

Insomnia in the Older Adult



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KEYWORDS

- Sleep-onset latency • Sleep efficiency • Benzodiazepines • Sleep diary • Pharmacotherapy
- Cognitive-behavioral therapy for insomnia (CBTi) • Wake after sleep onset

KEY POINTS

- The incidence of insomnia increases with aging. Insomnia can include difficulty falling asleep at the start of the sleep period, waking up during the night and having difficulty falling back asleep, and waking up early and being unable to get back to sleep. Difficulty staying asleep and early morning insomnia are common in older adults with insomnia disorder.
- When diagnosing insomnia, health care providers need to collect a thorough health history and include questions about the older adult's sleep, medical, and psychiatric history.
- Cognitive-behavioral therapy for insomnia, which consists of stimulus control, sleep restriction, sleep hygiene, and cognitive therapy, is the recommended first-line therapy for treatment of insomnia in older adults.
- Because of the higher risk for adverse effects in older patients, medications should be used sparingly and, when possible, be discontinued.
- Cognitive-behavioral therapy for insomnia has been shown to be more efficacious than medications for the long-term management of insomnia in older adults.

INTRODUCTION

Prevalence and Diagnosis of Insomnia

Sleep changes with aging. Specifically, babies sleep between 10 and 14 hours per day, whereas the recommended sleep duration for older adults is between 7 and 8 hours daily.¹ Many older adults experience dissatisfaction with the quantity and quality of sleep even with an adequate opportunity to sleep; when this is accompanied by daytime impairment over a period of time, they may meet the criteria for insomnia disorder (**Table 1**).

Compared with younger adults, the prevalence of insomnia is higher in middle and older adults^{2,3} and increases with age. Up to 50% of older adults report insomnia symptoms; however, this does not mean that insomnia is a normal part of aging.⁴

Sleep onset or initial insomnia is manifested by difficulty falling asleep that occurs at the start of the sleep period.⁵⁻⁷ Sleep maintenance or middle insomnia involves multiple and prolonged awakenings during the night.⁵⁻⁷ Late insomnia or early morning awakenings is waking up early on mornings and being unable to return to sleep.⁵⁻⁷ Older adults

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Table 1
Diagnostic criteria for insomnia

Diagnostic Criteria for Chronic Insomnia (ICSD-3)^{4,4}

Criteria A–F must be met:

- A. Patients report, or patients' parent or caregiver observes, one or more of the following:
 1. Difficulty initiating sleep
 2. Difficulty maintaining sleep
 3. Waking up earlier than desired
 4. Resistance to going to bed on appropriate schedule
 5. Difficulty sleeping without parent or caregiver intervention
- B. Patients report, or the patients' parent or caregiver observes, one or more of the following related to the nighttime sleep difficulty:
 1. Fatigue/malaise
 2. Attention, concentration, or memory impairment
 3. Impaired social, family, occupational, or academic performance
 4. Mood disturbance/irritability
 5. Daytime sleepiness
 6. Behavioral problems (eg, hyperactivity, impulsivity, aggression)
 7. Reduced motivation/energy/initiative
 8. Proneness for errors/accidents
 9. Concerns about or dissatisfaction with sleep
- C. The reported sleep/wake complaints cannot be explained purely by inadequate opportunity (ie, enough time is allotted for sleep) or inadequate circumstances (ie, the environment is safe, dark, quiet, and comfortable) for sleep.
- D. The sleep disturbance and associated daytime symptoms occur at least 3 times per week.
- E. The sleep disturbance and associated daytime symptoms have been present for at least 3 mo.
- F. The sleep/wake difficulty is not explained more clearly by another sleep disorder.

Diagnostic Criteria for Chronic Insomnia (DSM-5)⁵

- A. There is a predominant complaint of dissatisfaction with sleep quantity or quality, associated with one (or more) of the following symptoms:
 1. Difficulty initiating sleep (In children, this may manifest as difficulty initiating sleep without caregiver intervention.)
 2. Difficulty maintaining sleep, characterized by frequent awakenings or problems returning to sleep after awakenings. (In children, this may manifest as difficulty returning to sleep without caregiver intervention.)
 3. Early morning awakening with inability to return to sleep
 - B. The sleep disturbance causes clinically significant distress or impairment in social, occupational, educational, academic, behavioral, or other important areas of functioning.
 - C. The sleep difficulty occurs at least 3 nights per week.
 - D. The sleep difficulty is present for at least 3 mo.
 - E. The sleep difficulty occurs despite adequate opportunity for sleep.
 - F. The insomnia is not better explained by and does not occur exclusively during the course of another sleep-wake disorder (eg, narcolepsy, a breathing-related sleep disorder, a circadian rhythm sleep-wake disorder, a parasomnia).
 - G. The insomnia is not attributable to the physiologic effects of a substance (eg, a drug of abuse, a medication).
 - H. Coexisting mental disorders and medical conditions do not adequately explain the predominant complaint of insomnia.
- Specify if
- *Episodic*: symptoms last at least 1 mo but <3 mo
 - *Persistent*: symptoms last 3 mo or longer
 - *Recurrent*: 2 (or more) episodes within the space of 1 y

Abbreviations: DSM-5, Diagnostic and Statistical Manual of Mental Disorders (Fifth Edition); ICSD-3, International Classification of Sleep Disorders, Third Edition.

tend to have more challenges with sleep maintenance compared with younger adults,^{3,4,8} which results in reductions in total sleep time and sleep efficiency.⁸ Insomnia can also be situational, persistent, or recurrent.⁵ Situational insomnia is usually acute insomnia that lasts a few days or weeks and is associated with changes in the sleep schedule or the sleep environment.^{5,8} Life events, such as retirement, hospitalizations, and new-onset illnesses, can precipitate situational insomnia.

Usually when the event that triggers the insomnia is resolved, so too does the insomnia. If the insomnia does not resolve, it evolves into chronic insomnia.⁵ Recurrent insomnia is episodic and often returns with the occurrence of stressful life events.⁵

Risk Factors of Insomnia

Multiple factors increase the risk for older adults developing insomnia. They include environmental,

behavioral, medical, and social factors⁸ (Table 2). For example, older adults may change their usual bedtime and wake time after they retire increasing their risk for developing insomnia. Also, older adults also tend to have more comorbid disorders and are using multiple medications, which further increases their risk for sleep disturbances.^{2,3}

EVALUATION OF INSOMNIA

Insomnia is diagnosed through a detailed clinical history taken from patients and their bed partner.⁹ In order to diagnose the specific type of insomnia, it is important for clinicians to ask about the history of insomnia, insomnia symptoms, sleep-wake routines and patterns, other sleep-related symptoms, daytime functioning and consequences, and previous treatments.^{9,10} Older adults should also be asked about whether they snore or have leg discomfort.¹¹ Clinicians need to also identify whether there are comorbid medical, substance, and/or psychiatric conditions impacting sleep.¹⁰ Suggested screening tests for psychiatric disorders that can be used include: the Patient Health Questionnaire-9,¹² the Geriatric Depression Scale,¹³ and the General Anxiety Disorder Questionnaire.¹⁴ It is also important to assess daytime activities, as older adults may be less active during the day and consequently spend more time napping or dozing.

Subjective measures that can be used to evaluate sleep include sleep patterns questionnaires, like the Pittsburgh Sleep Quality Index (PSQI) and the Insomnia Severity Index (ISI), and sleep diaries. The PSQI is a 19-item instrument that assesses sleep quality and disturbances over a 1-month interval.¹⁵ Scores can range between 0 and 21, with a score of 5 or more suggestive of poor sleep quality.¹⁵ The ISI is a 7-item questionnaire that assesses the nighttime symptoms and impact of insomnia over the previous month.¹⁶ Scores range from 0 to 28, with values greater than 14 suggestive of moderate to severe insomnia.¹⁶

Sleep diaries allow for the prospective tracking of an individual's sleep/wake patterns. They capture information like bedtime, time to fall asleep, number and duration of nightly awakenings, wake-up time, out-of-bed time, and times and duration of daytime naps or dozing.^{9,17} Sleep diaries may also include questions about sleep quality, and types and amounts of medications, caffeine, and alcohol consumed.⁹ Sleep diaries completed for approximately 2 weeks allows for the recognition of sleep patterns and variability.⁹ Older patients sometime have difficulties completing sleep diaries because of visual impairments. Large print can be used for the sleep diaries given to these older adults to enhance the ease of completion of the diaries.

Table 2 Risk factors for insomnia in older adults	
Environment	Excessive noise, hot or cold temperatures, light during the sleep period Moving to a new home or downsizing to a smaller space or a retirement community or related facility Institutionalization
Behavioral/social	Irregular sleep schedules, caffeine use later in the day, alcohol close to bedtime Caregiving, hospitalizations, new medical problems Retirement or lifestyle change Death of a family member or friend Inappropriate use of social drugs, for example, alcohol (Note that alcohol is frequently used to self-medicate for sleep problems. It helps with falling asleep; however, when the effect wears off, sleep becomes light and disrupted.) Napping
Demographics	Female sex
Medical	Medications: theophylline, thyroid hormone, anticholinergics, stimulants, oral decongestants, antidepressants, corticosteroids, antihypertensives, opioids, nonsteroidal antiinflammatory drugs Sleep disorders: sleep apnea, restless leg syndrome, periodic limb movement disorder, rapid eye movement disorder, age-related circadian rhythm change (phase advance) Psychiatric and cognitive conditions: depression, anxiety, mania, panic attacks, schizophrenia, substance abuse, dementia Other medical conditions: diabetes, fibromyalgia, hypertension, cardiovascular disease, stroke, chronic pain

Data from Refs.^{2,5,8,9,34}

Objective assessments of sleep, such as actigraphy and polysomnography, are not necessary for routine diagnosis and assessment of insomnia; but they may be helpful to rule out other comorbid sleep disorders, such as sleep-disordered breathing or circadian rhythm sleep-wake disorders.^{18–20}

TREATMENTS FOR INSOMNIA

The goal of insomnia treatment is the improvement of sleep quality and/or quantity, and reduction in insomnia-related daytime impairments.⁹ Patients should be involved in the development of the treatment plan and decisions about which treatment goals to pursue because buy-in from patients is critical for success.²¹ The choice of treatment depends on the severity and duration of the insomnia symptoms, coexisting disorders, willingness of patients to engage in behavioral therapies, and vulnerability of patients to the adverse effects of medications.⁹ It is important to emphasize to patients that it is normal to have occasional nights of poor sleep during and after the completion of treatment so that they will have realistic expectations about treatment and cope better during treatment.²¹

Sleep diaries and questionnaires can be used to evaluate how the treatment is progressing and to determine when there has been sufficient improvement to warrant discontinuation of treatment.⁹ After treatment is discontinued, it is important to conduct periodic follow-ups to identify potential recurrence and precipitating events due to changes in health or lifestyle.

Nonpharmacologic Treatment Options

Cognitive-behavioral therapy for insomnia (CBTi) is a multicomponent intervention involving cognitive and behavioral techniques like stimulus control therapy, sleep restriction therapy, relaxation training, cognitive restructuring, and sleep hygiene education.²² The goal of CBTi is to replace maladaptive thoughts and sleep habits and to reduce arousal associated with sleep.²² CBTi has produced both short-term and long-term improvement in sleep.²³ Although CBTi is effective for insomnia, many health care providers are neither aware of the existence of CBTi nor know how to refer patients for treatment.²⁴

- Stimulus control aims to strengthen the association between the bed/bedroom and sleep and to produce a consistent sleep-wake schedule. Instructions for stimulus control include minimize napping; go to bed only when sleepy; get out of bed if unable to sleep;

use the bed/bedroom only for sleep and sex; and wake up at the same time each day.²²

- Sleep restriction is used to increase the homeostatic drive for sleep in order to improve sleep quality. The time spent in bed is reduced to the actual sleep duration based on sleep diaries, which creates some mild sleep deprivation. The time in bed is then gradually increased until the individual achieves an optimal sleep duration.²² There is strong support for sleep restriction in older adults with insomnia.²⁵ Sleep compression is an alternative technique to sleep restriction whereby time in bed is gradually reduced until the older adult achieves an optimal sleep duration.²⁶
- Relaxation training is done to reduce tension and intrusive thoughts that interfere with the ability to sleep. The relaxation techniques used include deep-breathing exercises, progressive muscle relaxation, biofeedback, and guided imagery.²²
- Cognitive restructuring aims to reduce worry and change misconceptions associated with sleep and insomnia using Socratic questioning.²² Challenging inaccurate patterns of thinking can change how older adults perceive the effect of sleep on their lives.
- Sleep hygiene education provides some guidelines about factors that may help or interfere with sleep. They include not eating a heavy meal or drinking alcohol within 2 hours of bedtime; limiting caffeine intake after lunchtime; exercising regularly but not within 2 hours of bedtime; and keeping the bedroom quiet, dark, and at a cool, comfortable temperature.²²

Mindfulness-based stress reduction techniques aim to change reactions to stress by teaching purposeful awareness and acceptance of the present state²⁷ and includes techniques, such as breathing, body scan, walking meditations, and Hatha yoga.²⁸ These techniques have been effective in reducing insomnia in older adults.²⁸

Bright light therapy helps to strengthen circadian rhythms and establish a healthy sleep-wake cycle.^{29,30} The results have been mixed on its efficacy for the treatment of insomnia in older adults^{29,30} but in general may have a favorable effect when used with older adults.²⁹ Health care practitioners can recommend white light sources with a bluish tint that provides at least 1000 lux at the eye during daytime hours; at a time that is most convenient for patients; on mornings after awakening if the circadian timing of patients is unknown; or during the time interval patients tend to be more tired.²⁹

Acupuncture is a traditional Chinese technique in which specific points on the body are stimulated, usually by inserting thin needles through the skin.³¹ It has been shown to be effective in improving insomnia symptoms in older adults.³¹

Pharmacologic Treatment Options

Benzodiazepines, such as lorazepam, temazepam, and clonazepam, decrease sleep latency and nocturnal awakenings; they also reduce rapid eye movement (REM) sleep.³² In older adults, they increase the risk for memory impairment, falls, fractures, motor vehicle accidents, and avoidable emergency department visits and hospital admissions; therefore, their use should be avoided in older adults.^{33,34} Between 5.3% and 10.8% of adults aged 50 years and older use benzodiazepines.³⁵ Long-term use of benzodiazepines can promote psychological dependence, and there is an increased risk of addiction and abuse.³⁶ Tolerance can also develop over time, thus, requiring larger doses to sustain the efficacy.³⁶ It is necessary to educate older adults about the effects of benzodiazepine use and encourage discontinuation through tapering.^{33,37} Although there is no current standard for tapering benzodiazepines, some providers recommend establishing a longer tapering schedule over 4 to 5 months for older patients and tapering the dose by 25% every 2 weeks.^{33,37,38} While tapering, health care providers could provide CBTi.^{37,38}

Nonbenzodiazepine hypnotics reduce sleep latency.³² These medications, which include eszopiclone, zolpidem, and zaleplon, should be avoided in older adults without consideration of the duration of use (no more than 90 days) because they can cause confusion and they increase the risk of falls and fractures. These medications should be avoided in older adults with dementia and cognitive impairment.³⁴

Melatonin receptor agonists reduce sleep latency and increase sleep duration.^{1,39} An example is ramelteon. The potential adverse effects include mild gastrointestinal disturbances and nervous system effects, such as dizziness, headache, somnolence, and fatigue, with no evidence of significant rebound insomnia or withdrawal effects.³⁹

Many *antidepressants* have sedating effects and are sometimes used to treat insomnia, often at lower doses than used for depression. Antidepressants often have overall REM-suppressing effects and can decrease slow-wave sleep latency

and the duration of slow-wave sleep.³² In the absence of an underlying depressive disorder, antidepressants should also be avoided in older adults because they are highly anticholinergic, are sedating, increase the risk of falls, and cause orthostatic hypotension.³⁴

Antihistamines decrease sleep latency;³² however, these over-the-counter sleep medications, like diphenhydramine, produce rapid tolerance and are highly anticholinergic.³⁴ Anticholinergic effects include blurred vision, dizziness, difficulty urinating, dry mouth, and constipation. Anticholinergic medications can also increase the risk for cognitive impairment and decline; therefore, drugs with a high anticholinergic profile, such as antihistamines, should be avoided in older adults.³⁴

Melatonin and valerian root are classified as complementary and alternative medications. They are supplements and are not regulated by the Food and Drug Administration. The doses and the preparations available to consumers usually vary significantly. Melatonin is an endogenous hormone secreted by the pineal gland but is also used as an exogenous supplement.^{40,41} Melatonin decreases subjective sleep latency in some studies, although it may cause headaches and drowsiness.^{40,41} Valerian root has been shown to improve subjective sleep parameters, but the research is less consistent with objective sleep parameters. Rare side effects reported for valerian root include gastrointestinal upset, contact allergies, headache, and restless sleep.⁴⁰ Individuals using complementary and alternative medications should always inform their health care provider and consider the interactions between herbal remedies and prescription medications.⁴⁰

Pharmacologic treatments should only be used for the short-term management of insomnia. When pharmacotherapy is used, health care providers should consider the insomnia symptoms, whether other treatments are available, how patients responded to previous treatments, the side effect profile of the medication, and medication interactions.³⁶ Older adults have better response rates with lower dosages because decreased lean body mass, increased body fat, and reduction in plasma proteins may increase blood concentration of unbound drugs and the drug half-life.³⁶ Therefore, when prescribing medications for insomnia for older adults, start with the lowest dose and titrate upward.³⁶ Given the side effects and concerns about the long-term safety, it is recommended that pharmacotherapy for insomnia be avoided or be used only for short periods of time.^{34,42}

Comparative Effectiveness of Cognitive-Behavioral Therapy for Insomnia and Medications

A comparative effectiveness study of CBTi compared with sleep medications (zopiclone, zolpidem, temazepam, or triazolam) found that CBTi is as effective for the short-term treatment of insomnia as medications.^{24,43} The effects of CBTi may also be more long-lasting than medications.^{22,24} Although medications produce more rapid improvements compared with CBTi, over the long-term, CBTi has more durable and sustained effects on sleep quality and outcomes. The therapeutic effects of medications are usually not maintained after the medication is discontinued.²⁴

SUMMARY

Aging is associated with several changes in sleep continuity and architecture parameters. Many older adults experience difficulties with falling asleep, staying asleep, or waking up too early, which leads to daytime impairment and warrants a diagnosis of insomnia. Factors, such as the sleep environment, medications, and medical and psychiatric disorders, can increase the risk for insomnia. Therefore, health care providers should obtain a comprehensive health and sleep history from older adults in order to correctly diagnose insomnia and identify the potential correlates of the disorder. After diagnosing insomnia, the first-line treatment is CBTi. Medications, such as benzodiazepines and nonbenzodiazepines, should be avoided in older adults given their potential for significant adverse consequences and clinical guidelines recommending against their use.

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