Cognitive Behavioral Therapy for Insomnia in Older Adults

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Abstract

Insomnia is associated with significant morbidity and is often a persistent problem, particularly in older adults. It is important to attend to this complaint and not assume that it will remit spontaneously. In many cases, unfortunately, insomnia remains unrecognized and untreated, often because it is presumed that insomnia is an inevitable consequence of aging. Although the sleep structure naturally changes with advancing age, these changes are not necessarily associated with complaints of poor sleep, distress, or daytime consequences, while chronic insomnia clearly is. There is increasing evidence that cognitive behavioral therapy (CBT) is effective for the management of chronic insomnia in the elderly and that it is of significant benefit for insomnia comorbid with medical and psychological conditions, also more prevalent in older age. The aim of this article is to familiarize clinicians working with older adults with the different components of CBT for insomnia and how to adapt the treatment to this population. A clinical case and session-by- session implementation of CBT for insomnia are described to illustrate information and guidelines provided in this article.
Introduction

Disturbed sleep is very common in older adults and may involve difficulties sleeping at night, excessive or undesired sleepiness during the day, or disruptive behaviors at night. Insomnia is the most prevalent of all sleep disorders in any age group. Epidemiological studies show that the prevalence of insomnia increases steadily with age (Morin, LeBlanc, Daley, Grégoire, & Mérette, 2006; Ohayon, 2002; Weyerer & Dilling, 1991). About 20% of persons aged 65 years and older experience significant and persistent insomnia (Foley et al., 1999; Lichstein, Durrence, Riedel, Taylor, & Bush, 2004), more than twice the rate observed in younger adults (Ohayon, 2002). Insomnia can involve difficulties initiating sleep, maintaining sleep, or early morning awakenings with an inability to return to sleep. Evidence of significant distress or impairments of daytime functioning must also be present for a diagnosis of insomnia to be made. Insomnia can be a primary disorder or comorbid with psychiatric or medical illnesses (American Psychiatric Association, 2000).

The structure of human sleep evolves throughout life and, from early adulthood to later life, sleep tends to become shorter, lighter, and more fragmented, with an increased number of awakenings throughout the night (Boselli, Parrino, Smerieri, & Terzano, 1998; Reynolds et al., 1985). In addition to these structural changes, evidence suggests that the circadian system may also show age-related changes, with sleep becoming more desynchronized. This often translates in a tendency to fall asleep earlier in the evening, wake up earlier in the morning, and more frequent intrusions of sleep during daytime activities (Revell et al., 2006). Nevertheless, it is important to understand that not all age-related changes in sleep structure are pathological and that most are not associated with complaints of poor sleep or daytime impairments (Kryger, Monjan, Bliwise, & Ancoli-Israel, 2004; Roth & Drake, 2004). Significant and chronic insomnia, on the other hand, produces negative consequences for the individual and is typically associated with increased daytime fatigue, mood disturbances, and cognitive problems that contribute to reduced quality of life (Simon & VonKorff, 1997). Evidence also shows that when
insomnia is left untreated, it heightens the risk for major depression (Breslau, Roth, Rosenthal, & Andreski, 1996; Ford & Kamerow, 1989) and negatively affects the prognosis of chronic medical conditions (Goldstein, Ancoli-Israel, & Shapiro, 2004; Qureshi, Giles, Croft, & Bliwise, 1997). Insomnia in older adults has long been considered the result of aging biological processes and thus an inevitable fate of older age. However, accumulating evidences point to a multifactorial origin, where health, psychological, situational, and environmental factors play an important role in the initiation and maintenance of sleep difficulties.

Many individuals with insomnia will self-medicate before seeking medical advice. This may involve using alcohol as a sedative, taking over-the-counter drugs, dietary supplements and natural products (Morin, LeBlanc, et al., 2006). Such practices can have adverse effects or cause drug interactions and, consequently, lead to a worsening of the insomnia problem (Sproule, Busto, Somer, Romach, & Sellers, 1999). When insomnia is diagnosed and treatment initiated, the first line of treatment will usually involve hypnotic medications. While hypnotics may be indicated and helpful in some forms of acute insomnia, significant risks and limitations have also been associated with their long-term use, and particularly so in older adults (Glass, Lanctot, Herrmann, Sproule, & Busto, 2005). Increasing evidence shows that cognitive behavioral therapy (CBT) is effective for the management of chronic insomnia in both younger and older individuals and that it can produce significant benefits for insomnia comorbid with medical and psychological problems (Irwin, Cole, & Nicassio, 2006; Morin, Bootzin, et al., 2006; Smith, Huang, & Manber, 2005). The purpose of this article is to discuss the use of multimodal CBT for insomnia in the elderly population and to illustrate the implementation of its different components in community-dwelling older adults. Since the main goal of this article is to familiarize clinicians with how CBT can be used and adapted with autonomous older adults, the reader is referred elsewhere for the management of complex insomnia in hospital settings or residential care (Bliwise & Breus, 2000; McCurry, Gibbons, Logsdon, Vitiello, & Teri, 2005).
A Conceptual Model of Chronic Insomnia

Several predisposing, precipitating, and perpetuating factors are involved at different times during the course of insomnia (Spielman, Conroy, & Glovinsky, 2003). Increasing age, female gender, hyperarousal, a prior history of insomnia, and an anxiety prone personality represent some of the factors that may predispose to insomnia (Ancoli-Israel & Roth, 1999; Ford & Kamerow, 1989; LeBlanc et al., 2007; Taylor, Lichstein, Durrence, Reidel, & Bush, 2005). Sleep disturbances are often precipitated by stressful life events, such as the death of a loved one, medical illness, retirement, separation, or hospitalization (Bastien, Vallières, & Morin, 2004; Healey et al., 1981). Sleep usually normalizes after the stressor has faded away or the person has adapted to its more enduring presence. For some individuals, however, sleep disturbances will develop a chronic course. A cardinal assumption of this model is that insomnia may become functionally independent from the original precipitating event (see Figure 1). For example, although pain is a common precipitating factor of sleep disturbances, spending excessive amounts of time in bed or napping during the day may contribute to perpetuate the sleep problem over time. Treatment should then focus on these maintaining factors even if the precipitating factors may still be instrumental in maintaining the sleep difficulties.

According to this model, behavioral and psychological factors are almost always involved in perpetuating insomnia over time, regardless of the nature of the precipitating event (Morin, 1993; Spielman et al., 2003). In older adults, as in any age group, such features may include poor sleep habits, irregular sleep-wake schedules, and misconceptions and unrealistic expectations about normal sleep. Figure 2 depicts how different factors, including excessive preoccupations and worries about sleep and unhelpful behaviors, can interplay to maintain sleep difficulties in a vicious cycle.

Cognitive Behavioral Therapy for Insomnia in Older Adults

There are no major fundamental differences between the implementation of cognitive and behavioral strategies for insomnia in the elderly compared to younger adults (Lichstein &
Morin, 2000). However, a number of factors, more relevant to this age group, need to be considered during assessment and treatment implementation. Such factors include, for example, the presence of comorbid medical (e.g., Parkinson’s disease, chronic pain) and psychiatric (e.g., depression) illnesses, polypharmacy (e.g., anticholinergics, antidepressants, diuretics), the presence of another sleep disorder (e.g., sleep-related breathing disorder, periodic limb movements in sleep), poor sleep habits (e.g., excessive daytime napping) and the impact of various developmental (e.g., cognitive decline), psychosocial (e.g., social isolation and loneliness) and environmental (e.g., temperature) variables (Moller, Barbera, Kayumov, & Shapiro, 2004; Vitiello, Moe, & Prinz, 2002). A comprehensive diagnostic evaluation of the sleep complaint, including overall medical and psychiatric health, is of cardinal importance as it will guide the identification of relevant treatment targets and interventions and how they may need to be adapted, and yield information on expected treatment response (Espie, 2000; Moller et al., 2004).

Coexisting illnesses are responsible for a significant proportion of sleep disruption. For example, the National Sleep Foundation (2003) reported that 43% of the elderly population presents two to three chronic conditions, 24% presents four or more, while only 10% had none. Pain conditions and insomnia are highly comorbid in older adults (Lichstein, Wilson, & Johnson, 2000). However, few studies have specifically examined the outcomes of CBT for insomnia in individuals with chronic pain conditions (Currie, Wilson, Pontefract, & deLaplante, 2000; Morin, Kowatch, & O'Shanick, 1990; Morin, Kowatch, & Wade, 1989) and the few that have did not adapt the protocol to address the management of pain in these patients. Nevertheless in these studies, promising results were observed on sleep measures and related variables such as anxiety levels (but no significant changes were reported on pain severity ratings). Although scarce, these results indicate that CBT for insomnia can be an interesting option in this population. In a review article on the treatment of insomnia in the context of medical and psychiatric conditions, Smith et al. (2005) suggested that the following points are important
when treating insomnia in patients with chronic pain conditions: (a) including interventions which aim at correcting beliefs about the interplay between pain and sleep, (b) ensuring that pain is adequately managed, (c) evaluating the effects of pain medications on sleep and, (d) modifying some of the pain-related coping strategies that might interfere with sleep.

Insomnia is also frequently associated with psychiatric disorders. Around 30% to 40% of older adults with insomnia complaints present anxiety or mood disorders (Ohayon, 2002). Moreover, the presence of insomnia complaints in the elderly increases the risk of developing depression (Pigeon et al., 2008; Roberts, Shema, Kaplan, & Strawbridge, 2000). Since disturbed sleep is a symptom of most major mental disorders, there is a widespread belief that effective treatment of the primary condition will resolve insomnia as well. Evidence rather shows that insomnia often persists in patients with chronic conditions receiving standard care (Katz & McHorney, 1998; Nierenberg et al., 1999). It is then warranted to treat both the underlying psychological condition and insomnia (Cuellar, Rogers, Hisghman, & Volpe, 2007).

Medications prescribed for the treatment of several comorbid conditions may cause or exacerbate sleep difficulties at night, as well as drowsiness during the day. This can lead to frequent napping, which in turn contributes to more sleep difficulties the upcoming night (Cuellar et al., 2007). On the other hand, use of sedative medications at bedtime can have residual sedative effects during the day and, although evidences are equivocal, sedative medications may represent a risk factor for falls in the elderly (Avidan et al., 2005). Many older adults with insomnia are chronic hypnotic users and it is possible that tolerance may have led to attenuation of efficacy over time (Quera-Salva, Orluc, Goldenberg, & Guilleminault, 1991). The sleep clinician has an active role in reviewing all factors that can have an impact on sleep, including potential drug effects. For clinicians who are not prescribing physicians, medication effects on sleep should still be reviewed and, when there is suspicion of potential interference with sleep, the patient's physician should be contacted and the patient should be encouraged to seek
medical advice. A careful review of all medications used is very important to determine their potential contribution to the sleep problem or daytime sleepiness (Vaz Fragoso & Gill, 2007) and will help in setting realistic treatment targets and goals. For example, when medication taken at bedtime is suspected to contribute to insomnia (e.g., corticosteroids), changing the administration schedule may sometimes be enough to alleviate the sleep disturbances. In other cases, hypnotic withdrawal or a change of medication may be indicated. On the other hand, using CBT in hypnotic-dependent patients with persisting insomnia without weaning them from their medications may also be indicated and is associated with significant improvement (Soeffing et al., 2008).

Cognitive decline can also be an issue with older adults and consequently require adaptations of the standard interventions. For example, a simplified sleep diary with bedtime, arising time, and estimated sleep time may provide enough information to proceed with treatment. In addition, treatment might focus exclusively on restricting time in bed rather than incorporating all of its usual components. The therapist should always make sure that instructions are fully understood and that the patient will remember them when relevant. A system of written reminders placed in strategic places at home, written notes, kept in a special log book for patients to take home, regular reminders and more frequent follow-ups by the therapist may be useful to help the person with treatment implementation and adherence. Treatment goals may also need to be modified during the course of therapy to help the person adhere to treatment recommendations.

Over the past years, several of the behavioral and cognitive interventions have been validated for the treatment of insomnia in later life, including sleep restriction, stimulus control therapy, relaxation-based interventions, cognitive therapy, and sleep hygiene education. These interventions being compatible with each other (Lichstein & Morin, 2000), multicomponent therapy packages such as CBT have become the standard psychological approaches for treating insomnia (Irwin et al., 2006; McCurry, Logsdon, Teri, & Vitiello, 2007; Morin, Bootzin, et
The goal of multicomponent treatment packages is to increase benefits by adding interventions that will target a wider range of factors that are believed to maintain the problem. The content of CBT per se is not standardized and different combination of these components have been used in studies examining its efficacy in older adults (for a review, see Nau et al. 2005). Typically, CBT for insomnia will include behavioral interventions (i.e., stimulus control, sleep restriction, relaxation), cognitive interventions (cognitive restructuring therapy), and an educational component (sleep hygiene). These interventions aim at curtailing sleep-incompatible behaviors, attenuating arousal, and altering sleep-related dysfunctional cognitions and thoughts, all of which are hypothesized to play a major role in maintaining and exacerbating insomnia over time (Morin, 1993; Spielman et al., 2003). The most common components are described below along with a discussion of factors that need to be considered when they are implemented in the elderly population. Empirical evidence supporting the use of each intervention in this age group is also briefly discussed.

**Sleep Restriction Therapy**

In response to poor sleep, a common reaction is to increase time in bed. However, this misguided effort to provide more opportunity for sleep is a strategy that is more likely to result in fragmented and poor quality sleep. Sleep restriction therapy consists of curtailing the amount of time spent in bed to the actual amount of time slept (Spielman, Sasin, & Thorpy, 1987). After sleep efficiency improves, time in bed is gradually increased until optimal sleep duration is achieved. The presumed underlying mechanisms involve a mild sleep deprivation which strengthens the homeostatic drive and consolidates the total amount of sleep over a shorter period of time. According to our clinical observations, sleep restriction may also produce a paradoxical shift of attention from apprehension and worrying about not being able to fall asleep at the desired time to one of concern about being able to stay awake until the prescribed bedtime.
The following example illustrates how to implement this procedure. John is a 70-year-old man who presents with a 14-year history of mixed sleep-onset and maintenance insomnia. According to his daily sleep diaries kept for a 2-week baseline period, his usual bedtime is 9:30 P.M. and he typically arises around 6:30 A.M., for a nightly mean of 9 hours spent in bed. He takes an average of 60 minutes to fall asleep and is awake for 75 minutes in the middle of the night and for an additional 45 minutes at the end of the sleep period before getting out of bed. The summation of these three variables (i.e., sleep-onset latency, wake after sleep onset, and early-morning awakening) yields a total wake time of 180 minutes (3 hours), leaving only 6 hours of sleep out of 9 spent in bed, for a global sleep efficiency (SE) of 64% \[SE= \frac{\text{Total Sleep Time (min)}}{\text{Total Time in Bed (min)}} \times 100\].

A sleep efficiency index lower than 80% to 85% is usually associated with difficulties initiating or maintaining sleep, as well as with restless and unsatisfying sleep. Conversely, sleep efficiency greater than 85% to 90% means better sleep initiation and continuity and more sound and satisfying sleep. Nevertheless, high sleep efficiency does not necessarily mean adequate sleep duration. In this example, John reports sleeping an average of 6 hours per night out of 9 hours spent in bed, so the initial prescribed “sleep window” (i.e., from bedtime to arising time) is 6 hours. Allowable time in bed is subsequently adjusted weekly contingent upon sleep efficiency. It is increased by 15 to 20 minutes when sleep efficiency is greater than 85% for the previous week, decreased by the same amount of time when sleep efficiency is below 80%, and kept constant when sleep efficiency falls between 80% and 85%. Periodic adjustments are made until optimal sleep duration (based on the person's needs and sleep goals) is reached.

Ideally, the initial “sleep window” and subsequent changes in allowable time in bed are determined in an empirical fashion and according to sleep diary data. In clinical practice, however, it is not always possible or desirable to follow these rules in a rigid manner. Adjustments are often required as a function of the person's health restrictions, acceptance of the treatment option, and willingness to comply with the prescribed regimen.
Sleep restriction therapy has been shown to meet evidence-based criteria for the treatment of insomnia in older adults, both as a stand-alone intervention and when combined with other interventions (McCurry et al., 2007; Morin, Bootzin, et al., 2006). Despite a small reduction in total sleep time in the early phase of treatment, patients are generally more satisfied with their sleep quality and eventually regain additional sleep time at follow-up (Friedman et al., 2000; Lichstein, Riedel, Wilson, Lester, & Aguillard, 2001).

**Stimulus Control**

This intervention is based on the assumption that insomnia is the result of maladaptive conditioning between environmental (bed, bedroom) and temporal (bedtime) stimuli and sleep-incompatible behaviors (e.g., worrying, reading, or watching TV in bed). According to this paradigm, these stimuli (bed, bedtime, and bedroom) have lost their discriminative properties previously associated with sleep. The main therapeutic goal is to reestablish or strengthen the associations between sleep and the stimulus conditions under which sleep typically occurs. This is accomplished by minimizing the amount of time awake in bed, by eliminating sleep-interfering activities, and by regulating the sleep-wake schedule. The basic principles are analogous to those implicated with other clinical dysfunctions (e.g., obesity, substance abuse) in that the objective is to alter the relationship between a given behavior (sleep) and the stimulus conditions (bed, bedtime, bedroom) controlling it. Stimulus control instructions for insomnia include: (a) postponing bedtime until sleep is imminent (i.e., when the person feels sleepy), (b) getting out of bed when unable to fall back to sleep quickly during the night, (c) eliminating all nonsleep activities (e.g., reading, watching TV, worrying) from the bedroom, (d) keeping a regular arising time in the morning and, (e) avoiding daytime or evening naps (Bootzin, Epstein, & Wood, 1991). These recommendations are particularly relevant to some older individuals who may engage more frequently in sleep-incompatible activities in the bedroom due to physical discomfort and restricted range of movement. Napping is also a common practice in this age group and may decrease the homeostatic drive when too close to bedtime.
Implementation of stimulus control procedures warrants special attention when working with older adults. For example, the requirement to leave the bed or bedroom during long awakenings should be adapted or eliminated altogether when working with persons who have ambulatory difficulties. Those individuals can be instructed to stay in bed when unable to sleep, but to stop their efforts to sleep, to plan a quiet and relaxing activity (e.g., reading, crossword puzzles) that they can do until sleepiness returns and to turn off the lights again when sleepiness is felt (Bootzin & Epstein, 2000). Although these instructions (also named countercontrol) may appear to be exactly the opposite of the original stimulus control instructions, there is some evidence showing that countercontrol and stimulus control produce about the same amount of improvement in college students with sleep onset insomnia (Zwart & Lisman, 1979). Bootzin and Epstein (2000) suggest that a possible explanation for the effectiveness of countercontrol may be that, since the person is instructed to do something which is unrelated to trying to sleep (e.g., tossing and turning), the usual learned associations between the cues of the bed and bedroom with the arousal and frustration associated with sleeplessness are still being disconnected. Other studies, on the other hand, have shown that the magnitude of the effects observed with countercontrol were lower than with the original stimulus control instructions, both in elderly and younger adults with sleep maintenance (Davies, Lacks, Storandt, & Bertelson, 1986). This suggests that stimulus control should be the intervention of choice, except for individuals who are physically incapacitated and are unable to get out of bed by themselves, or are at increased risks for falls (Bootzin & Epstein).

There is also some controversy around the recommendation to avoid napping as prescribed in younger adults. At least 25% of the elderly population takes a daily nap (Beh, 1997; Foley et al., 1995; McCrae et al., 2006). While the results of some studies show a negative relationship between sleep complaints and napping (e.g., Hays, Blazer, & Foley, 1996), others have observed improvements in daytime cognitive performance and sleep quality ratings in some older adults taking a daytime nap, suggesting that scheduled
napping may be beneficial for some individuals of this age group (Campbell, Murphy, & Stauble, 2005; Foley et al., 1995; Monk, Buysse, Carrier, Billy, & Rose, 2001; Tanaka et al., 2002). As individuals age, it becomes more difficult to sustain energy throughout the day and sleepiness may be felt earlier at night. Rather than completely eliminate napping, a good alternative, especially in those who struggle to maintain alertness during the day, may be to allow a time-limited nap (e.g., 30 to 90 minutes) at a specific moment of the day (e.g., early afternoon). This practice may be beneficial in terms of increased alertness and reduced fatigue throughout the afternoon and may also facilitate postponement of bedtime in the evening. Moreover, it increases the total sleep time per 24 hours (Bootzin & Epstein, 2000; McCrae et al.). Naps should be taken in bed and the stimulus control instruction to leave the bed if unable to fall asleep within 15 to 20 minutes should be followed as well. We should also ensure that napping does not reduce nocturnal sleep time or is not a way to cope with boredom. To counteract daytime sleepiness and increase overall level of daytime activities when relevant, stimulating activities such as going for a walk, engaging in a regular exercise regimen or socializing can be suggested.

Controlled studies indicate that stimulus control, singly or in combination, is effective for both sleep-onset and sleep-maintenance insomnia in older adults (Engle- Friedman, Bootzin, Hazlewood, & Tsao, 1992; Pallesen et al., 2003; Puder, Lacks, Bertelson, & Storandt, 1983). However, results from a recent review examining evidence-based psychological treatments for older adults suggest that this approach, although well validated with younger adults, only partially meets criteria for an evidence-based intervention in older adults (McCurry et al., 2007). This may be due to the fact that recent clinical studies conducted with this population have typically combined these procedures with other behavioral and cognitive procedures.
Relaxation-based Interventions

There are several types of relaxation-based interventions (Lichstein, 2000; Manber & Kuo, 2002), with some methods aimed at reducing muscle tension (e.g., progressive-muscle relaxation) and attention-focusing procedures targeting mental arousal in the form of worries or intrusive thoughts (e.g., imagery training). A more passive form of relaxation may be preferable with older individuals experiencing physical discomfort or pain (Lichstein & Johnson, 1993; Lichstein et al., 2001; Pallesen et al., 2003). Progressive relaxation techniques may be more difficult to use with physically impaired elderly because it can be quite demanding. They should be modified to prevent muscle spasms or arthritic pain by eliminating the instruction to contract or tense the muscles and rather having the person focus on releasing muscle tension passively (Lichstein & Johnson). Relaxation requires training and daily practice for at least 2 to 4 weeks and professional guidance is often necessary in the initial stages of treatment. For an exhaustive and detailed description of relaxation procedures and more in-depth discussion of their efficacy in older adults, see Lichstein (2000).

Relaxation has been shown effective for insomnia in younger adults with few differences across methods, but results are more equivocal with older adults (Friedman, Bliwise, Yesavage, & Salom, 1991; Lichstein et al., 2001) and its status, given the wide array of techniques and lack of high-quality data, is more difficult to determine.

Cognitive Therapy

Insomnia can be exacerbated by excessive preoccupations with sleep and by apprehensions of the next day consequences, all of which can heighten arousal and interfere with sleep. For example, some older adults may struggle to maintain sleep patterns that are unrealistic for their age groups, whereas others believe that insomnia is an inevitable fact of aging. Cognitive therapy is a psychotherapeutic intervention aimed at guiding patients, through Socratic questioning, collaborative empiricism, and guided discovery, at reevaluating the accuracy of their thoughts and beliefs, and altering these when necessary (J. Beck, 1995). The
basic premise of this approach is that the appraisal of a given situation (sleeplessness) can trigger negative emotions (anxiety, frustration) that are incompatible with sleep (Harvey, 2002; Morin, 1993). For example, when a person is unable to sleep at night and begins thinking about the possible consequences of sleep loss on the next day's performance, this can set off a spiral reaction and feed into the cycle of insomnia, emotional distress, and more sleep disturbances (see Figure 2). Cognitive therapy for insomnia is designed to short-circuit the self-fulfilling nature of this cycle. A more didactic approach can be used jointly to provide basic facts about individual differences in sleep needs and developmental changes in sleep physiology over the course of the life span and distinguish age-related changes in sleep patterns from clinical insomnia. For a more detailed presentation and discussion of cognitive therapy for insomnia, see Morin (1993) or Bélanger, Savard, and Morin (2006).

Here again there are no major modifications between conducting cognitive therapy with younger and older age individuals. It may be possible that since many older adults have had a much longer experience with insomnia, their belief system may be more strongly engrained and their thinking pattern less flexible than in younger aged individuals. However, this may be due to personality factors as well, rather than age alone. Although most healthy seniors will be able to grasp the main concepts in cognitive therapy, those with cognitive impairment may be less responsive to that type of interventions, the dosage and treatment response can thus vary greatly across patients. The main implication for treatment may be to remain very concrete and use many practical examples. Suggestions enumerated earlier in the context of cognitive decline can also be applied to cognitive therapy. Topics that should be carefully addressed, and perhaps considered as standard, are the age-related changes in sleep architecture and their consequences on the experience of sleep, the beliefs about unrealistic sleep standards based on younger years' sleep and individual differences in sleep duration requirements (Nau et al., 2005).
Cognitive therapy has become a standard component of most insomnia interventions (Morin, Bootzin, et al., 2006). Its contribution to outcomes has been examined in younger adults (Harvey, Sharpley, Ree, Stinson, & Clark, 2007); however, it remains to be evaluated in older adults (McCurry et al., 2007).

**Sleep Hygiene Education**

This intervention is mostly concerned with health practices (e.g., diet, exercise, substance use) and environmental factors (e.g., light, noise, temperature) that may interfere with sleep. Although these factors are seldom of sufficient severity to be the primary cause of insomnia, they may exacerbate sleep difficulties caused by other factors. Several recommendations can be made to minimize interference from poor sleep hygiene practices such as avoidance of stimulants (e.g., caffeine, nicotine) and alcohol, exercising regularly, minimizing noise, light, and excessive temperature. Psychoeducation could also include some information on how to stay active, busy, and plan interesting activities to fight boredom during the day.

Although sleep hygiene education alone is often not sufficient for treating insomnia successfully (Engle-Friedman et al., 1992), a regular exercise regimen has been found useful for insomnia in elderly populations (King, Oman, Brassington, Bliwise, & Haskell, 1997). Table 1 presents an overview of key points when planning CBT with older adults.

**Clinical Vignette**

Lillian is a 68-year-old widowed woman (predisposing factor). She retired from teaching 3 years ago and lives alone in her home. She has osteoporosis and joint pain, but the symptoms are now controlled with medication and an exercise program. Aside from occasional pain and discomfort during the day, she has no other serious health problems and did not present any symptoms suggestive of another sleep disorder. She reports having been preoccupied with her sleep for almost 20 years. She first experienced sleep difficulties when she was 49 years old and was experiencing menopausal symptoms. She was bothered by hot
flushes in the middle of the night and it was difficult for her to fall back to sleep (precipitating factor). The sleep difficulties subsided along with the other symptoms after she initiated hormonal therapy, but the fear of experiencing sleeplessness and its potential consequences the next day (perpetuating factor) remained. She also felt very strongly that since she was getting old, insomnia could have serious consequences on her health and feared that it could be a risk factor for cancer (perpetuating). She reports that she began to change some of her sleep habits at that time in order to compensate for sleep loss and make sure she got enough rest (perpetuating). The sleep difficulties worsened considerably 10 years ago after her husband passed away (precipitating). She was prescribed lorazepam 1 mg at bedtime for a month. She continued using it on an as-needed basis for close to a year. She consulted a psychologist at that time to help her through bereavement. While her anxiety (can be all predisposing, precipitating or maintaining factor) eventually decreased following therapy, the sleep difficulties remained and, although they eventually decreased in severity, they took on a chronic form with waxing and waning symptoms. She managed the more severe bouts with occasional medication and natural products (perpetuating factor). Three years ago, when she retired from work (precipitating factor), her sleep difficulties resumed a regular nightly course. She was then prescribed zolpidem nightly for one month, which she continued using on an intermittent schedule (can be a perpetuating factor).

At time of evaluation, she reported both difficulties falling asleep and maintaining sleep and would wake up two to three times per night. She estimated spending around 2.5 to 3 hours awake per night. Her usual bedtime was 10:00 P.M. and she would leave the bed at around 7:00 A.M. She reported taking a nap of approximately 90 minutes late in the morning, with the hope of feeling less tired throughout the day, but reported that she would only sleep for a couple of minutes during that period but stayed in bed to rest (perpetuating factor). She reported increased daytime fatigue and decreased mood. She was regularly cancelling her daytime activities (perpetuating factor), sometimes staying at home for the whole day because she felt...
too tired to go out. She feared that she might have a car accident or fall when she was too tired (perpetuating factor). She suffered from a fractured arm (precipitating factor) a few months before she came into treatment. Because she had osteoporosis, she feared that she may fall again and seriously injure herself (perpetuating factor), thus limiting or cancelling many daytime activities if she didn't feel rested enough to undertake them (perpetuating factor).

The clinical evaluation suggested primary insomnia in the moderate to severe range. Although she did present anxiety symptoms, frequent worries and a mildly dysphoric mood, she did not meet the criteria for any Axis I disorder of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; American Psychiatric Association [APA], 2000). Lillian was given sleep diaries (see Morin & Espie, 2003) to keep for the two upcoming weeks. She was also asked to fill out the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Garbin, 1988) and the State-Trait Anxiety Inventory (STAI; Spielberger, 1983) to monitor her mood pre- and posttreatment. She also filled out the Dysfunctional Beliefs about Sleep Scale (DBAS; Morin, Vallières, & Ivers, 2007), which can be useful to identify some strongly engrained beliefs regarding sleep and sleep difficulties to address during cognitive therapy.

**Sleep-by-session Treatment**

The different components of CBT are usually introduced in a sequential fashion over six to eight therapy sessions (Morin & Espie, 2003). Sleep restriction is usually introduced first, followed by stimulus control, cognitive therapy, and sleep hygiene. This sequence can be altered contingent on the treatment targets identified during clinical assessment. The standard approach is usually interactive and didactic. Sessions usually begin with setting the sessions' agenda, reviewing the sleep diary data with the patient, setting the sleep window for the upcoming week, and discussing compliance issues. The prior week's homework is then discussed and new topics (behavioral or cognitive) are introduced. The session usually ends with a brief review of the session's key points and explaining the homework for the upcoming week. Between-session homework and behavioral experiments (Ree & Harvey, 2004) are
essential parts of this treatment. The sessions described below followed this structure. The evolution of Lillian's sleep parameters and sleep efficiency throughout treatment sessions are depicted in Figures 3a and 3b.

**Session 1**

The treatment approach and rationale were presented and discussed. Patient and therapist worked together at identifying realistic treatment goals. The prior week's sleep diary showed a mean total sleep time of 370 minutes (6 hours, 10 min) and the mean sleep efficiency was of 70%. In addition to the daily late-morning nap she reported, Lillian reported frequent short involuntary naps close to bedtime (perpetuating factor), lying on the couch watching TV. An individualized case conceptualization was conducted and shared with Lillian, emphasizing the relationship between her excessive preoccupations with sleep, excessive focus on her physical sensations during the day, watching out for fatigue symptoms, negative emotions (anxiety, frustration, and helplessness), activation during prolonged awakenings and maladaptive behaviors (frequent naps, frequent daytime bed rest with an effort to fall asleep). The type of model depicted in Figure 2 can be used in-session to illustrate the interplay of different perpetuating factors; a blank-box model template can be used for patients to identify the perpetuating factors that are relevant to them. This type of exercise can be interesting to help patients better understand the consequences of their thoughts and behaviors on their sleep. Sleep restriction and stimulus control rationale and procedures were carefully explained; the first sleep window was set at 6 hours and the sleep schedule was collaboratively decided upon.

Activities to help manage sleepiness and help prevent evening napping were identified and written down (e.g., talk on the phone with a friend, knit, watch TV sitting on a chair instead of lying on the couch, save washing dishes and other light chores for a little later to remain more active during the evening and, if sleepiness is felt, walk around the room for a few minutes).
Session 2

The prior week's sleep efficiency index was of 90%, the sleep window was thus increased by 15 minutes and a new sleep schedule was set. Lillian reported difficulties staying awake until the prescribed bedtime. Ways to fight sleepiness in the evening were reviewed and a short early-evening walk was planned. The regular daily nap was also moved to the early afternoon. Sleep hygiene information and education on sleep patterns and normal changes with aging were discussed, with an emphasis on the importance of daily exercise and planning interesting activities during the day as well to fight boredom and sleepiness.

Session 3

The sleep window was increased to 6.5 hours. Pros and cons of hypnotic use were discussed, including their effects on sleep and possible next-morning residual effects. Cognitive therapy work aiming at reducing sleep-related anxiety and excessive sleep focus was initiated. The three-column negative automatic thoughts form (J. Beck, 1995) was introduced to help track specific sleep-related negatives cognitions and several examples were done in-session. At this point, some cognitive work was done at every remaining session.

Session 4

The sleep window was increased by 15 minutes. Going over the prior week's sleep, Lillian reported that her room temperature and her cat climbing into her bed may also be disturbing her sleep, but was hesitant to make the necessary changes fearing it might worsen her sleep (perpetuating factor). Through the use of behavioral experiments, the therapist suggested that she tested those two hypotheses in the upcoming week. Cognitive work on the preoccupations Lillian reported and on themes identified on the DBAS was continued. The five-column automatic thoughts form (J. Beck, 1995) was introduced and work on how to restructure her negative automatic thoughts between sessions was begun, several examples using what she had reported were done in-session. Table 2 presents an example of a completed five-column form.
Session 5

Because Lillian's sleep efficiency index was lower this week (82%), the sleep window was maintained at 6 hours, 45 min. This was addressed and treatment rationale was reviewed. Ways to help with compliance and daytime fatigue were brainstormed. Cognitive therapy work on relevant themes such as the fear of driving after a poor night's sleep, effects of cancelling her activities on daytime sleepiness and mood (e.g., loneliness) and fear of chronic insomnia consequences was continued. The risks of falling asleep while driving (which she had never experienced but had read about) were evaluated and higher risk situations were distinguished from low risk situations. Progress up to this point was discussed and charted and Lillian was encouraged to keep up her efforts and involvement in treatment.

Session 6

As Lillian was more compliant, her sleep efficiency index went back up to 94%. Her sleep window was consequently increased to 7 hours. Cognitive therapy further addressed negative automatic thoughts using the five-column automatic thoughts form and planning behavioral experiments to restructure these thoughts and challenge strongly engrained beliefs such as her estimated sleep needs, the fear of insomnia consequences and excessive avoidance of some daytime activities.

Session 7

The sleep window was increased to 7 hours and 15 minutes. In preparation for the end of therapy, all behavioral procedures were reviewed to further increase integration and identify potential compliance problems. Strategies to maintain treatment gains were identified and written down. The more salient points included identifying and writing down the remaining preoccupations and fears about insomnia consequences, encouraging her to continue to work with the automatic thoughts form at home, staying more active early in the evening when sleepiness was higher and planning her daytime activities to ensure she remains socially and physically active. Cognitive therapy work was continued and the remaining preoccupations and
erroneous beliefs about sleep identified on the DBAS were addressed. Along with her other weekly assignments, Lillian also filled out the BDI-II and the STAI.

**Session 8**

Since this was the last treatment session and given that the sleep efficiency index was very good (96%), the sleep window was increased to 7.5 hours, which was close to Lillian's reported sleep needs. Relapse prevention interventions, emphasizing specific problems and high-risk situations, distinguishing between lapses and relapses, and actions to take to maintain treatment gains were discussed. Progress from pre- to posttreatment was charted. Graphs such as those presented in Figures 3a and 3b were actually used to show Lillian the evolution of her sleep throughout treatment. Her pre-post scores on the BDI-II and STAI were also discussed in the context of the relationship between sleep and mood and the impact that each can have on the other. Both measures showed some improvement; her BDI-II score went from 15 to 7 and the STAI from 44 to 39 by the end of treatment. Final recommendations were made and therapy was ended.

**Conclusions and Future Research Directions**

The clinical vignette presented in this article illustrates how CBT can be implemented on an outpatient basis, with an older person who did not present any major physical or mental health problems. Based on our clinical experience, many older adults with sleep disturbances present with similar complaints and intervening early on is important as it helps prevent worsening of the sleep problem and often contributes to improve mood and quality of life. Management of insomnia complaints in older adults with severe medical conditions (e.g., degenerative disorders) or institutionalized elderly can be quite different. Sleep can be severely disrupted in hospitals or nursing homes because of several environmental factors associated with the setting per se (e.g., routine care, living arrangements, noise, lighting) and interventions with this population are most often contingent upon the nursing staff or family caregivers (McCurry et al., 2005).
Lillian was very motivated; she was receptive to this approach and very compliant with treatment recommendations. This is not always the case, however. Some of the procedures can be challenging for some patients and adherence with treatment recommendations can be quite variable (Bouchard, Bastien, & Morin, 2003; Perlis et al., 2004; Riedel & Lichstein, 2001). For example, Riedel and Lichstein showed that adherence to stimulus control recommendations was only 69% in their elderly sample. Strategies to enhance motivation and treatment adherence are essential parts of CBT and related problems may need to be addressed more than once during the therapeutic process. For a detailed discussion of barriers to engagement in sleep restriction and stimulus control, see Vincent, Lewycky, and Finnegan (2008). At time of evaluation, Lillian was using hypnotic medication on an occasional basis only and appeared to manage to keep her use at a minimal level. She did not report feeling dependent or that she could not manage without it and no formal intervention was provided to manage hypnotic use, apart from examining with her the pros and cons of hypnotics and making sure she was using it correctly. Discontinuing chronic hypnotic use and managing hypnotic dependence can be challenging, especially in seniors. Nevertheless, results from a recent study suggest that CBT can be useful in improving sleep in long-term chronic users (Soeffing et al., 2008) and other evidence also shows that CBT during taper can facilitate discontinuation per se (for a review, see Bélanger, Belleville, & Morin, in press).

In a consensus conference on the management of sleep disorders, the National Institutes of Health (2005) specifically stressed the importance of evaluating and treating sleep disorders in older adults as sleep problems expose this particularly vulnerable population to the development of other conditions and increases the burden of care. However, many healthcare providers continue to consider insomnia in the elderly as a natural consequence of aging. Healthcare providers should be more cognizant of the fact that sleep disturbance is not a function of age per se, but rather a function of all the other consequences of aging and that managing insomnia specifically may improve overall health and quality of life of elderly patients.
Despite increased research on the treatment of late-life insomnia in the last decade, additional studies are needed to improve access and effectiveness of current therapies. For instance, while there is strong empirical evidence supporting the use of CBT in older adults with either primary or secondary insomnia, a number of barriers (e.g., availability cost, transportation) may prevent elderly persons from accessing valuable treatment resources. Clinical research is needed to validate treatment delivery methods such as self-help approaches and group therapy, which could help overcome some of these barriers and, ultimately, prove more cost-effective than traditional face-to-face therapy. Self-help treatment provided in the form of written, audio-video, or electronic (Internet) material may represent a useful alternative or complement to professionally guided therapy (Rybaczyck, Lopez, Schelbe, & Stepanski, 2005). Telephone consultation and group therapy can also reduce the cost of therapy, with the added benefit for group therapy of providing opportunities for social interactions and support from peers experiencing similar problems. This is an important area for further research as many older adults do not have the financial resources to receive individual treatment provided by professional therapists. Community-based educational programs targeting senior citizens may also prove valuable. Providing basic information about normal sleep patterns in older age and simple lifestyle recommendations for maintaining healthy sleep with aging might prevent the development of chronic insomnia and long-term dependence on hypnotic medications. Such hypotheses warrant empirical studies.

Minimal interventions such as these are unlikely to be sufficient for individuals with more complicated insomnia. In fact, there is no single treatment that works for every person with insomnia, whether younger or older, and future research is needed to optimize benefits of current therapies and develop new ones that are more specific to some of the unique features of insomnia in later life. We could then evaluate whether individually tailored therapies for late-life insomnia is more effective than the usual generic CBT. Future research is needed to examine what should be the first-line therapy for insomnia in late-life, and how to proceed with second-
level treatment for those who do not respond to initial therapy. For the most challenging forms of insomnia in elderly individuals with dementia and other chronic illness, the evaluation of multicomponent therapeutic approaches using behavioral, environmental, and pharmacological interventions are likely to be necessary.
Figure 1. A conceptual model of the development of chronic insomnia. Adapted from Spielman and Glovinsky (1991).

Figure 2. A microanalytic model of chronic insomnia showing how maladaptive sleep habits and dysfunctional beliefs and attitudes can contribute to perpetuate insomnia. Reproduced with permission from Morin (1993).
Table 1
Description of CBT components and special considerations when used with older adults

<table>
<thead>
<tr>
<th>Intervention strategy</th>
<th>Description and aim</th>
<th>Special considerations</th>
</tr>
</thead>
</table>
| **Stimulus Control**  | • Reassociate the bed/bedroom with sleep and re-establish a consistent sleep-wake schedule.  
• Go to bed only when sleepy; get out of bed when unable to sleep; use the bed/bedroom for sleep only; arise at the same time every morning; no napping. | • Getting out of bed during long awakenings in the middle of the night should be implemented with caution—or avoided—with some older adults with restricted mobility, difficulties ambulating or confused.  
• Napping can be beneficial if properly timed and short in duration. It can help postpone bedtime and decrease daytime fatigue in some elderly.  
• It may be useful to help some older adults find some activities in order to stay active. Find something else (than sleep) to do in the morning and in the evening. |
| **Sleep Restriction**  | • Curtail time in bed to the actual sleep time, thereby creating mild sleep deprivation, which results in more consolidated and more efficient sleep. | |
| **Relaxation Training** | • Reducing somatic tension (e.g., progressive muscle relaxation, autogenic training) or intrusive thoughts (e.g., imagery training, meditation) interfering with sleep. | • Progressive relaxation techniques are physically demanding and directives are sometimes difficult to understand and apply.  
• Prevent muscle spasms or arthritic pain by eliminating the muscle tensing and focus on releasing tension passively.  
• Teaching about normal sleep and aging can shape realistic expectations. |
| **Cognitive Therapy**  | • Changing faulty beliefs, attitudes, misconceptions, or unrealistic expectations about sleep, insomnia, and the next day consequences. | |
| **Sleep Hygiene Education** | • General guidelines about health practices (e.g., diet, exercise, substance use) and environmental factors (e.g., light, noise, temperature) that may promote or interfere with sleep. | • Importance of being physically active.  
• In nursing home: adapting on environmental factors. |
Figure 3. a. Evolution of sleep parameters throughout treatment sessions. TIB = time in bed; TST = total sleep time; TWT = total wake time; S = session; Pre-tx = pretreatment. b. Evolution of sleep efficiency throughout treatment sessions.
### Table 2
Example of a completed negative automatic thoughts form

<table>
<thead>
<tr>
<th>Identification and evaluation of your automatic thoughts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Situation (Date)</strong></td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td><strong>What situation led to the negative emotions?</strong></td>
</tr>
<tr>
<td>1. How did you feel at that time?</td>
</tr>
<tr>
<td>2. How intense, on a scale of 0-100, was each emotion?</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td><strong>05/15/2008 Last Tuesday night, around midnight. I was in bed since 9:45 and was still not asleep</strong></td>
</tr>
<tr>
<td>Discouraged (50%)</td>
</tr>
<tr>
<td>Sad (30%)</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td><strong>05/18/2008 When I woke up this morning I felt heavy and so tired...</strong></td>
</tr>
<tr>
<td>Frustrated (50%)</td>
</tr>
<tr>
<td>Anxious (about 25%)</td>
</tr>
</tbody>
</table>


References


