JCSM
Journal of Clinical Sleep Medicine

NIH INSOMNIA ABSTRACT

Efficacy of Behavioral and Psychological Treatments of Chronic Insomnia

Charles Morin, Ph.D.

École de Psychologie, Université Laval, Sainte-Foy, Québec, Canada

Behavioral and psychological interventions that have received adequate validation for the treatment of chronic insomnia include sleep restriction, stimulus control therapy, relaxation, cognitive therapy, sleep hygiene education, and a combination of those methods, usually referred to as cognitive-behavior therapy.[1] The primary objective of these interventions is to remove those factors that perpetuate or exacerbate sleep difficulties over time. Such features may include hyperarousal, poor sleep habits, irregular sleep-wake schedules, and misconceptions and excessive worry about sleep and insomnia.

Evidence for Efficacy

Treatment outcomes from controlled studies of behavioral and psychological interventions have been summarized in three meta-analyses.[2–4] Evidence from these quantitative reviews show that treatment produces reliable changes on several sleep parameters (see Table 1), including sleep latency (effect sizes ranging from 0.87 to 1.05), number of awakenings (0.53–0.83), duration of awakenings (0.65–1.03), total sleep time (0.42–0.49), and sleep quality ratings (0.94–1.44). The magnitude of those therapeutic effects is considered large ($d > 0.8$) for sleep latency and sleep quality and moderate ($d > 0.5$) for other sleep parameters. When converted into percentile ranks, these data indicate that between 70 and 80 percent of patients with insomnia benefit from behavioral and psychological treatment. Only a small proportion (20–30 percent) achieves full remission (i.e., symptom-free) after treatment, but the majority obtains significant (greater than 50 percent) symptom reduction on measures of sleep latency and time awake after sleep onset, with absolute values of those parameters falling below or near the 30-minute criterion used to define sleep onset and maintenance insomnia.[1–4] Total sleep time is increased by about 30 minutes, from 6 to 6.5 hours, and sleep quality is enhanced as well. Findings from meta-analyses represent conservative estimates of treatment effects as they are based on averages computed across all behavioral interventions and insomnia diagnoses (i.e., primary and secondary). Comparisons of single treatment modalities suggest a slight advantage for stimulus control and sleep restriction therapies. There is a trend currently, however, for most investigators to combine cognitive-behavioral approaches, which may produce broader and more clinically significant impact on daytime functioning parameters.

Treatment outcome has been documented primarily with prospective daily sleep diaries, with approximately 25 percent of randomized clinical trials using polysomnography[5–7] and another 20 percent using wrist-actigraphy.[8] Although the magnitude of improvements is usually smaller on the later measures, it does parallel clinical changes reported by patients on daily sleep diaries. Collectively, these findings indicate that treatment does not only alter patients' sleep perception but also produces physiological changes on sleep continuity measures.

Evidence for Generalizability

Most treatment studies, until recently, had focused on primary insomnia in otherwise healthy, young, and medication-free patients. Evidence from several recent studies suggests that patients with medical and psychiatric conditions can also benefit from insomnia-specific treatment, even though the outcome with those patients is more modest than in primary insomnia. Controlled studies have documented the benefits of cognitive-behavior therapy for treating insomnia associated with chronic pain,[9] cancer,[10] and various medical conditions in older adults.[11] The findings from secondary insomnia studies indicate that baseline and posttreatment insomnia symptom measures are usually more severe among patients with comorbid disorders, but the absolute changes on those outcomes during treatment are comparable to patients with primary insomnia.

Some early studies suggested that older adults did not respond to treatment as well as younger adults, but more recent findings indicate that they can benefit from treatment, particularly when screened for other sleep disorders (e.g., sleep apnea).[6,7,11] There is also evidence that a supervised withdrawal program, with or without cognitive-behavior therapy, can facilitate discontinuation of hypnotic medications among prolonged users.[12,13]

Long-Term Outcomes

A reliable finding across studies with follow-ups is that behavioral treatment produces stable changes in sleep patterns over time. Indeed, several studies with long-term follow-up data have shown that sleep improvements observed at posttreatment are well maintained up to 6, 12, and 24 months after treatment completion.[5–8] Long-term outcomes must be interpreted cautiously, however, as few studies report long-term data and, among those that do, attrition rates increase over time. In addition, a substantial proportion of patients who benefit from short-term therapy remain vulnerable to recurrent episodes of insomnia in the long-term. There is a need to evaluate the effects of long-term mainte-

Disclosure: Dr. Morin has indicated no financial conflict of interest.

Table 1—Mean Effect Sizes of Psychological and Behavioral Treatments for Insomnia

Authors/Variables	SOL	NA	WASO	TST	SQ
Morin et al. (1994)	0.88 (0.67)[a]	0.53 (0.67)	0.65 (0.67)	0.42 (0.64)	n/a
Murtagh and Greenwood (1995)	0.87 (0.58–1.16)[b]	0.63 (0.63–0.63)	n/a	0.49 (0.49–0.49)	0.94 (0.28–1.60)
Smith et al. (2002)	1.05 (0.76)[a]	0.83 (1.30)	1.03 (0.19)	0.46 (0.62)	1.44 (1.20)

[a] Standard deviations; [b] 95 percent confidence intervals.
Note: SOL = sleep-onset latency; NA = number of awakenings; WASO = wake after sleep onset; TST = total sleep time; SQ = sleep quality; n/a = not available.

nance therapies to prevent or minimize the frequency and severity of those episodes.

Needs for Future Research

Despite recent progress made in the treatment of insomnia, there are several unresolved issues in need of further research. For instance, there is little information about the impact of insomnia treatment on measures of daytime functioning, quality of life, and psychological well-being. Also, while there is evidence supporting the efficacy of behavioral and psychological treatment, there is still little information about its clinical effectiveness[8] when implemented in clinical practices. Another challenge for the future will be to optimize outcome. Although most treated individuals are considered treatment responders, only a minority achieve full remission, and a substantial proportion continue to experience residual sleep difficulties and remain at risk for insomnia. Ongoing studies are examining what the optimal dosage of therapy is and whether the addition of maintenance and individualized therapy would enhance outcome. Additional studies are also needed to evaluate whether the addition of sleep medication to behavioral intervention has an additive or subtractive effect on short- and long-term outcomes. On the practical side, an important challenge will be to disseminate more efficiently validated behavioral interventions. Innovative treatment implementation models using nurse practitioners,[8] telephone consultations,[14] self-help materials, and the Internet could facilitate access to treatment.

REFERENCES

1. Morin CM, Hauri PJ, Espie CA, Spielman AJ, Buysse DJ, Bootzin RR. Nonpharmacologic treatment of chronic insomnia. Sleep. 1999;22:1134–56.
2. Morin CM, Culbert JP, Schwartz SM. Nonpharmacological interventions for insomnia: a meta-analysis of treatment efficacy. Am J Psychiatry. 1994;151:1172–80.
3. Murtagh DR, Greenwood KM. Identifying effective psychological treatments for insomnia: a meta-analysis. J Consult Clin Psychol. 1995;63:79–89.
4. Smith MT, Perlis ML, Park A, et al. Comparative meta-analysis of pharmacotherapy and behavior therapy for persistent insomnia. Am J Psychiatry. 2002;159:5–11.
5. Edinger JD, Wohlgemuth WK, Radtke RA, Marsh GR, Quillian E. Cognitive behavioral therapy for treatment of chronic primary insomnia: a randomized controlled trial. JAMA. 2001;285:1856–64.
6. Morin CM, Colecchi C, Stone J, Sood R, Brink D. Behavioral and pharmacological therapies for late-life insomnia: a randomized clinical trial. JAMA. 1999;281:991–9.
7. Lichstein KL, Riedel BW, Wilson NM, Lester KW, Aguillard RN. Relaxation and sleep compression for late-life insomnia: a placebo-controlled trial. J Consult Clin Psychol. 2001;69:227–39.
8. Espie CA, Inglis SJ, Tessier S, Harvey L. The clinical effectiveness of cognitive behaviour therapy for chronic insomnia: implementation and evaluation of a sleep clinic in general medical practice. Behav Res Ther. 2001;39:45–60.
9. Currie SR, Wilson KG, Pontefract AJ, deLaplante L. Cognitive-behavioral treatment of insomnia secondary to chronic pain. J Consul Clin Psychol. 2000;68:407–16.
10. Savard J, Simard S, Ivers H, Morin C. A randomized study on the efficacy of cognitive-behavioral therapy for insomnia secondary to breast cancer: I-Sleep and psychological effects. J Clin Oncol. In press.
11. Lichstein KL, Wilson NM, Johnson CT. Psychological treatment of secondary insomnia. Psychol Aging. 2000;15:232–40.
12. Morgan K, Dixon S, Mathers N, Thompson J, Tomeny M. Psychological treatment for in somnia in the management of long-term hypnotic drug use: a pragmatic randomized controlled trial. Br J Gen Prac. 2003;53:923–8.
13. Morin CM, Bastien C, Guay B, et al. Randomized clinical trial of supervised tapering, cognitive-behavioral therapy, and a combined approach to facilitate benzodiazepine discontinuation. Am J Psychiatry. 2004;161:332–42.
14. Bastien C, Morin, CM, Ouellet MC, Blais FC, Bouchard S. Cognitive-behavior therapy for insomnia: comparison of individual therapy, group therapy, and telephone consultations. J Consul Clin Psychol. 2004;4:653–9.