The prevalence of insomnia in the general population is approximately 6% to 10%. In addition, an estimated 30% of the general population may have symptoms of insomnia without meeting the diagnostic criteria. As a disorder, insomnia is characterized by a persistent difficulty initiating or maintaining sleep, or early morning awakening with inability to return to sleep, that has been present for at least 3 months. Additionally, the sleep difficulties must occur at least 3 nights a week, result in impaired daytime functioning, and cause significant distress.

Cognitive-behavioral therapy for insomnia (CBT-I) is an effective treatment, supported by several systematic reviews and meta-analyses. In the short term, CBT-I is as effective as pharmacotherapy. However, CBT-I is the preferred treatment for chronic insomnia, according to recommendations in European and American guidelines.

Here we review 8 recent studies that examined CBT-I. These studies are summarized in the Table (page 41).


Although CBT-I is a first-line treatment for chronic insomnia, it is underutilized in clinical practice primarily due to limited availability. Because few clinicians are certified in CBT-I, it has become necessary to develop alternative modes of delivery for CBT-I, such as fully automated, internet-delivered approaches to reach more patients with insomnia. Digital CBT-I (dCBT-I) is comparable to in-person CBT-I in improving insomnia symptoms and reducing concurrent depressive symptoms with insomnia. It is unclear if unguided, internet-delivered CBT-I is effective for achieving remission from depression or preventing depression in the long term. Chen et al examined the efficacy of dCBT-I in reducing and preventing depression over a 1-year follow-up.

Study design
- Participants from various centers in Southeastern Michigan were recruited between 2016 and 2017. Data was obtained from the Sleep to Prevent Evolving Affective Disorders (SPREAD) trial.
- Participants who met DSM-5 criteria for chronic insomnia disorder were randomized to dCBT-I (n = 358) using the Sleepio digital CBT program via the internet or to online sleep education (n = 300).
- The primary outcome was depression, measured using the Quick Inventory of Depressive Symptomatology-Self Report.
Clinical Point
dCBT-I can improve depression and insomnia and has a sustained antidepressant effect.
(QIDS-SR-16) at 1-year follow-up. Depression incidence was also tested against insomnia treatment response.

**Outcomes**
- The severity of depression was significantly lower at 1-year follow-up in the dCBT-I group compared with the control group.
- The dCBT-I group showed a 51% higher remission rate than the control group at 1-year follow-up.
- The incidence of moderate to severe depression in individuals with minimal to no depression at baseline was halved at 1 year after receiving dCBT-I treatment compared with the control group.

**Conclusion**
- dCBT-I can improve depression and insomnia and has a sustained antidepressant effect.
- dCBT-I is effective for preventing depression. In other words, the risk of developing depression is decreased when dCBT-I is used to treat insomnia in individuals with minimal to no depression at baseline.


dCBT-I is effective for treating insomnia in the short term; however, little is known about the long-term effectiveness of dCBT-I on sleep and daytime symptoms. Vedaa et al. evaluated the efficacy of dCBT-I at 18 months after the intervention.

**Clinical Point**
**Fully-automated, internet-based CBT-I is efficacious in maintaining positive effects on sleep and daytime functioning for up to 18 months**

**Study design**
- In this randomized controlled trial (RCT), the efficacy of unguided, internet-delivered CBT-I (n = 95) was compared with web-based patient education (n = 86) for patients with chronic insomnia.
- Participants were assessed at baseline, after a 9-week intervention period, and at 6-month follow-up. Participants in the internet CBT-I group were reassessed at 18 months after the intervention using online questionnaires, including the Insomnia Severity Index (ISI), Bergen Insomnia Scale (BIS), Brief Dysfunctional Beliefs and Attitudes Scale, Hospital Anxiety and Depression Scale, Chalder Fatigue Questionnaire, and sleep diaries.

**Outcomes**
- At 18 months, significant improvements were noted from baseline ISI and BIS scores and in levels of daytime fatigue, as well as psychological distress and beliefs about sleep.
- Sleep diary variables—including sleep onset latency, time awake during the night (wake time after sleep onset), early morning awakening, total sleep time, and sleep efficiency—showed significant improvement from baseline to 18-month follow-up (at least moderate effect size).
- Improvements were maintained from the completion of the 9-week intervention to follow-up at 18 months.

**Conclusion**
- Fully-automated, internet-based CBT-I is efficacious in maintaining positive effects on sleep and daytime functioning up to 18 months after completing treatment.


Comorbid insomnia and sleep apnea (COMISA) can affect a patient’s ability to accept and comply with continuous positive airway pressure (CPAP) therapy. Providing adequate treatment for these patients can be challenging.

Sweetman et al. evaluated the acceptance and use of CPAP in patients with
obstructive sleep apnea and chronic insomnia following initial treatment with CBT-I compared with treatment as usual (TAU).

**Study design**
- In this RCT, 145 participants with COMISA were randomized to 4 sessions of CBT-I or TAU before starting CPAP therapy until 6 months after randomization.
- Primary outcomes were objective CPAP adherence and objective sleep efficiency at the end of 6 months.
- Secondary outcomes were CPAP acceptance/rejection, changes in sleep parameters, global insomnia severity, and daytime impairments at 6 months.

**Outcomes**
- The CBT-I group had higher initial CPAP acceptance and greater average nightly adherence to CPAP (61 minutes more) than the TAU group.
- Significant improvements were noted in global insomnia severity, nighttime insomnia complaints, and dysfunctional sleep-related cognitions at 6 months in the CBT-I group compared with TAU.
- No differences between the 2 groups were noted in sleep diary parameters or daytime impairments at 6 months.

**Conclusions**
- Patients with COMISA can benefit from receiving CBT-I before starting CPAP therapy because CBT-I can improve immediate acceptance of CPAP and may help to maintain adherence to CPAP over time.
- Patients with sleep apnea should be evaluated for comorbid insomnia, and CBT-I should be considered before starting CPAP treatment.


The Treatment of Insomnia and Depression (TRIAD) study reported the effects of combining antidepressants with CBT-I in patients with major depressive disorder (MDD) and insomnia. Asarnow et al examined the moderation of circadian preference in the reduction of depression and insomnia symptoms severity during the same trial.

**Study design**
- In this RCT, 139 participants with MDD and insomnia were treated with an antidepressant (escitalopram, sertraline, or desvenlafaxine) and randomized to 8 weeks of CBT-I or control therapy (sleep education).
- Measurements used were Composite Scale of Morningness for circadian preference (morningness vs eveningness), depression severity with the Hamilton Rating Scale for Depression, and insomnia severity using the ISI.

**Outcomes**
- CBT-I was effective for insomnia regardless of circadian preference.
- A smaller reduction in depression scores was noted in participants with greater evening preference.
- Depression outcomes were better among participants with evening preference if they were assigned to CBT-I vs control therapy.
- The control therapy (sleep education) was particularly ineffective in reducing depression symptoms in participants with evening preference.

**Conclusion**
- Individuals with MDD and insomnia and an evening preference are at an increased risk for poor response to antidepressants alone.
- Outcomes for both depression and insomnia improve if CBT-I is combined with antidepressants.
- Offering sleep education alone is not sufficient.
Clinical Point

Both CBT-I and sleep restriction therapy are efficacious for menopause-related insomnia, but CBT-I produces higher remission rates.

Postmenopausal women with sleep disturbances experience higher medical and psychiatric comorbidities, and have higher alcohol consumption and stress levels than postmenopausal women with good sleep. Nonpharmacologic insomnia treatments with durable effects are imperative for postmenopausal women because they are safer than pharmacologic approaches. Although CBT-I is the recommended first-line treatment for chronic insomnia, its application in menopause-related insomnia is limited. Drake et al. evaluated the efficacy of CBT-I in menopause-related insomnia compared with sleep restriction therapy (SRT) and sleep hygiene education (SHE).

Study design

- This RCT was conducted at a health system with 6 hospitals in Michigan.
- Postmenopausal women who met DSM-5 criteria for chronic insomnia disorder (n = 150) were randomized into 1 of 3 groups: SHE, SRT, or CBT-I.
- Primary outcome measures were ISI scores and sleep diaries that documented multiple sleep parameters, including sleep onset latency, wake time after sleep onset, number of awakenings in the middle of the night, time in bed, total sleep time, and sleep efficiency. These were measured at baseline, after completion of treatment, and 6 months after treatment.

Outcomes

- Both CBT-I and SRT outperformed SHE on the ISI and for most of the sleep parameters on sleep diaries immediately after treatment completion and at 6 months after treatment.
- Total sleep time was 40 to 43 minutes longer in the CBT-I group than in the SRT and SHE groups at 6-month follow-up.
- Remission rates (sleep onset latency ≤30 minutes, wake time after sleep onset ≤30 minutes, sleep efficiency ≥85%) were significantly higher in CBT-I group (CBT-I > SRT > SHE).

Conclusion

- Sleep hygiene education as a stand-alone treatment is not useful for treating chronic insomnia.
- Both CBT-I and SRT are efficacious for menopause-related insomnia.
- CBT-I may be a better option than SRT because it produces higher remission rates and better long-term outcomes.

CBT-I has shown efficacy in the treatment of insomnia in postmenopausal women. In this study, Kalmbach et al. compared 3 nonpharmacologic modalities—CBT-I, SRT, and SHE—for the treatment of menopause-related insomnia and daytime impairment.

Study design

- In this RCT, 150 participants with new peri- and post-menopausal onset or exacerbation of insomnia were randomized to 1 of 3 groups: SHE, SRT, or CBT-I.
- Participants were assessed at baseline, after treatment completion, and at 6-month follow-up using the ISI, sleep diaries, Fatigue Severity Scale, Epworth Sleepiness Scale, Work Productivity and Activity Impairment Questionnaire, and 36-item Medical Outcomes Study Short Form Health Survey.
Outcomes

• In both the CBT-I and SRT groups, significant improvements were noted in fatigue, energy, daytime sleepiness, and work function after treatment completion and at 6-month follow-up.

• Improvements were noted in emotional well-being and resiliency to physical and emotional problems in the CBT-I group at 6 months.

• Improvements in overall general health and social functioning, less pain, and fewer hot flashes were reported by postmenopausal women who remitted from insomnia; however, these benefits were not directly related to any specific treatment modality.

Conclusion

• CBT-I and SRT are superior to SHE for improving daytime functioning, and some aspects of life quality and work productivity, in postmenopausal women with insomnia.

• CBT-I may be superior to SRT in producing larger improvements in fatigue, energy level, and daytime sleep propensity.

• CBT-I can improve emotional well-being and resilience to emotional problems in postmenopausal women with insomnia.


Depression is common in patients with cancer and is usually associated with comorbid insomnia. Depression has significant effect on treatment compliance, coping with illness, and quality of life. Peoples et al15 examined the effects of CBT-I on depression in cancer survivors.

Study design

• This was a secondary analysis of a multicenter, randomized, placebo-controlled trial that evaluated interventions for cancer survivors with chronic insomnia in which the primary outcome measure was insomnia severity.

• Cancer survivors (n = 67) were randomized to CBT-I plus armodafinil or placebo or to SHE plus armodafinil or placebo.

• The Patient Health Questionnaire-9 (PHQ-9) and ISI were used to measure depression and insomnia at baseline, after 7-weeks of intervention, and at 3 months postintervention.

Outcomes

• Immediately after completing the intervention, cancer survivors treated with CBT-I had significantly less depression (38% greater improvement in depression) compared with those who received SHE (control group).

• In the CBT-I group, 23% of cancer survivors achieved a clinically important reduction (5-point reduction on PHQ-9 total score) in depression at postintervention compared with 6% of those in the control group.

• At 3 months after the intervention, only 14% of cancer survivors in CBT-I group reported depression (PHQ-9 score >4), whereas 47% of those in the control group (SHE) reported depression.

Conclusion

• CBT-I improves both depression and insomnia in cancer survivors, and the improvements are sustained at 3 months after completing treatment.

• Improvement in insomnia severity appears to mediate the positive effects of CBT-I on depression.


The American Academy of Sleep Medicine recommends imagery rehearsal (IR) therapy, which incorporates some components of CBT-I, for the treatment of recurrent
posttraumatic stress disorder (PTSD)–related nightmares. In this study, Harb et al16 compared CBT-I plus IR to CBT-I alone for the treatment of nightmares in veterans with combat-related PTSD.

Study design
• This RCT included male and female US veterans (n = 108) deployed to Iraq and Afghanistan with current PTSD and recurrent nightmares related to deployment.
• Participants were randomized to 6 sessions of CBT-I plus IR or CBT-I alone.
• Primary outcome measures included frequency of nightmares and distress associated with nightmares.

Outcomes
• A significant improvement in nightmares was noted in both groups (29% of participants showed a clinically-significant reduction in nightmare frequency and 22% of participants achieved remission).
• CBT-I plus IR was not superior to CBT-I only at postintervention and at 6-month follow-up.

Conclusion
• Both IR and CBT-I demonstrated efficacy for decreasing nightmare frequency and distress.
• Combining IR and CBT-I may not provide a synergistic advantage over CBT-I alone for treating PTSD-related nightmares in veterans.

References