

NONPHARMACOLOGIC INTERVENTIONS IN SLEEP DISORDERS

INSOMNIA

Insomnia is a heterogeneous condition with a number of different possible causes (Table 6.1). Thus, "a one-size-fits-all" approach to treatment will not be as effective as that tailored to a particular patient's needs.⁴⁵

Because insomnia is such a pervasive problem, there are currently a number of self-generated and professionally designed treatment strategies. In addition, popular folk remedies are still in evidence, such as drinking

warm milk (more recently, herbal teas) or counting sheep. And since the introduction of chloral hydrate by Liebrich in 1869, a wide range of pharmacologic interventions (discussed in Chapter 7) have been used.⁴⁶

Choosing Treatment Options for Insomnia

The *duration* of insomnia is particularly important in deciding on a treatment strategy. With *transient* insomnia, treatment stresses the development of good sleep habits and judicious short-term use of sedatives or hypnotics. In cases of short-term insomnia that last up to 3 weeks and are associated with situational or medical stress, treatment strategies include behavioral techniques, discussed below, and careful and limited use of pharmacologic agents. Long-term or *chronic* insomnia, lasting more than 3 weeks, requires careful assessment and treatment according to the specific findings; options are behavioral, including relaxation, techniques and, if needed, intermittent use of sedatives or hypnotics. Figure 6.1 displays a decision tree that takes into account etiologic factors (cf. Figure 4.1).¹⁵

But because pharmacologic treatments often lose their effectiveness over time and may cause dependence, treatment of chronic insomnia must also rely on a number of nonpharmacologic options that offer help in dealing with psychologic factors, such as the tension/anxiety, and negative conditioning associated with the disorder (Table 6.2).¹⁵ As the table indicates, these therapies often address more than one factor.

Sleep Hygiene Information. Good sleep hygiene refers to a set of rules and basic information about personal and environmental activities that affect sleep. Patients who present with insomnia often engage in daily activ-

Table 6.1. Causes of Insomnia

Physical Disorders
Periodic movements during sleep, restless legs, gastroesophageal reflux, sleep apnea, fibromyalgia, arthritis, chronic pain, cardiac problems
Substances
Caffeine, nicotine, alcohol, hypnotics, tranquilizers, prescription medications, substances of abuse
Circadian Rhythm Problems
Shift work, jet lag, delayed sleep phase syndrome, advanced sleep phase syndrome
Psychologic Factors
Stress, psychopathology, nightmares, inactivity, reinforcement for insomnia
Poor Sleep Environment
Noise, ambient temperature, light, sleeping surface, bed partner
Poor Sleep Habits
Extended time in bed, naps, irregular schedule, bed as a cue for arousal

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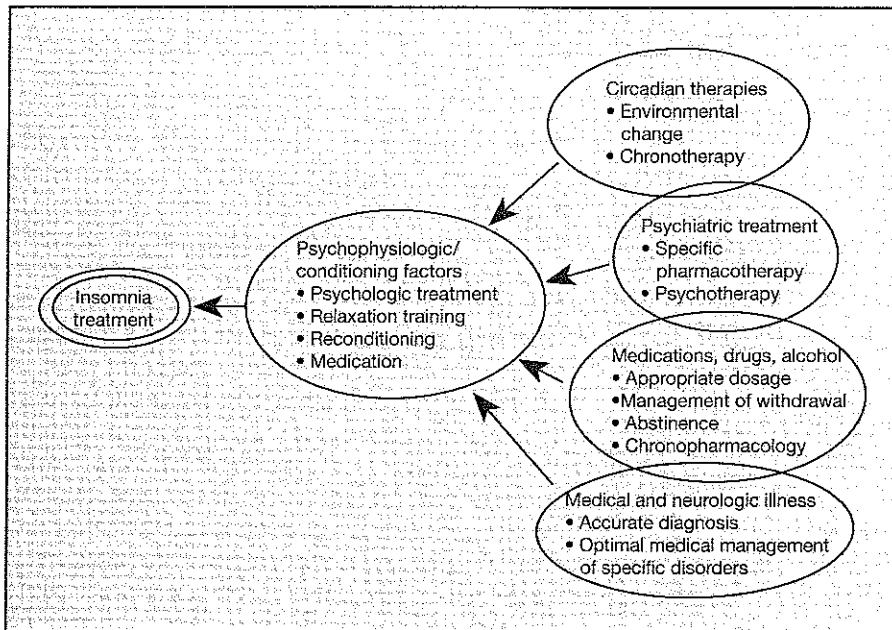


Figure 6.1 Treatment of insomnia must often address multiple etiologic factors. Treatment aimed at psychophysiological-behavioral factors is often appropriate, even when a medical, psychiatric, or circadian disturbance is present, since these behavioral factors may perpetuate other types of insomnia. (From Buysse and Reynolds,¹⁵ with permission.)

ities that interfere with good sleep. A set of rules that promotes good sleep hygiene includes

- 1) Sleep only as much as necessary to feel refreshed.
- 2) A regular wake-up time helps to set the internal circadian clock and leads to regularity of sleep onset.
- 3) Regular daily exercise tends to deepen sleep (occasional exercise, however, does not improve the net night's sleep).
- 4) Avoid noise if at all possible; sleep in a sound-attenuated room if necessary.
- 5) Excessive warmth or cold interferes with sleep.
- 6) Hunger may disturb sleep; a *light* snack may be helpful; do not indulge in a substantial meal.
- 7) An *occasional* sleeping pill can aid sleep (chronic use is generally ineffective in most insomniacs, and may lead to dependence).
- 8) Evening caffeine (including coffee, tea, chocolate, and colas) disturbs sleep.
- 9) Alcohol before bedtime (nightcap) should be avoided. Although alcohol helps tense people fall asleep more easily, their sleep is fragmented and unsatisfying.
- 10) Patients who are frustrated because they cannot fall asleep should not try harder to sleep but instead should turn on the light and do something else outside the bed, preferably in another room.
- 11) Tobacco use disturbs sleep (nicotine may help calm those addicted to it, but it is a stimulant).⁴⁷

Providing basic information about sleep hygiene during

counseling seems to be helpful when used in conjunction with other interventions; but one study that used sleep hygiene as the only intervention against insomnia did not evidence much success.^{3,48,49}

Stimulus Control Instructions. These are techniques, developed in the early 1970s by Bootzin and colleagues^{45,48}; they are designed to help the insomniac fall asleep quickly, maintain sleep, and establish a steady sleep/wake pattern. The insomniac is taught to identify the bed and bedroom exclusively with sleep and to avoid activities in the bedroom that might interfere with sleep. The patient is given a set of rules to follow^{15,45,48}:

- 1) Lie down *only* when you are sleepy and ready to sleep.
- 2) Use the bed only for sleep (and sexual activity which is conducive to sleep). Do not do anything else in bed; do not read, eat, or watch television.
- 3) If you cannot fall asleep after 10 minutes, get up and go to another room. Stay as long as you wish. When you become sleepy, return to bed. Do not watch the clock, but if you cannot fall asleep in 10 minutes or less, get up and try again later.
- 4) If you still cannot sleep, repeat Rule 3. The goal is for your mind to identify the bed/bedroom solely with sleep. Once this has occurred, you will not need to repeat this step so frequently.
- 5) Set an alarm and get up at the same time every morning, no matter how much you slept the night before.

Table 6.2. Psychologic, Psychophysiologic, and Behavioral Treatments for Insomnia

Category	Treatment	Description
Behavioral	Sleep Hygiene	Stresses environmental factors, physiologic factors, behaviors, and habits that promote sound sleep
	Stimulus Control	Reinforces bed/bedroom as a stimulus for sleeping by limiting sleep-incompatible behaviors that may become associated with bed
	Sleep Restriction	Increases sleep efficiency by limiting time spent in bed, and by causing mild sleep deprivation
Relaxation	Biofeedback	Teaches relaxation by reinforcing specific EEG or EMG patterns
	Progressive Muscular Relaxation	Teaches relaxation by systematic tensing and relaxing of muscle groups
	Autogenic Training	Teaches relaxation by coupling pleasant visual images with relaxing somatic sensations, such as warmth and heaviness
	Imagery	Teaches relaxation through pleasant mental images
Psychologic	Paradoxical Intention	Instructs patient to concentrate on staying awake, in order to reduce excessive efforts to fall asleep and performance anxiety
	Cognitive Therapy	Explores assumptions and beliefs about sleep and insomnia, and provides more rational alternatives
	Psychotherapy	"Talking therapy," focusing on psychologic conflicts, coping styles, and defense mechanisms

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The purpose of this rule is to help your body establish a consistent sleep rhythm.
6) Do not nap during the day.

Controlled studies have shown that stimulus control instructions are effective in sleep onset insomnia and they improve sleep maintenance in older patients.^{45,48}

Sleep Restriction. Sleep restriction addresses the fact that less than 85% of insomniacs' time in bed is spent sleeping; that is, they have low *sleep efficiency*. With this therapy, the healthcare practitioner uses the patient's sleep diary to estimate the actual time spent sleeping. The patient is then instructed to reduce the time spent in bed to the time spent sleeping. This deprivation helps to

consolidate sleep. When the patient's sleep efficiency goes up, the time allowed in bed is gradually increased.^{15,45}

Biofeedback. A number of relaxation techniques are recommended for treatment of insomnia. One of these is *biofeedback*, of which there are several types including EEG, electromyogram (EMG), theta, and sensorimotor rhythm (SMR) feedback. EMG biofeedback teaches relaxation, which has been shown to be effective in sleep-onset problems. SMR biofeedback strengthens a 12 to 14 Hz rhythm in the sensorimotor cortex, but has proven effective only in selected patients.^{15,45}

Relaxation Training. There are a number of relaxation training techniques, such as progressive muscular relaxation (patients tense then relax their muscles), yoga, meditation, autogenic training (relaxing coupled with pleasant sensations), and imagery creation (relaxation coupled with pleasant images); all are based on the premise that if insomniacs learn to relax during the day, they will fall asleep faster at night. These techniques have all proven effective in some insomniacs and have the added benefit of teaching a tool that can be used for coping with daily stress.^{15,45}

Paradoxical Intention. Paradoxical intention is a psychological technique that assumes sleep cannot be completely placed under voluntary control and that insomnia is increased by conscious effort to fall asleep. In this therapy, whose effectiveness has been demonstrated, the patient is instructed to *stay awake*. With the burden of falling asleep taken away, the patient's insomnia improves.¹⁵

Cognitive Therapy. Cognitive therapy is a restructuring technique that focuses on patients' personal beliefs and thoughts about sleep and insomnia. The patients are then asked to replace these beliefs with other, more rational, beliefs. Cognitive therapy has been found effective in multimodal treatment of insomnia. Paradoxical intention is a type of cognitive therapy.^{15,45}

Psychotherapy. Insight-oriented psychotherapy ("talk therapy") is often recommended for chronic insomnia, since insomniacs may have underlying symptoms of depression or anxiety that prevent sleep. Psychotherapy treats the characterologic predisposition for insomnia and thereby alleviates the condition. However, while many have claimed psychotherapy to be effective in insomnia, there have been no controlled trials.¹⁵

Effectiveness of Nonpharmacologic Insomnia Treatments. A meta-analysis of 17 studies,³ including 683 patients, showed that in those who received active treatment, posttreatment improvement ranged from a mean (unweighted) of 26% to 59%. However, even placebo-treated patients demonstrated a mean of 30% post-treatment improvement.

HYPERMOMNIA

Treatment of hypersomnia is difficult, and the results usually unsatisfactory. At present, treatments for narcolepsy or idiopathic hypersomnia are pharmacologic, and many are still experimental. *Since these conditions are chronic and often disabling, once a diagnosis is made, the healthcare practitioner should refer these patients to a qualified sleep specialist.*¹⁹

Obstructive Sleep Apnea Syndrome

Obstructive sleep apnea syndrome is treated both medically and surgically. A large component of the medical aspect is behavioral change, such as weight loss or smoking cessation. It is also important for the clinician to establish rapport so the patient will attempt to change lifestyle behaviors.⁴⁹

Risk Factor Reduction/Behavioral Modification. Patients with OSAS have a high risk of developing cardiovascular and cerebrovascular disorders, and every effort should be made to reduce CV risk factors in these patients. Sleep apnea patients should be encouraged to lose weight: Most of them are overweight, and weight loss often leads to improvement. In addition, sleep apnea patients should lower their cholesterol levels, quit smoking, decrease or eliminate alcohol in the evening, and avoid large meals before bedtime.^{22,49} Some may also benefit from training to avoid the supine sleeping position.

Diagnosis of OSAS. Definitive diagnosis of OSAS is essential before the initiation of therapy. Sleep apneas can rarely be diagnosed by history alone or by report of a bed partner. Direct observation by a skilled healthcare practitioner is of limited value: about a third of cases will be missed. Despite the cost, polysomnography is the diagnostic procedure of choice for sleep apnea. PSG monitoring quantifies frequency of apneas, hypopneas, and arousals, as well as frequency and extent of oxygen desaturation (which can also be determined by oximetry when PSG is not available). PSG also distinguishes apnea from other causes of sleep disruption, such as nocturnal myoclonus or sleep-onset REM sleep of narcolepsy. Even after treatment is begun, the sleep apnea