Awake at 4 a.m.: Treatment of Insomnia With Early Morning Awakenings Among Older Adults

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Insomnia is a common problem among older adults. In particular, older adults experience insomnia coupled with early morning awakenings due to an interaction between age-related changes in circadian rhythm timing coupled with behavior changes that contribute to sustained poor sleep. Cognitive–behavioral therapy for insomnia (CBT-I), at times coupled with circadian interventions (e.g., timed light exposure), are likely to be most successful in optimizing sleep quality. In delivering CBT-I to older adults, modifications are sometimes necessary to accommodate for medical problems, lifestyle, social factors, and patient preferences. Addition of circadian interventions can ameliorate the negative effects of inappropriately timed sleep as well. These treatment methods can be highly effective and benefits can be long-standing. A case example is used to illustrate these points. © 2010 Wiley Periodicals, Inc. J Clin Psychol: In Session 66:1161–1174, 2010.

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Insomnia is a complaint of poor sleep that, for some people, reaches the level of a disorder worthy of treatment. Insomnia can be an independent disorder (primary insomnia) or attributed to another condition (secondary insomnia; American Academy of Sleep Medicine, 2005; American Psychiatric Association, 1994). It is often difficult to ascertain whether insomnia is ''primary'' or ''secondary'' to another

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condition; however, research suggests that insomnia can be successfully treated in either case. This is particularly relevant among older adults because about 70% of older adults with insomnia have comorbid psychiatric disorders, medical conditions, take medications that impact sleep or use alcohol or drugs (National Institutes of Health, 2005).

Insomnia can take several forms. Sleep-onset insomnia (difficulty falling asleep) is most common in younger adults, whereas sleep maintenance insomnia (difficulty staying asleep) and early morning awakening are more common in older adults (Lichstein, Durrence, Riedel, Taylor, & Bush, 2004). Insomnia can be transient, lasting a few days or weeks; however, many older adults experience insomnia for years.

Studies estimate that the prevalence of insomnia in the general population ranges from 10 to 20%. Rates among older adults appear much higher, with some studies showing rates as high as 40%. Importantly, older adults with medical conditions and depression are particularly at risk for insomnia. Healthy older adults have rates of insomnia similar to the overall adult population.

One reason older adults may be at higher risk for insomnia is that sleep itself changes with advancing age. Sleep latency (time to fall asleep) increases, early morning awakenings are more common, deep sleep (stages 3–4) decreases, and sleep efficiency (time asleep while in bed) is reduced. Because older people spend less time in the deeper stages of sleep and more time in the lighter stages of sleep, they are more likely to awaken, for example, from noise in the environment.

Most primary sleep disorders (e.g., sleep apnea) increase in prevalence with advancing age. Individuals with untreated sleep apnea are sleepier during the day than people without sleep apnea or people with treated sleep apnea. Among older adults, nocturia or arthritis pain can disrupt nighttime sleep. In inpatient settings (e.g., hospitals, nursing homes), environmental factors such as noise and light also disrupt sleep. Insufficient nighttime sleep then contributes to daytime sleepiness and may lead to daytime napping. This can devolve into a vicious cycle in which napping then leads to even more nighttime insomnia.

In this article, we briefly describe insomnia and common sleep problems in older adults. We then discuss the two-process model of sleep regulation (Borbely, 1982) as it applies to sleep disturbances in advanced age. A case illustration of an older patient with insomnia and early morning awakenings follows a description of the gold-standard behavioral treatment for insomnia: cognitive behavioral therapy for insomnia (CBT-I). Clinical considerations on adapting CBT-I for older adults (and for the particular case discussed) are presented in the clinical practices and summary section. Practical recommendations are summarized in Table 1.

Sleep Regulation in Older Adults: The Two-Process Model

According to the two-process model of sleep regulation (Borbely, 1982), two biological mechanisms control sleep: the homeostatic drive for sleep (Process S), that is, the longer one is awake, the more likely one is to fall asleep; and the circadian drive for sleep (Process C), a separate process by which the propensity for sleep varies across the 24-hour day. The two-process model can be used to conceptualize sleep disturbance in older adults. First, as sleep architecture changes and the ability to sleep solidly at night decreases, the homeostatic drive for sleep (Process S) may increase during the daytime hours. If the person then naps, the homeostatic drive will be reduced at night.

Table 1
Adaptation and Special Considerations of Cognitive–Behavioral Therapy of Insomnia (CBT-I) for Older Adults

Component of treatment	Standard practice/Goal	Considerations for older adults
Sleep diaries and other forms/ materials used in therapy	Establish baseline sleep patterns, track progress in therapy, and remind patients of appropriate behavior changes and rationale for changes	• Use large font (≥13) to overcome common visual acuity decrements associated with aging • Write the prescribed recommendations directly on sleep diary or other forms to aid memory (e.g., bed time: 10:30 p.m., wake time: 6:00 a.m.)
Sleep education	Education regarding the two-process model of sleep regulation (using appropriate vocabulary), sleep stages, and insomnia	• Education about normal age-related changes in sleep • Education about comorbid conditions and their effect on sleep
Sleep restriction	Improve sleep continuity by limiting time spent in bed	• Use sleep efficiency of 85% to extend time in bed • Consider why patient spends excess time in bed • Discuss activities to do during the "extra" time spent out of bed • If bed is used for "rest" when pain symptoms are severe, identify other places where patient can "rest" without sleeping • Daytime napping should be eliminated if possible. A brief (30-minute nap with alarm clock) may be needed to maintain alertness until bedtime • When establishing starting point for time in bed, adjust upward if napping is a large proportion of total sleep
Stimulus control	Associate the bed/bedroom solely as a place for sleep or sexual activity Move all nonsleep activities out of the bedroom. Get out of bed at night if not asleep within about 15–30 minutes	• Remind patient to use assistive devices (cane, walker, glasses, etc.) if out of bed at night • Assess fall risk. If a major concern, have patient sit on edge of bed or in a chair near bed for safety • If patient needs help from caregiver to transfer in/out of bed, use stimulus control strategies during the day only, and allow patient to remain in bed at night
Sleep hygiene education	Address daytime habits and sleep environment that may be interfering with sleep	• Ensure physical activity and dietary recommendations are consistent with medical recommendations • Allow for liquids consumed with evening medications. Remind patient to urinate immediately before bedtime
Cognitive therapy	Challenge patient's dysfunctional beliefs and misconceptions about sleep and insomnia	• Age-related misperceptions about sleep. Some older adults may come to a point of "passive acceptance" that sleep is poor because of age • Encourage realistic expectations given patient's comorbid conditions and needed medications that may impact sleep • Patients with mild cognitive problems may find cognitive therapy difficult, but may still benefit from behavioral aspects of treatment

Table 1
Continued

Component of treatment	Standard practice/Goal	Considerations for older adults
Worry time	Excessive rumination and worry often occurs at night. This approach moves worry out of the sleep environment. It entails setting a time-limited period during the day dedicated exclusively to worry and solutions to the worries	• Be mindful of difference between "excessive worry" and normal age appropriate introspection and late-life considerations • Use content of worry time (e.g., loneliness) to inform treatment plan (e.g., increase social contacts)
Relaxation training	Reduce physiologic and cognitive arousal at bedtime. Techniques can include progressive muscular relaxation, transcendental meditation, yoga, biofeedback, and guided imagery	• Consider patient preferences in choosing strategy • Query activities patient may already be doing for relaxation (e.g., sitting in the garden looking at flowers) to inform choice of strategies (e.g., guided imagery)

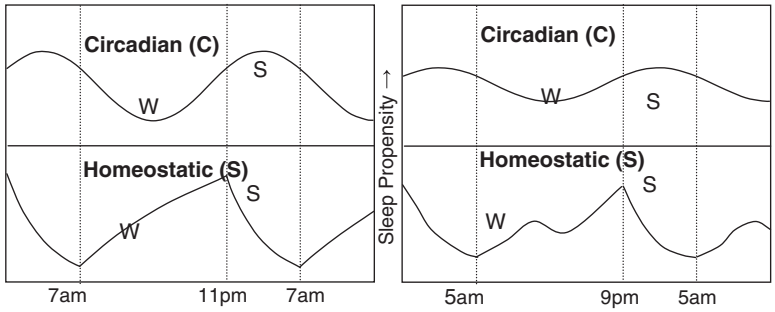

Figure 1. The two-process model of sleep regulation. Panel A depicts a healthy younger adult. Panel B depicts an older adult with altered circadian timing, reduced circadian rhythm amplitude and alterations in sleep homeostasis resulting from daytime sleeping. W = wake; S = sleep.

Endogenous circadian rhythms (Process C) also change in timing and quality with advancing age. In particular, circadian rhythm amplitude is reduced, which may result in a weaker daytime "alerting signal" from the biological clock. Also, the timing of circadian rhythms typically shifts to an earlier time, which can result in sleepiness at undesirable times (e.g., at 6 p.m.). Figure 1 shows a schematic diagram of Process S and Process C in a healthy younger adult (Panel A), and an older adult with reduced circadian rhythm amplitude and earlier timing with alterations in sleep homeostasis (Panel B).

Periodic environmental stimuli, especially light exposure, play a vital role in the entrainment of internal circadian rhythms to the 24-hour environment. Lack of sufficient exposure to appropriately timed light is implicated in sleep difficulties with aging. Exposure to light at night can alter circadian rhythms as well.

Advanced sleep phase disorder (ASPD) is common in older adults. Advanced sleep phase disorder is characterized by a persistent tendency to fall asleep and wake up earlier than is desired or socially customary (e.g., 6:00 p.m., 3:00 a.m.). The treatment of choice for ASPD is bright light therapy administered in the evening (Gooley, 2008). Exposure to bright light in the evening temporarily inhibits the

release of melatonin, a hormone related to sleepiness. Once bright light exposure is ceased, melatonin is released and sleepiness is fostered. Bright light therapy in ASPD is, therefore, used to postpone sleepiness to coincide with the desired bedtime of the patient. Notably, ASPD and insomnia symptoms sometimes co-occur in the elderly. In these cases, the two conditions may be mutually exacerbating, and warrant concomitant or sequential treatment depending on the specific case formulation.

Cognitive Behavioral Therapy for Insomnia in Older Adults

Studies have shown that CBT-I is highly effective for older adults and may be superior to pharmacotherapy in the long-term management of chronic insomnia (Bloom et al., 2009). There have been at least seven published randomized controlled trials with older adults that compared CBT-I to no-treatment or placebo treatments. All showed that CBT-I was associated with significant improvements in sleep compared to control treatments. Two meta-analytic reviews have also shown that CBT-I is highly effective in the treatment of insomnia among older adults (Irwin, Cole, & Nicassio, 2006; Pallesen, Nordhus, & Kvale, 1998).

Cognitive–behavioral therapy of insomnia is generally a brief treatment (4–8 sessions) that can be administered in group or individual format. It typically consists of several components, including sleep education, sleep restriction, stimulus control, sleep hygiene education with targeted recommendations, cognitive restructuring, and sometimes use of a "worry time" and/or relaxation training (Perlis et al., 2005).

During therapy, patients are asked to keep a daily sleep diary to track their sleep. This is used to adjust their sleep schedule and enhance sleep efficiency [(total sleep time/total time in bed) $\times$ 100]. For older adults, a sleep efficiency $>85\%$ is considered normal, and sleep time is extended when this goal is reached (a criteria of 90% is used for younger adults). Table 1 outlines specific modifications and special considerations when using CBT-I with older patients.

Cognitive–behavioral therapy of insomnia is based on Beck's (1967) cognitive model, which posits that thoughts, feelings, and behaviors are interrelated and symptoms can be alleviated by changing thoughts and behaviors, which will in turn change how a person is feeling. Cognitive–behavioral therapy uses Socratic questioning to inspire awareness and motivation to change. In CBT-I, the behavioral components are based largely on classical conditioning, and in particular on stimulus control. In addition to Beck's (1967) original CBT framework, CBT-I is based on the etiological model of insomnia known as Spielman's three factor (3-P) model (Spielman, Saskin, & Thorpy, 1987). The 3-Ps represent three key factors in the development of chronic insomnia: predisposing factors that make the person vulnerable to insomnia, precipitating factors that trigger the insomnia, and perpetuating factors that maintain the insomnia (see Table 2). The perpetuating factors are often maladaptive attempts to cope with and counteract the effects of the insomnia (e.g., napping to make up for lost sleep).

The goal of CBT-I is to target perpetuating factors. During the cognitive component of therapy, the patient is made aware of the interrelationships among thoughts, feelings, and behaviors and is taught to restructure thoughts that increase the likelihood of poor sleep (e.g., "I have to sleep for at least 8 hours or I cannot function.") into thoughts that are neutral or calming (e.g.,"I'll get through my day tomorrow, no matter how much I sleep tonight."). Some patients have difficulty identifying and working with specific thoughts, whereas others are highly receptive to cognitive exercises and find them tremendously helpful.

Table 2
Examples of Predisposing, Precipitating, and Perpetuating Factors in Older Adults

Predisposing	Precipitating	Perpetuating
1. Genetic predisposition and family history	1. Acute stress related to medical conditions	1. Napping
2. Hyperarousability	2. Hospitalizations	2. Extended time in bed (often due to boredom)
3. Decreased homeostatic sleep drive	3. Exacerbation of psychiatric symptoms (e.g., depressive episode)	3. Little bright light exposure or physical activity during the day
4. Decreased circadian rhythmicity (amplitude and phase)	4. Lifestyle factors	4. Side effects of medications
5. Medical conditions	a. Retirement	5. Bed associated with nonsleep activities
6. Psychiatric disorders	b. Social isolation	6. Overuse of caffeine
a. Mood disorders	c. Decreased daily activities	7. Overuse of alcohol (for sleep)
b. Anxiety disorders	5. Reduced mobility	8. Maladaptive thoughts about sleep and sleep difficulties
6. Medications		10. Depression
		11. Anxiety

It is important to note that each patient is different and what is a predisposing factor for one may be a precipitating event or perpetuating factor for another. For example, a long-standing major depressive disorder places a person at higher risk for insomnia (predisposing); however, an acute major depressive episode may coincide with the onset of insomnia (precipitating), and having depression may contribute to behaviors that maintain insomnia such as failing to engage in health-promoting behaviors like taking medications or visiting healthcare providers (perpetuating). An individualized conceptualization of each patient is needed to insure that the appropriate cognitive and behavioral targets are addressed.

Case Illustration

Presenting Problem and Client Description

Mr. George was an 80-year-old man referred by his primary care physician to the insomnia clinic for evaluation and treatment of chronic insomnia. During the intake session he described taking too long to fall asleep and waking up very early in the morning. Mr. George reported thinking about sleep and wishing he could sleep more on a "daily basis" for the past 5 years. These problems began when he had two back surgeries and subsequently reduced his physical activity. He had been an avid golfer "forever" and was forced to give up this daily pastime as a result of his back problems (though he continued to teach golf lessons at a local college, which he enjoyed very much). Mr. George did not directly attribute his sleep difficulties to these events, and had no explanation for his poor sleep. He explained that he had been an "early riser" his whole life, but he used to fall asleep quickly and sleep longer at night.

To manage his sleep problems, Mr. George tried several sleeping pills with no significant benefit. He most recently tried over-the-counter sleep aids (e.g., Advil PM®), which were beneficial for a few days, but then stopped working "just like the other pills." Mr. George expressed that he did not wish to use medications for sleep. He was particularly concerned because of the warning label on the over-the-counter medications advising against use by people over age 65 and/or for more than 10

days. He was also concerned about potential medical consequences or psychological dependence from prescription medications.

Mr. George lived alone in an apartment, he was single, never married, and did not have children. He previously taught physical education courses at the college level, and "semiretired" about 10 years ago. At the time of the interview, he had a fairly routine daily schedule, with fixed meal times and regular exercise which entailed walks, light weight lifting, sit-ups and pushups, and teaching golf lessons. He reported getting out of bed at 5:30 a.m. and proceeding to take a walk, then doing indoor exercises followed by breakfast. He taught golf lessons until noon. His afternoon schedule was generally open. He spent his time reading, listening to music, and occasionally watching television. Mr. George ate dinner between 4:30–5:00 p.m. and watched TV or read books afterwards. While watching TV after his dinner, Mr. George reported reliably feeling a strong urge to sleep, but "fighting it off" out of concern that he would wake up even earlier in the morning. Although Mr. George did not take planned naps during the day, upon questioning, he endorsed dozing off for brief periods while reading or watching TV.

Mr. George reported going to bed at 9:30 p.m., explaining that he did not "feel sleepy" but went to bed "out of boredom." He reported that it sometimes took him 2 hours to fall asleep, although sometimes he "mysteriously" fell asleep within minutes. He was unable to identify factors that contributed to this variability. On occasion he ruminated about an unpleasant social exchange or contemplated his current lifestyle and lack of social contacts while in bed.

Mr. George reported waking up around 3:30–4:00 a.m., and remaining in bed awake until 5:30 a.m. On a typical night, he reported sleeping 3 to 4 hours. He reported "rarely" having a good night of sleep, which for him entailed sleeping for 6 hours. Mr. George reported that his sleep environment was comfortable, and he denied being bothered by noise, light, or temperature. He did not have a bed-partner or pets who shared the bed with him, and he did not engage in activities other than "sleeping and trying to sleep" in bed (e.g., no eating, television, or reading). Aside from thinking and worrying about his sleep problems, Mr. George reported no other daytime consequences related to his sleep problems, "It doesn't really affect me; I'm surprised to say."

Mr. George did not drink alcohol, or consume caffeine. He did not smoke, use recreational drugs, or abuse prescription medications. Mr. George reported some arthritic pain, which he did not think affected his sleep. He denied symptoms of other sleep problems (e.g., sleep apnea, nocturia) or other medical or psychiatric conditions that might affect sleep. Mr. George reported a positive family history of insomnia and a number of relatives who were "early risers," but no other relevant family medical or psychiatric history.

Case Formulation

Mr. George presented as a healthy 80-year-old man with complaints of insomnia. He complained of trouble falling asleep and early morning awakenings for several years. Although the onset of his sleep problem coincided with back surgery, he denied pain or other residual symptoms. He denied other medical or psychiatric disorders that would account for his insomnia. He endorsed distress over his insomnia and difficulty staying awake during quiet activities during the day (especially in the evening). He was therefore diagnosed with primary insomnia. In addition to insomnia, advanced sleep phase disorder (a separate condition characterized by

Table 3
Predisposing, Precipitating, and Perpetuating Factors in the Conceptualization of Mr. George's Sleep Problem

Predisposing	Precipitating	Perpetuating
1. Genetic predisposition and family history of early sleep times	1. Back surgery followed by recovery period	1. Extended time in bed (earlier bedtime) due to boredom
2. Age-related changes in sleep architecture (e.g., reduced deep sleep)	2. Reduction in physical and social activity after surgery	2. Anxiety and worry about sleep problem 4. Conditioned arousal when awake at night 5. Evening sleepiness and dozing due to insufficient sleep while in bed at night 6. Reduced evening light exposure as a consequence of more time spent indoors 7. Impoverished social support and social activities

normal sleep on an early schedule) was considered as a differential diagnosis. Insomnia was targeted first, with the caveat that direct treatment of his circadian rhythm disorder may also be needed.

The 3-P model was used to conceptualize his insomnia problem and to inform treatment. Table 3 presents the predisposing, precipitating, and perpetuating causes for Mr. George's insomnia. Given the level of social isolation reported by the patient, we considered a diagnosis of depression as a potential comorbid condition. His diagnoses according to the *Diagnostic and Statistical Manual of Mental Disorders*, *Fourth Edition* (*DSM-IV*; American Psychiatric Association, 1994) were:

- Axis I: Primary Insomnia
- r/o: Circadian rhythm sleep disorder, advanced type
- r/o: Depression
- Axis II: None
- Axis III: Arthritis, h/o back surgeries
- Axis IV: Inadequate social support, decreased daily activities
- Axis V: 70

Course of Treatment

Given the perpetuating factors probably accounting for the chronic nature of Mr. George's insomnia, and his desire for a medication-free approach, CBT-I was chosen as the starting point. Because we anticipated a circadian component, we discussed with Mr. George that, if his sleep improved, but the timing was not what he desired, this could be addressed with timed exposure to bright light using an artificial light box or outdoor sunlight. He was agreeable to this plan.

In addition, discrepancies suggested that Mr. George was more concerned about his sleep problem than he originally endorsed. In particular, the use of medications and coming to the insomnia clinic appointment indicated a higher degree of concern than his statement that insomnia was "not affecting" him. Through Socratic questioning it became evident that Mr. George's desire to sleep more was, in part, related to a lack of activities and to being bored. Once this became evident,

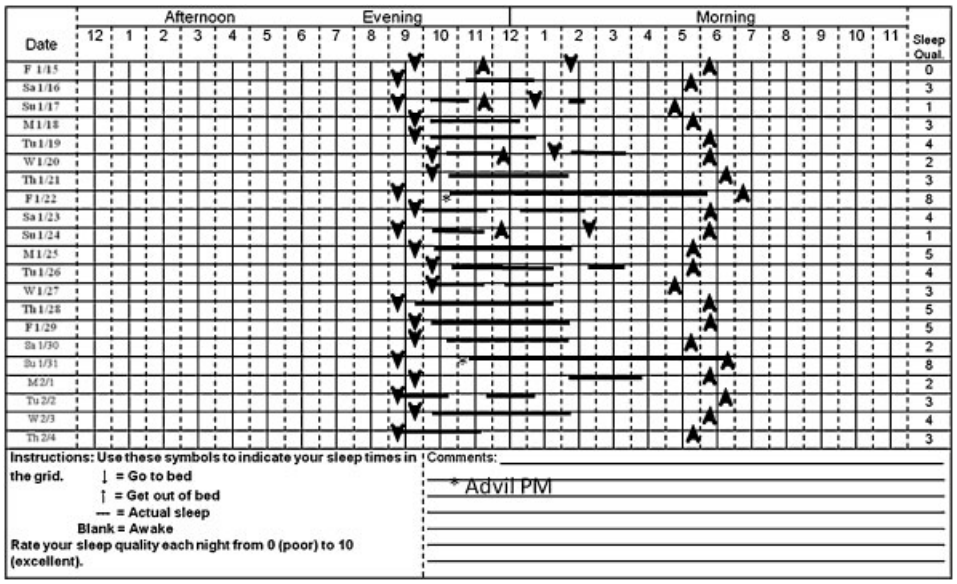

Figure 2. The sleep diary maintained by Mr. George prior to cognitive–behavioral therapy of insomnia. The diary shows early morning awakenings and occasional difficulties with falling asleep. It also shows the use of over-the-counter sleep aids.

Mr. George was assigned the homework task of brainstorming activities he could engage in so he could avoid using his bedroom as a place to go when he was bored. Mr. George was then provided with a sleep diary to complete until his next appointment. Mr. George had to drive a fairly long distance to the clinic, but was motivated to participate in treatment. We planned to consolidate information into fewer sessions when possible (e.g., discuss sleep restriction, stimulus control, and sleep hygiene at session 1).

Mr. George arrived to his first appointment with 2 weeks of sleep diary information (shown in Fig. 2). He "tried to come up with ideas" for occupying his time in the evenings, but indicated he hadn't thought of anything he really wanted to do. He stated he would keep thinking about it. His diary showed fragmented sleep, early morning awakenings, and trouble falling asleep at night. Information summarized from his sleep diary showed:

- Bedtime: 9–10 p.m.
- Morning rise time: 5:30–6 a.m.
- Time in bed: 8.5 hours
- Time to fall asleep: 1 hour (variable)
- Time awake during the night: 3–4 hours (typically from 2–6 a.m.)
- Total time asleep: 4 hours
- Sleep efficiency: 47%
- No daytime napping
- Advil PM used on two nights

Mr. George was using an over-the-counter sleep aid on an occasional basis; therefore, we consulted with a physician who reinforced Mr. George's desire to sleep without using a medication and cautioned Mr. George about the risks associated

with over-the-counter sleep aids for older adults. Mr. George decided to stop the medication.

The session began with a review and discussion of Mr. George's sleep diary, followed by education about the two-process model of sleep regulation, including sleep homeostasis (i.e., the longer one is awake, the sleepier one is) and circadian rhythms (i.e., one is sleepier at some times of day than others), and the stages of normal sleep. He expressed understanding of the material, asked questions, and stated, "This all makes sense to me!" at the end of the education section. Using information from his sleep diary, a sleep schedule was developed using principles of sleep restriction. Given his extremely short sleep time (4 hours), we were concerned about restricting his time in bed to such an extent that he would not be able to sustain this over a one-week period. Working together with Mr. George, we developed the following sleep schedule:

- Bedtime: 10:00 p.m.
- Morning rise time (with an alarm clock): 4:00 a.m.
- Getting out of bed if not asleep in 15–30 minutes, and returning to bed only when sleepy.

As sleep hygiene behaviors were not a major concern (based on the initial interview), and Mr. George preferred to limit the number of trips he made to the clinic, this topic was discussed briefly. Mr. George thought he might try taking a hot shower or bath before bedtime as a way to relax. In addition, we discussed reasons he might benefit from spending more time outdoors in the late afternoon or early evening, to increase exposure to light later in the day. His routine was to take a 45–60 minutes walk in the morning. We encouraged him to wear a hat and sun glasses on this walk so that exposure to light in the early morning would be less likely to impact his circadian rhythms. He agreed to a short (15–20 minutes) afternoon walk as well.

At the conclusion of the session, Mr. George was provided with the clinician's telephone number in case questions arose during the week, he was cautioned about driving if drowsy, and he was provided with a sleep dairy to maintain for the next week. Notes were written at the bottom of the dairy to remind him of the action plan: bedtime, rise time, time outdoors, and hot shower/bath in the evening. He was also reminded of his assignment to generate ideas of afternoon activities (although we had already introduced an afternoon walk and evening shower/bath during the session).

One week later, Mr. George's sleep diary reflected a significant improvement in sleep quality, with less time awake at night and more consolidated sleep. He was having extreme difficulty staying awake until 10 p.m., so went to bed "a little earlier than I was supposed to." His diary showed the following:

- Bedtime: 9:30–9:45 p.m.
- Morning rise time: 4:00 a.m. (no variation)
- Time in bed: 6.5 hours
- Time to fall asleep: 0–10 minutes
- Time awake during the night: 60 minutes
- Total time asleep: 5.25 hours
- Sleep efficiency: 81%
- No daytime napping
- No sleep medications

Mr. George was pleased that he was no longer having trouble falling asleep. In fact, he found it was difficult to stay awake until 9:30 p.m. He noted that he may have been dozing off occasionally around 9:00 p.m. We felt this reflected an advanced sleep phase. His trouble falling asleep had disappeared by reducing his time in bed, but he was still awakening between 3:00–3:30 a.m. Mr. George was now sleeping better, but was unsatisfied with the timing of his sleep. We therefore discussed the use of a light box. He had been unable to walk in the afternoons during the previous week because of rain, and he was concerned he might not be able to do it every day, stating, "Some days I'm worn out after teaching class all morning. I'm not sure I'll be able to do the walking every day when I really think about it." We also discussed the option of "living on an advanced schedule," perhaps going to bed at 7:00–8:00 p.m., and arising at 3:00 a.m. The dialogue below shows this discussion.

Clinician: "Mr. George, I'm pleased that you are happy with the changes you've seen in your sleep, and I also understand this is not quite what you were hoping for. One option would be to stay on an early schedule, and just wake up at 3 a.m. after a good night of sleep. What do you think?"

Mr. George: "Yeah, but I don't really want to be up at 3 in the morning. I think I'll get even more isolated than I already am if I'm awake when everyone else is asleep and vice versa. It's probably not going to be good for me in the long-run."

Clinician: "So what I'm hearing is that you prefer to try something to shift your sleep later—maybe light therapy like we discussed—and see if you can get on a better schedule."

Mr. George: "Yep. That's what I'm hoping for. That's why I'm here. At least I'm falling asleep within a few minutes now. That is a big improvement, but..."

Clinician: "Why don't we order a light box for you. When it arrives, we'll take a look at your sleep diaries and determine when you should use it. You'll need to sit in front of it for about 30 minutes each evening, probably near your bedtime. You can read or watch TV while using it. How does that sound?"

Mr. George: "That sounds good to me."

Mr. George was concerned he would become more socially isolated if he stayed on his advanced schedule and expressed interest in using a light box to delay his sleep time. The plan for the following week was to go to bed at 9:00 p.m. and wake up at 3:00 a.m. while a light box was ordered for the patient. He was instructed to go to bed 15 minutes earlier (at 8:45) if he was sleeping well (defined as falling asleep within 30 minutes and being awake for less than 30 minutes at night) in one week, and to come back to the clinic in 2 weeks. We selected this criterion because calculating sleep efficiency can be difficult for patients to do on their own.

At the third session, Mr. George noted that he had received a letter from the Internal Revenue Service (IRS) indicating he would be audited. He stated, "I stayed awake all night worrying about it—even though I haven't done anything wrong." He then noted that, whenever something comes up, "I tend to lose sleep over things. I mean, that's the way I am. Night is when I worry."

We discussed the fact that losing some sleep over stressful life events is to be expected, and that adjusting his thoughts might help to reduce anxiety related to sleep. Mr. George, however, was not receptive to cognitive restructuring techniques. First, Mr. George had difficulty identifying errors in thinking, noting, "It just feels true at the time. I'm not sure I see the point of all this." When discussing alternative thoughts, he noted, "I don't think this is going to work for me. I feel forced to think differently when it just doesn't match up with my experiences." We therefore took a more behavioral approach to coping with nighttime worries, and Mr. George was

instructed on how to use a "worry time" during the day to deal with the problem of worrying in bed. Mr. George noted that this seemed like "a good strategy." He was also reminded to adhere to the rules of stimulus control, and to get out of bed if he was lying awake for more than 15–30 minutes. Because his sleep quality had deteriorated somewhat, his schedule was not modified from the prior session.

The patient's light box arrived, and he came in with his sleep diaries to retrieve it. He was going to bed at 8:45 p.m., and getting out of bed at 3:30 a.m. He thought he might need a bit more sleep, but felt he was "getting close" to obtaining the sleep he needed. "Sometimes it's still so hard to stay awake after about 8:30." We instructed him to use the light box from 7:30–8:00 p.m., then move that time 15 minutes later each week while simultaneously shifting his bedtime and wake time by 15 minutes until he reached the schedule he desired. He was provided with a tracking sheet to help him make adjustments to the timing of these activities. He was scheduled to return to the clinic in 3 months and to call with questions in the meantime.

Outcome and Prognosis

We spoke with Mr. George by telephone 2 weeks after he began the light therapy. He was a little confused about how to adjust the timing, but stated that, "my body just seems like it can stay awake until 9 now, and a couple of times I even slept until the alarm went off at 4." We reviewed that he was to delay the light, his bedtime and his wake-up time 15 minutes later each week, and he was offered an appointment to review this in person. He declined and said he would try it on his own and call with any problems. He noted that he was not able to use the light box one night because wanted to hear a lecture at the local library and asked if this was a problem. We encouraged him to continue looking for such activities to participate in, and noted that he should not miss these activities to use the light box. He was relieved and stated he was hoping to go to another lecture, but didn't want to "mess up" his progress.

We have not yet seen Mr. George since that telephone contact. Given his success with this combined approach, he is likely to have sustained benefit. Once his sleep is stabilized, we will review how he might handle acute insomnia in the future and discuss his progress in increasing social activities.

Clinical Practices and Summary

In the treatment of older adults with insomnia, one must consider a multitude of factors, including biological (circadian), psychological, and social factors as well as interactions among them. In addition, changes in cognitive function, visual acuity, hearing impairment, and mobility limitations should be considered when providing any psychotherapy intervention to older adults; this is relevant for the treatment of sleep disorders as well. With age, the biological clock that regulates circadian rhythmicity becomes less powerful and may require more light to stay on track. In addition, older people can have physical restrictions or become socially isolated. This can result in getting out less often, which reduces exposure to sunlight and decreases melatonin-mediated circadian rhythmicity. This can contribute to daytime drowsiness and low energy, creating a detrimental feedback loop. Decreased activity and social isolation often need to be addressed in treatment of insomnia in older adults. "Too much free time" may result in resistance to sleep restriction prescriptions as these recommendations create "even more free time" that has to be filled during the day and evening.

Older adults are likely to have medical and/or psychiatric comorbidities which impact sleep and significantly complicate the diagnosis, treatment, and prognosis of insomnia. As in the case of Mr. George, we advocate a step-wise treatment approach during which the focus was to fix one thing at a time and monitor progress. In this framework, differential diagnosis, treatment, and outcome are seen as a process, rather than as discrete categories. This fosters individualized conceptualizations of the presenting problem, flexibility in the treatment, and realistic expectations for outcomes. The case of Mr. George also illustrates that some patients are not receptive to some portions of the treatment (e.g., Mr. George was not interested in cognitive therapy approaches, but still may benefit from the more behavioral aspects of treatment). In such cases, treatment should be individualized to meet the patient's needs and expectations.

In our experience, older adults are able to understand the rationale behind CBT-I and are willing to follow the changes prescribed. As long as the prescriptions are targeted to the specific needs of the individual, there is flexibility in the rules, and consideration is given to the possible restrictions inherent in having the physical and sometimes social stressors that accompany older age. For example, because sleep restriction may be more challenging for older adults compared to younger adults who have full daily schedules, it is important to keep in mind that small changes, such as postponing bedtime by one hour, can make a big difference. These small changes should be encouraged and praised in psychotherapy, even if they are far from meeting the ideal and standard CBT-I guidelines. Age alone or comorbid medical and psychiatric conditions should not preclude participation in CBT-I, even when the sleep problem may be related to that condition (e.g., pain, depression). A caveat is the presence of cognitive impairment, which may limit the complexity of interventions and necessitate involvement of caregivers and/or family members. The goal of treatment of insomnia with older adults should be to improve daytime functioning, reduce health risks, and improve quality of life.

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