Age-related changes in sleep physiology have been well-documented using polysomnography (Table 1). Most age-dependent changes in sleep parameters occur by age 60 years,⁷ with the exception of sleep efficiency. Sleep efficiency (percentage of time spent asleep while in bed), in contrast, continues to show an age-dependent decrease beyond age 90 years. Older adults also have a decrease in total sleep time, with corresponding decreases in the percentage of time in slow wave sleep and REM sleep.⁷ Slow wave sleep and REM sleep are thought to promote metabolic and cognitive recovery, and to enhance learning and memory, respectively.² Older adults also have an increase in time awake after sleep onset.⁷ Although the number of arousals from sleep increases in healthy older adults, evidence suggests they do not have greater difficulty falling back to sleep.⁸ There is an increase in sleep latency (the time it takes to fall asleep) up to age 60, with no clear age effect beyond that point.⁷

Circadian rhythms also change over the lifespan. These rhythms are 24-hour intrinsic physiologic cycles that are involved in control of sleep-wake and many other physiologic processes (eg, blood pressure, bone remodeling, release of certain hormones).⁹ Aging is associated with a phase advance, resulting in an earlier onset of sleepiness in the evening and earlier morning awakening.¹⁰ Daytime wakefulness is affected by phase advance, with older adults being more alert in the morning and more somnolent in the evening. Although napping is common in older adults, results with regard to the benefit or harm of this practice are mixed. Some studies show beneficial and

potentially protective effects of napping in later life, whereas others show it to be a risk factor for morbidity and mortality.¹¹ There is some evidence to suggest that naps are protective for mortality if nighttime sleep duration is short, but are associated with increased mortality risk if nighttime sleep duration is longer than 9 hours.¹²

SLEEP COMPLAINTS IN OLDER ADULTS

Epidemiology

Major sleep complaints include insomnia and drowsiness. Symptoms of insomnia consist of difficulties with initiating or maintaining sleep (including early morning awakening).¹³ Drowsiness has to do with the propensity for sleep and is often established by napping behavior.¹⁴ Many large studies documenting the epidemiology of sleep complaints in older adults have shown that insomnia symptoms and drowsiness are common in this age group. The Established Populations for Epidemiologic Studies of the Elderly included 9282 community-dwelling adults aged 65 and older, and found that 43% of participants reported difficulty with sleep onset or maintenance, and 25% reported napping.¹⁵ The National Sleep Foundation's 2003 Sleep in America Poll confirmed the prevalence of these symptoms, stating that 46% of community-dwelling adults aged 65 to 74 reported insomnia symptoms, and 39% of people in this age group reported napping. These prevalence rates increased to 50% and 46%, respectively, in participants aged 75 to 84 years.¹⁶ It is estimated that 40% to 70% of older adults have chronic sleep problems, and up to 50% of cases are undiagnosed.⁶

The major sleep complaint depends on the cause of the sleep disturbance. Symptoms of insomnia are common in people using activating medications or substances, in those with comorbid medical or psychiatric illness, or in those with restless leg syndrome (RLS). Daytime drowsiness can result from sedating medications, chronic medical illness, or obstructive sleep apnea (OSA). With respect to OSA, whereas drowsiness and snoring are the most common complaints, older adults may also complain of choking or gasping on awakening, observed apneas, morning headache, nocturia, wandering, or confusion.^{17,18}

Consequences of Poor Sleep

Sleep complaints, whether related to insomnia symptoms or drowsiness, have important consequences in older adults. Beyond being distressing for the subject, these symptoms predict poor physical and mental health-related quality of life.¹⁹ In longitudinal studies, insomnia complaints

Table 1
Age-related changes in sleep architecture

	Decreased	Increased
Sleep parameter	<ul style="list-style-type: none"> • Total sleep time • Sleep efficiency • Slow wave sleep • Rapid eye movement sleep 	<ul style="list-style-type: none"> • Time awake after sleep onset • Number of arousals from sleep • Sleep latency

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