Diagnosing and treating sleep disorders in the older adult

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Changes in the sleep–wake cycle and sleep architecture are very common in healthy aged individuals. Because normal healthy elderly individuals exhibit many physiologic and neurologic changes (eg, changes in sympathetic activity, cognitive function, gait, and stance), changes in sleep in the elderly can be considered part of normal aging. Although some of these changes may be viewed as maturational changes, others may be related to pathologic alterations. There is a strong association between sleep disorders and some pathologic conditions (eg, cardiovascular diseases, mood disorders, and cognitive deficits). Regardless of whether these changes are normal or pathologic, complaints about sleep difficulty should not be overlooked.

Sleep is composed of two states of sleep: non–rapid eye movement (NREM) and rapid eye movement (REM) sleep. NREM is further broken down into stages 1, 2, 3, and 4. Stage 1 sleep is the lightest level of sleep, and each subsequent stage gets progressively deeper with stages 3 and 4 (also called slow wave sleep or deep sleep) being the deepest. As one gets older, most of the night is spent in the lighter, stage 2 sleep because the amount of deep sleep is reduced. Nevertheless, these normative changes in sleep architecture on their own do not account for most of the sleep complaints of older adults.

Approximately 50% of older adults complain of sleep difficulty. Both subjective reports and objective measurements have suggested that when compared with younger adults, older adults take longer to fall asleep; have lower sleep efficiency (defined as the amount of sleep given the amount of time in bed); have more nighttime awakenings; wake up earlier than they would like in the morning; and require more daytime naps. Table 1 provides a list of subjective complaints and objective findings. In addition to the reduction in deep sleep, older adults are significantly sleepier throughout the day than younger adults, as confirmed by the multiple sleep latency test, an objective test of daytime sleepiness.
Table 1. Subjective reports and objective findings

<table>
<thead>
<tr>
<th>Subjective reports</th>
<th>Objective findings</th>
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</thead>
<tbody>
<tr>
<td>Spend too much time in bed</td>
<td>Decrease in deep sleep (stages 3 and 4)</td>
</tr>
<tr>
<td>Spend less time asleep</td>
<td>Decrease in REM sleep</td>
</tr>
<tr>
<td>Increased number of awakenings</td>
<td>Significant increase in awakenings</td>
</tr>
<tr>
<td>Increased time to fall asleep</td>
<td>Increased frequency of sleep disorders</td>
</tr>
<tr>
<td>Less satisfied with sleep</td>
<td>Reduced sleep efficiency</td>
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<tr>
<td>More tired during the day</td>
<td>Increased daytime sleepiness</td>
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<tr>
<td>Longer and more frequent naps</td>
<td>Increased number of naps</td>
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In part, these changes are a result of the older adult's decreased ability to sleep. This decreased ability has been associated with several factors, including changes in circadian rhythms, specific sleep disorders, other medical and psychiatric illnesses, and medication use. Several effective treatments for sleep difficulties associated with these factors are available. Given the high prevalence of sleep complaints and sleep disorders in older adults, there is a clear need for health care professionals to have an increased awareness of these sleep disturbances so that they are able to assess and treat these patients.

Epidemiology of insomnia in the elderly

Insomnia is a complaint of difficulty falling asleep, difficulty staying asleep, or nonrestorative sleep. The most common complaints in the elderly are of sleep maintenance insomnia (an inability to maintain sleep throughout the night) and early morning insomnia (awakening early in the morning with an inability to return to sleep).

Sleep complaints are common in all age groups, but particularly in older adults. In a study of over 9000 adults over age 65 years, 42% had difficulties in both falling asleep and staying asleep, whereas 28% just reported difficulties in falling asleep [11]. At follow-up 3 years later, the sleep complaints had resolved in 15% of those who initially had reported difficulties, but the incidence of new insomnia was 5% (ie, 5% of those without sleep difficulties at baseline had a new sleep complaint at follow-up) [31].

Chronic insomnia is also quite prevalent in older adults. In a telephone interview with 1000 randomly selected adults, the prevalence of chronic insomnia was age-dependent and highest in those aged 65 years and over (ie, 20%). The prevalence of occasional insomnia, however, did not change with age [31]. Most epidemiologic studies also indicate that insomnia in the elderly is more prevalent in women than in men [41].

As serious as insomnia can be, patients with these complaints often fail to report them to their physicians. In one epidemiologic study, despite the high prevalence of insomnia, 69% of people with sleep complaints never discussed this problem with their physician and only 5% made an appointment specifically to discuss their sleep problem [31]. A second study showed that only 37% of patients who reported having insomnia discussed their sleep difficulties with their primary care physician. Those patients who did discuss their sleep with their physician were more likely to have poor health, longer duration of insomnia, older age, and higher income [31]. These data suggest that physicians must ask their patients about sleep because the patient often does not initiate the discussion.

Consequences of insomnia in the elderly

Sleep disturbances in the older adult can have significant and serious consequences. Insomnia can lead to decreased quality of life, mood changes, decreased concentration, difficulty with memory, and
potentially may have a negative impact on morbidity and mortality.

Insomnia has been shown to result in decreased quality of life and more symptoms of depression and anxiety \(^1\). Insomnia also leads to decreases in performance, particularly slower reaction time, poorer balance, and deficits in attention and memory \(^2\). Diminished cognitive function is sometimes secondary to severe insomnia \(^3\), and may be particularly problematic in the elderly, because it may be mistaken for dementia.

Insomnia in the elderly is also associated with morbidity. Difficulties with sleep have been associated with poor health status \(^4\), and long-term persistence of insomnia associated with heart disease, diabetes, and respiratory disease diagnosed 3 years earlier \(^5\). Importantly, mortality may be associated with changes in cognition. For example, slower response times may increase the risk of falls (which are directly related to an increased risk of mortality). Similarly, changes in cognition may lead to early institutionalization and loss of ability to conduct normal daily activities \(^6\).

**Causes of insomnia**

Insomnia may be a primary illness, or it may be a consequence of other factors, such as medical and psychiatric illnesses, concomitant drug use, circadian rhythm changes, specific sleep disorders, behavioral factors, and psychosocial factors.

**3.1 Medical and psychiatric illnesses**

Complaints of difficulty sleeping may often be related to the many comorbid medical conditions common in the older adult. For example, 60% to 90% of patients with Parkinson's disease have sleep complaints. Some of the sleep problems arise from the disease process itself (ie, biochemical changes in the brain, dementia, bradykinesia and rigidity, tremor, and respiratory disturbances associated with airway and respiratory movements). Parkinson's disease, however, can also result in pain in the legs and back, difficulties getting in and out of bed, turning in bed, and vivid dreams and nightmares. Although drug treatment with low to moderate doses of dopamine agonists or antiparkinsonian agents may improve sleep by reducing rigidity and bradykinesia, they may also exacerbate or even create new sleep disturbances, such as those secondary to visual hallucinations associated with levodopa, nocturnal dystonia, and choreic movements.

Insomnia can also be caused by conditions causing pain (ie, arthritis and malignancies); neurologic disorders (ie, restless legs, stroke, or dementia); or organ system failure disorders (ie, pulmonary disease, congestive heart failure, asthma, and gastrointestinal disorders) \(^7\). Many older adults may have several of these conditions, all of which may be contributing to poor sleep.

Insomnia is also related to many psychiatric disorders, particularly mood disorders. Insomnia may be a diagnostic symptom for major depression and generalized anxiety disorder. Studies have shown that not only can insomnia be a symptom of depression, but that patients with unresolved insomnia are three times as likely to develop depression \(^8\).

**3.2 Medication use**

The same chronic conditions that cause complaints of sleep often require long-term drug therapy and that same drug therapy may also be contributing to poor sleep \(^9\). Alerting or stimulating drugs taken late in the day may cause difficulty falling asleep at night. In particular, central nervous system stimulants, β-blockers, bronchodilators, calcium channel blockers, corticosteroids, decongestants, stimulating antidepressants, stimulating antihistamines, and thyroid hormones are all known to
contribute to insomnia. The older adult is often required to take many of these medications and each may contribute to poor sleep. Sedating drugs taken early in the day may lead to excessive daytime sleepiness and daytime napping behavior, which may contribute to sleep-onset insomnia or may further exacerbate and maintain the existing insomnia. Adjusting the dose of the agent or the time of day that these medications are taken often improves sleep.

3.3 Changes in circadian rhythms

Circadian rhythms, from the Greek *circa* (about) and *dias* (day), are biologic 24-hour rhythms. Some examples of circadian rhythms include endogenous hormone secretions, core body temperature, and the sleep–wake cycle. These rhythms are controlled by the internal circadian pacemaker located in the suprachiasmatic nucleus in the anterior hypothalamus. Circadian rhythms are synchronized to the 24-hour day by external zeitgebers (time-givers or cues), such as light and activity, and by internal rhythms. For example, the sleep–wake cycle is synchronized both by internal rhythms (e.g., core body temperature and endogenous melatonin), and external rhythms (e.g., light-dark cycle, activity, meals).

As people age, the synchronization of the sleep–wake cycle by both internal and external rhythms is reduced. Older adults may no longer have the same response to external cues or are exposed to fewer environmental cues. In addition, the internal circadian rhythms become much weaker (i.e., less robust) resulting in less consistent periods of sleep–wake across the 24-hour day.

The sleep–wake cycle in the older adult also shifts, or advances. This condition is called advanced sleep phase syndrome (ASPS). ASPS is likely caused by changes in the core body temperature cycle, by decreased light exposure, and by environmental factors. There may also be a genetic component. Older adults with ASPS have rhythms that are out-of-sync with the environment. The most common complaints of patients with ASPS are being sleepy early in the evening and waking up too early in the morning. Although sleepy early in the evening, patients with ASPS do not usually go to bed early, but fall asleep in the early evening while relaxing or watching television. Several hours after these inadvertent naps, when they get into bed, they may experience greater difficulty falling asleep and subsequently complain of sleep-onset insomnia and early morning awakenings.

The prevalence of ASPS is about 1% in younger adults. Although the prevalence in older adults is known to increase, the exact amount has not been established. Often patients have learned to function with the changes in their circadian clocks, and do not present for treatment. Those who do seek treatment might present with complaints that are very similar to complaints of sleep-maintenance insomnia. An extensive sleep history needs to be obtained along with 1 to 2 weeks of sleep diaries. When possible, the patient should also wear a wrist actigraph from several days to 1 week, allowing for the objective examination of the sleep–wake cycle. If these assessments suggest early evening sleepiness or early evening bedtimes along with early morning awakenings, the clinician should suspect ASPS.

Elderly patients should be educated that ASPS is not a medical disorder and does not necessitate treatment because shifting of the circadian rhythm is a common and expected development in older age. The extent of the discomfort the ASPS has on the day-to-day life of the patient determines the extent of the treatment. For those patients who complain that their waking hours are no longer consistent with societal norms, causing them to be awake (or asleep) when those around them are not, there are two possible treatments: bright light therapy and administration of exogenous melatonin. Appropriate treatment of the circadian rhythms changes may reduce unnecessary use of sedative-hypnotic drugs.

Bright light is the most influential external zeitgeber on the sleep–wake circadian rhythm, yet older persons are exposed to significantly less bright light than their younger counterparts. Healthy older adults receive on average only 60 minutes of bright light a day (>2000 lux) whereas elderly
demented patients living in the community receive on average 30 minutes of bright light a day (>2000 lux) \[14\], and demented nursing home patients receive on average no light greater than 2000 lux and only 10 minutes of bright light a day greater than 1000 lux \[15\] \[16\].

Bright light exposure later in the day delays the sleep-wake circadian rhythm and helps the patient stay alert later into the evening and to sleep later into the morning hours. The brighter the light, the less time exposure needed (eg, 2 hours at 2500 lux versus 30 minutes at 10,000 lux). Because the best source of bright light is sunlight, patients should spend more time outdoors in the late afternoon. Because light asserts its effect on the sleep-wake cycle by the visual pathway, sunglasses should not be worn. Because normal room light is not generally bright enough to shift rhythms, and if the patient is unable to spend 2 hours a day outdoors, another option is a special commercially available “light box,” which provides a minimum of 2500 lux light exposure.

The second potential treatment for ASPS is the administration of exogenous melatonin. Melatonin is an endogenous hormone secreted by the pineal gland and its secretion is synchronized with the sleep-wake circadian rhythm because it is stimulated by darkness and inhibited by light. Melatonin secretion decreases gradually with age, which may be an important element in the development of disturbed sleep and shifted rhythms in this population. Exogenous melatonin has been shown to be effective in synchronizing the sleep-wake circadian rhythms in several populations suffering from inappropriately synchronized rhythms, such as blind persons and persons suffering from jet lag \[17\] \[18\]. Exogenous melatonin replacement therapy is being explored as a treatment for ASPS. Although there are no reports of any significant long-term side effects of melatonin, longitudinal studies are still needed and clinicians should be cautious when recommending melatonin for use on a regular basis, because in the United States melatonin is considered a nutritional supplement sold over the counter and is not regulated by the Food and Drug Administration.

**Specific sleep disorders causing insomnia**

Periodic limb movements in sleep is characterized by clusters of repeated leg jerks, which occur approximately every 20 to 40 seconds during the night, with each jerk causing a brief awakening. The number of limb movements followed by arousals per hour of sleep is called the periodic limb movement index and a clinical diagnosis of periodic limb movements in sleep is made when a patient has a periodic limb movement index greater than or equal to 5. The prevalence of periodic limb movements in sleep increases significantly with age. The prevalence of periodic limb movements in sleep in older adults is estimated at 45%, compared with 5% to 6% in younger adults \[19\] \[20\]. There is no gender difference.

Another disorder, often comorbid with periodic limb movements in sleep, is restless legs syndrome. Restless legs syndrome is characterized by dysesthesia in the legs, usually described by patients as “a creeping crawling sensation” or as “pins and needles,” which can only be relieved with movement \[21\]. These sensations often occur whenever the patient is in a restful, relaxed state. About 80% of patients with restless legs syndrome have periodic limb movements in sleep but only about 30% of patients with periodic limb movements in sleep have restless legs syndrome.

The most common complaints of patients with periodic limb movements in sleep are sleep initiation insomnia, sleep maintenance insomnia, and excessive daytime sleepiness. Patients may or may not be aware of leg kicks or jerks and some may complain simply of having difficulty falling asleep or staying asleep with no knowledge that they kick. Bed partners may be aware of the leg movements and may have moved into a separate bed. Those with both periodic limb movements in sleep and restless legs syndrome may also complain of discomforting sensations in their legs during the day. Clinicians should assess patients with symptoms of restless legs syndrome for anemia, uremia, and peripheral neuropathy before treatment.

Benzodiazepines (eg, clonazepam [Klonopin], temazepam [Restoril]) work by decreasing the number of
arousals; however, they do not significantly reduce the number of limb movements. Clinicians should also be aware of possible daytime sedation resulting from these longer-acting medications. In contrast, opiate agents (e.g., codeine [Tylenol #3 and #4], propoxyphene hydrochloride [Darvon]) inhibit most leg jerks but do not eliminate all arousals. These agents may also have a beneficial effect on the dysesthesia in restless legs syndrome. Carbidopa-levodopa (Sinemet), a dopaminergic agent, is effective in reducing both the limb jerks and the associated arousals. Shifting of limb movements from the nighttime to the daytime, however, may occur. The first-line treatment for periodic limb movements in sleep is pergolide (Permax), pramipexole (Mirapex), ropinirole (Requip), or gabapentin (Neurontin) because they reduce or eliminate both the limb jerks and the associated arousals.

**Treatment of primary insomnia in the elderly**

Managing insomnia in the older patient begins with matching the treatment to each patient's needs. The goal of treatment is not only to increase the amount and improve quality of nighttime sleep but also to improve daytime function. A sleep history (including information on any disruptive nighttime or daytime behaviors that may be affecting the patient's sleep) needs to be conducted together with a medical and psychiatric examination to evaluate the possible underlying causes of the insomnia. Medical conditions need to be treated successfully and dose and timing of medications may need to be adjusted.

Sleep hygiene rules should be taught and included as part of any treatment of insomnia. Sleep hygiene rules include instructions on how to maintain healthy sleep-wake routines. Poor sleep habits have been associated with a reduction in nighttime sleep quality and difficulties with alertness during the day. Sleep hygiene rules, specifically adapted for older adults, are as follows:

- Check effect of medication on sleep and wakefulness
- Avoid caffeine, alcohol, and cigarettes after lunch
- Limit liquids in the evening
- Keep a regular bedtime-wake time schedule
- Avoid naps or limit to one nap a day, no longer than 30 minutes
- Spend time outdoors (without sunglasses), particularly in the late afternoon or early evening
- Exercise

Behavioral therapy should also be a part of any treatment because it has been shown to be as effective as pharmacologic management in elderly patients with insomnia, particularly in terms of sleep improvements and patient satisfaction. Behavioral therapies that have been shown to be effective in the elderly include cognitive-behavioral therapy, stimulus-control therapy, and sleep-restriction therapy.

In the elderly, care is needed when prescribing longer-acting hypnotics, because they have several side effects that may be particularly pronounced in the elderly, including changes in sleep architecture, morning hangover leading to excessive daytime sleepiness, poor motor coordination, and visuospatial problems, which increase the risk for injury in this group. Sleep should be evaluated regularly, especially before renewing the prescription of the longer-acting hypnotic, because tolerance is common with this class of drugs and insomnia symptoms may return. Withdrawal of the longer-acting hypnotics should be very gradual to reduce the likelihood of rebound insomnia. The shorter-acting, nonbenzodiazepine hypnotics should be considered when hypnotic therapy is indicated, because they are absorbed quickly and have shorter half-lives and do not impair daily functioning.

**Other sleep disorders commonly found in the elderly**

6.1 **Sleep-disordered breathing**
Sleep-disordered breathing (SDB) is characterized by apneas (complete cessation of respiration) and hypopneas (partial respiration) during sleep. To be considered pathologic, each respiratory event must last a minimum of 10 seconds and occur repeatedly over the course of the night. The number of apneas and hypopneas per hour of sleep is called the apnea-hypopnea index or respiratory disturbance index. Clinical diagnosis of SDB is traditionally given when a patient has an apnea-hypopnea index or respiratory disturbance index greater than or equal to 5 to 10. The apneas and hypopneas result in repeated arousals from sleep and nighttime hypoxemia.

SDB is more common in older adults than younger adults. Although the prevalence of SDB is approximately 4% to 9% in middle-aged men and women (30 to 60 years), it is 45% to 62% in older adults (60 or more years) [26] [27]. At all age groups, SDB is more common in men than women and in patients with hypertension [28]. There is also some suggestion that SDB might be more severe in older African-Americans than in older whites [28] [29].

The two main symptoms of SDB are snoring and excessive daytime sleepiness. The snoring, which is often extremely loud and heard throughout the house, is caused by airway collapse. The snoring is so loud at times that bed partners are forced to move into a separate bedroom. Although not all snoring is associated with sleep apnea, snoring alone has been associated with increased risk of ischemic heart disease and stroke [30].

The excessive daytime sleepiness in SDB, often manifested as falling asleep at inappropriate times during the day, has been associated with both brief repeated nighttime awakenings, which frequently follow the apneic events, and with the intermittent nighttime hypoxemia. Patients with excessive daytime sleepiness secondary to SDB may fall asleep while reading, watching television, at the movies, in conversation with a group of friends, or while driving. Daytime sleepiness can be a very debilitating symptom, causing social and occupational difficulties; reduced vigilance; and cognitive deficits, including decreased concentration, slowed response time, and memory and attention difficulties. These symptoms may be particularly serious in older adults who already have mild or moderate cognitive impairment.

SDB is also a risk factor for hypertension and cardiac and pulmonary problems [31], which can then lead to increased risk of mortality [32] [33]. Although cause and effect have not yet been determined, treating the SDB reduces the severity of the hypertension and heart disease and may reduce the risk of shorter survival.

When SDB is suspected, the patient should be referred for an overnight polysomnography recording in a sleep disorders clinic. Recommendations for treatment should be based on the results of the objective recording.

The most common treatment for SDB is continuous positive airway pressure [34]. There are several newer types of devices that provide positive airway pressure, including bilevel positive airway pressure, and auto-positive airway pressure. Each of these devices provides air pressure through a hose connected to a nose-mask. The air pressure acts as a splint to maintain the opening of the upper airway, thereby preventing obstruction or collapse of the airway. The degree of air pressure is dependent on the patient's apnea severity (traditionally 5–20 cm H₂O) and is titrated individually for each patient at the sleep laboratory. Bilevel positive airway pressure allows for the variation in positive airway pressure during expiration and inspiration, reducing expiratory positive airway pressure compared with the inspiratory positive airway pressure. The auto-positive airway pressure allows for the overnight variability in airway pressure, which is adjusted automatically depending on the extent of airway obstruction. Auto-continuous positive airway pressure adjusts for periods of reduced obstruction by providing lower airway pressure while providing greater airway pressure with increases in obstruction.

Positive airway pressure devices can feel uncomfortable initially. Because these devices are

http://home.mdconsult.com/das/article/body/39865059-3/jorg=journal&source=MI&sp=14... 8/12/2004
recommended for nightly use and are a long-term management approach, clinicians should be aware of possible poor patient compliance [35]. Adding a humidifier can reduce the discomfort and possible nasal irritation that is sometimes associated with these devices.

Another treatment is the oral device, which can be used for the management of milder forms of obstructive sleep apnea and of snoring [36]. The tongue-retaining device and mandibular-advancement device are the two most common oral devices and are each anchored on the patient's teeth or gums. These oral appliances prevent obstruction at the hypopharyngeal level by moving the tongue or the mandibular forward. Depending on the type of device used, the effectiveness of this approach in decreasing respiratory disturbance index and increasing blood oxygen saturation levels varies from 40% to 81%. Clinicians need to be aware of possible side effects, which occur in an estimated 30% of subjects, including pain or discomfort in the temporomandibular joint or short-term occlusion abnormalities when removing the appliance. There are several different surgical approaches for the treatment of SDB, but these are generally not recommended in the elderly.

6.2 Rapid eye movement sleep behavior disorder

REM behavior disorder (RBD) is characterized by complex motoric behaviors occurring during REM sleep. It usually occurs during the second half of the night, when REM is more prevalent and most likely results from an intermittent lack of skeletal muscle atonia typically present during REM sleep. The patients may engage in complex motoric behaviors over the course of the night, such as vigorous and complex body movements and actions, walking, talking, and eating, and may be unable to recollect these actions in the morning. Movements may be violent and may harm the patient or the patient's bed partner. Patients' recollections suggest these behaviors may be the result of acting out their dreams, made possible by the lack of muscle atonia during REM sleep.

The etiology of RBD remains unknown. Some reports have suggested acute RBD is associated with the intake of tricyclic antidepressants, fluoxetine, and monoamine oxidase inhibitors, and with withdrawal from alcohol or sedatives. In contrast, chronic RBD has been associated with narcolepsy, and other idiopathic neurodegenerative disorders, such as dementia and Parkinson's disease.

Assessment of RBD should include a complete sleep history. When possible, bed partners should also be interviewed because patients may be unaware of their behaviors over the course of the night. Patients should have a simultaneous overnight polysomnogram and video recording of nighttime behavior, to confirm whether there is a link between REM sleep and the complex behaviors exhibited by the patients. When examining the polysomnogram, clinicians should be attentive to any marked intermittent elevations in muscle tone or limb movements in the electromyogram recording, specifically during REM sleep, when such features are normally rare.

The treatment for RBD is primarily clonazepam, which acts by inhibiting nighttime motoric movements without directly affecting muscle tone [171]. Clonazepam results in cessation (partial or complete) of abnormal body movements during the night in 90% of RBD patients. All symptoms return when the medication is stopped. Because of the drug's long half-life, patients may complain of excessive daytime sleepiness. If clonazepam is contraindicated, several alternative drugs have shown some positive effects (but not as effective) in RBD, including tricyclic antidepressants and dopaminergic agents.

Patients with RBD and their bed partners need to be educated on making changes in bedtime and sleeping routines and environment, to make the bedroom safer, decreasing the potential for injurious behavior during the night. For example, heavy curtains should be placed on bedroom windows, and doors and windows should be locked at night reducing the risk of the patient wandering out of the bedroom. If the patient is extremely active or violent during the night, heavy or breakable objects should be removed from the vicinity of the bed, and if needed patients may want to sleep on a mattress placed
on the floor to avoid falling off the bed.

The prevalence of RBD is unknown, but recent reports suggest elderly men may be at higher risk for developing RBD.

**Sleep problems in dementia**

One of the most common reasons for the institutionalization of an elderly person is frequent nocturnal awakenings with wandering and confusion, common symptoms in dementia [38]. The sleep of older adults living in nursing homes is extremely disturbed and severely fragmented. Often there is not a single hour in a 24-hour day that is spent fully awake or asleep [19].

Environmental factors in the nursing home also contribute to the reduction in the quality of sleep. Noise and light exposure occurs intermittently throughout the night and contributes to the sleep disruptions. Institutionalized patients spend a significant amount of the 24-hour day in bed, leading to rapid cycling between sleep and wake during this time. Changes in sleep hygiene and the sleep environment of nursing home patients may greatly improve the sleep quality in this population. Strategies for helping both patients and nursing home staff reduce the nighttime disturbances while promoting stronger and more defined sleep–wake cycles are listed next:

- Time in bed during the day should be limited
- Naps should be 1 hour or less, early in the afternoon
- Sleep–wake schedule should be regular and similar to prior home routine
- Meal times should be regular and meals should not be eaten in bed
- Caffeinated beverages and food should be avoided
- Nighttime noise should be decreased
- Patient room should be as dark as possible at night
- Patient environment should be brightly lit during the day
- Exercise appropriate for each patient should be encouraged
- Roommates should be matched on sleep–wake and agitated behavior
- Patients should be assessed for possible sleep disorders and specific treatment initiated
- Medications should be checked for sedating-alerting effects

Managing sleep problems in the demented elderly person remains challenging. Sedative hypnotics and antipsychotics are often used, but have many associated problems because they exacerbate insomnia and the symptoms of dementia, and because of their side effects. Nonpharmacologic treatments with bright-light therapy, restricting time in bed, increased physical activity, and improving the environment are frequently more optimal treatment approaches for use with the elderly population and are all now being explored by multiple research groups [40][41][42][43].

**Summary**

Increased awareness of normal and pathologic changes in sleep and sleep–wake schedule in the elderly may help health care professionals significantly improve mood, cognitive functioning, quality of life, and health in this growing portion of the population. Although the elderly show an increased prevalence of sleep disorders and changes in both sleep architecture and sleep–wake cycles, disrupted sleep is not an inevitable part of aging. Decreased ability to sleep because of changes in medical and psychiatric illnesses, medication use, circadian rhythms, and specific sleep disorders is very common. In addition, prevalence of certain sleep disorders increases significantly with age. Appropriate diagnosis and identification of the specific factors contributing to the sleep complaint, however, enable effective treatment of many of the symptoms associated with poor sleep.

**References**


Abstract


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