

# Sleepiness in the Elderly

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## KEYWORDS

• Excessive daytime sleepiness • Older adults • Elderly

## KEY POINTS

- Excessive daytime sleepiness is a pathologic condition in the elderly.
- Excessive daytime sleepiness is associated with sleep and mood disorders, soporific medications, various medical conditions, and cognitive decline.
- Older adults tend to underreport excessive daytime sleepiness.
- Assessment of sleepiness in older adults may require collateral information and multiple methods.
- Management of underlying causes is pertinent; direct interventions to address sleepiness may be necessary.

## INTRODUCTION

There was a time when sleep disorders were simply classified as “those that sleep too little” (insomnia); “those that sleep too much” (hypersomnia); “those that have body clock problems” (circadian sleep issues); and “the things that go bump in the night” (parasomnias). Ironically, any of the 4 above described groups can be associated with excessive daytime sleepiness (EDS). The pertinence is that patients do not present saying, for example, that “I think I have sleep apnea or narcolepsy.” It is therefore up to the clinician to try to discern what the most “culpable” reason is and to treat it. There is often clear evidence of a major sleep disorder such as narcolepsy, or of a well-recognizable behavioral pattern such as a restricted time spent in bed. However, hypersomnolence/excessive sleepiness can be multifactorial, and this is particularly the case in the elderly, making both the diagnosis and the management of EDS in the elderly a “chess challenge” at a higher level. The challenge being that there are often more moving parts in the causality (eg, polypharmacy or cooccurring medical conditions and specific sleep disorders, including

some that may be triggered by medications). The potential of finding a single or clear solution is less likely and may require investigation beyond the usual range of the armamentarium used in a standard sleep clinic assessment. The additional tests may include the evaluation of melatonin secretion, multiple sleep latency test (MSLT), maintenance of wakefulness test, as well as assessment of mood and cognition.

Finally, one has to appeal for modesty when it comes to treatment of excessive sleepiness in the elderly. As clinicians, we like to provide solutions. There is a narrow gap between being dismissive of problems in the elderly (“it is normal at this age”) and proceeding too vigorously with a series of repeatedly failing interventions. The balance is in recognizing that there are many things we possibly still do not know and that should humble us making interventions for which we have a reason, but not to perseverate with many trials of treatment that have no substantial basis. This article describes the still limited understanding of EDS in the elderly and discusses considerations for assessment and management.

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## NORMAL SLEEP IN OLDER ADULTS

Total sleep time, sleep continuity, and sleep architecture change with healthy aging. Total sleep time declines by an average 10 minutes per decade, more in women and less in men, representing a large effect size of aging on sleep duration.<sup>1</sup> Sleep continuity also decreases with aging, because of the increase of both wake after sleep onset (WASO) and sleep onset latency (SOL). Time spent awake during the night lengthens by 10 minutes in every 10 years of life and becomes noticeable from the third decade of age. Increase of SOL is more subtle and becomes noticeable only in older adulthood (greater than 80), when it is 10 minutes longer compared with the SOL of people in their 20s. The above changes in SOL and WASO contribute the decline of sleep efficiency, most prominently from the 40s by 3% per decade. With respect to the composition of sleep, proportions of stage 1 and stage 2 of sleep slowly and gradually increase between the ages of 20 and 70, whereas the percentage of slow wave sleep (SWS) and rapid eye movement (REM) sleep decreases with aging. Although the effect sizes are small for stage 1, stage 2, and moderate for REM sleep, there is a robust decline of SWS with aging.

Because SWS is a marker of the sleep homeostat, the question arises whether diminishing SWS is a sign of declining efficiency of the sleep homeostat to dispense sleep drive during the night or is it simply the result of less accumulation of sleep drive and decreased biological need for deep sleep in older age. If sleep pressure remains high but older adults are unable to produce enough deep sleep at night, they should feel sleepier during the day and/or nap more than younger and middle-aged adults do even if the circadian wake-promoting mechanisms are active. Conversely, if sleep need declines with age, the less efficient and more “shallow” sleep of older adults should be sufficient to maintain normal level of sleepiness, alertness, and cognitive functioning during the day.

Experiments applying extended wakefulness and total sleep deprivation paradigms have shown that older adults are more alert; less sleepy; able to stay awake better; and able to maintain attention and cognitive performance more effectively than younger adults can after sleep deprivation.<sup>2-5</sup> In addition, older adults have normal increase of daytime sleep propensity and normal SWS rebound and increase in slow-wave sleep activity in response to nighttime experimental SWS disruption, suggesting that the sleep homeostasis is intact in old age.<sup>2,6</sup> The circadian distribution of sleep propensity during the daytime hours is

similar in older to that in younger adults, providing further support to the observation that healthy older adults are not sleepier during the day than adults of younger age.<sup>7,8</sup>

Collectively, the above findings indicate that sleep in healthy older adults adequately maintains normal daytime sleep propensity and alertness despite the normal, age-related changes in sleep duration, continuity, and architecture. Indeed, epidemiologic studies have shown that the prevalence of EDS and hypersomnolence is similar or even lower in older than in younger and middle-aged adults, confirming that excessive sleepiness and hypersomnia are not normal states in healthy old adulthood.<sup>9-11</sup> Thus, when excessive daytime sleepiness and hypersomnolence are detected in older adults, these conditions should be viewed as warning signals for the presence of pathologic conditions; nonadaptive sleep-specific or daytime behavioral habits; or environmental factors that interfere with normal sleep and wake regulation, sleep quality, and maintenance of wakefulness during the day.

## SLEEP, MOOD, AND COGNITIVE CHANGES ASSOCIATED WITH EXCESSIVE DAYTIME SLEEPINESS IN OLDER ADULTS

Chronic medical conditions, including sleep, psychiatric, and neurologic conditions, as well as certain prescribed medications are associated with EDS in older adults (Fig. 1, Table 1).<sup>11-13</sup> EDS, increased frequency of napping, or unintentional dozing may be the first or most readily noticeable signal of the presence of an undiagnosed sleep disorder, depression, latent neurodegenerative disorder, or cognitive decline. It is important to note that EDS is not simply a benign risk factor, symptom, or consequence of other condition. EDS independently impairs functioning; interferes with activities of daily living; decreases exercise frequency; increases the risk for falls and cognitive decline; and increases mortality in the elderly.<sup>14-19</sup> Hence, it is crucial to recognize EDS, identify and eliminate the conditions that may contribute to it, or to address EDS directly, if the causes cannot be eliminated.

## SLEEP-RELATED FACTORS ASSOCIATED WITH EXCESSIVE DAYTIME SLEEPINESS IN OLDER ADULTS

### *Sleep-Related Breathing Disorders*

The most common sleep disorders associated with EDS in older adults are sleep-related breathing disorders (SRBD). The prevalence of SRBD increases with age and reaches an exceptionally

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