

Sleepless in America



Lack of sleep can lead to on-the-job injuries and productivity loss. What are the keys to more and better-quality sleep?



Insufficient sleep is a common complaint among Americans. In 2008, approximately 28% of surveyed adults in the United States reported insufficient sleep, occurring on 14 or more days out of the past 30.¹

■ *What is Insomnia?*

Insomnia is a medical condition defined as dissatisfaction with sleep quality or quantity, that includes difficulty getting to sleep, difficulty staying asleep, or early morning awakening.²⁻⁵ To meet criteria for a diagnosis of insomnia the sleep disturbance:

- causes significant distress or reduces daily functioning;
- occurs at least 3 nights per week and is present for at least 3 months (despite adequate opportunity for sleep);
- does not co-occur with another sleep disorder; and
- cannot be explained by an existing mental disorder or medical condition.

Often, insomnia cannot be attributed to substance use, a sleep disorder, or another medical condition, although these issues may be contributing factors. Insomnia can lead to psychiatric conditions, especially depression. Insomnia may put one at a higher risk of developing or experiencing a relapse of a mood disorder, and can worsen psychiatric symptoms.⁶ People with insomnia may experience physical changes, such as increased heart rate, high blood pressure, and increased levels of stress hormones; they may also develop chronic medical conditions, such as heart disease. Accordingly, insomnia is linked to increased health care use and costs, and a lower quality of life.^{2,7}

■ *How Much Sleep Is Normal?*

The normal, or necessary, amount of sleep varies by person. On average, adults need between 7 and 9 hours of sleep. For young people and babies, “normal” sleep hours may be much longer, and older adults may need less sleep to feel rested. Those who are concerned with the length of time they sleep should consult a physician. Sleep assessment tools are available online and from health care providers.⁸

No standardized test exists for insomnia; people are diagnosed from self-reported symptoms.² These symptoms commonly include irritability, sadness, increased sleepiness, fatigue while awake, and decreased psychomotor performance (such as impaired attention or memory, and slowed reaction time).



■ *Common Causes of Insomnia*

Poor sleep hygiene

Psychological factors

- Stress
- Anxiety
- Depression

Medical conditions, such as

- Chronic pain
- Joint or muscle pain (arthritis)
- Respiratory conditions
- Gastroesophageal reflux disease (GERD)
- Hormonal problems
- Overactive thyroid
- Heart conditions
- Neurological conditions (Alzheimer's or Parkinson's disease)
- Urinary system problems (incontinence, enlarged prostate)
- Sleep disorders (snoring, sleep apnea, restless leg syndrome, narcolepsy)
- Alcohol and substance use disorders

Medications and substances, such as:

- Some antidepressants
- Epilepsy medicines
- High blood pressure medication (beta-blockers)
- Steroid medication
- Nonsteroidal anti-inflammatory drugs (NSAIDs)
- Stimulants used to treat attention deficit hyperactivity disorder or narcolepsy
- Some medicines used to treat asthma (e.g., salbutamol, salmeterol, theophylline)
- Caffeine, nicotine, alcohol

■ *What Causes Insomnia?*

Insomnia can have many underlying causes and influences that make it worse (see sidebar, Common Causes of Insomnia).² These include genetic, behavioral, physical, and environmental factors, such as physical and mental illness, older age, being female, chronic pain, substance use behaviors, low socioeconomic status, shift work, and an unstable sleep schedule.^{2,7}

Insomnia may also be brought on by stress or a poor sleeping environment. Examples of a poor sleeping environment include an uncomfortable bed, exposure to light, inappropriate temperature, environmental noise, and disturbance by pets, children, or a partner who snores or moves around during sleep.

Substance misuse—such as taking recreational or non-prescribed drugs—can also affect sleep. The use of stimulants (e.g. nicotine, cocaine, amphetamines, methamphetamines, and caffeine found in tea, coffee, colas, and energy drinks) can negatively influence sleep quality. Some people may resort to drinking alcohol to get more sleep. While alcohol does help people drift off to sleep, it usually worsens the problem, as it results in abnormal, non-restful sleep.

■ *Effects of Insomnia on Worker Health and Productivity*

Insomnia is associated with a significantly decline in work performance and workplace problems.⁹⁻¹¹ Compared with good sleepers, the sleep disturbed are more likely to have on-the-job accidents, use more health care services, and be absent from work.^{3,12} Among the U.S. civilian workforce, estimates of insomnia-related workplace costs due to excess sickness absence, reduced worker productivity, and workplace accidents and injuries range between \$15 billion and \$92 billion annually.^{11,13}

■ *Insomnia Evaluation*

Most people with insomnia try to treat the problem on their own. However, insomnia is a medical condition that health care providers often treat effectively. This is why a person with insomnia should be evaluated by a health care provider.

During a medical evaluation, a provider will try to identify insomnia's cause. To help with this evaluation, the provider may ask the patient to keep a detailed sleep diary for several weeks. The provider may also invite the patient to complete an overnight or daytime sleep study to observe the patient's sleep pattern.

■ *Insomnia Treatments*

Treatments for insomnia include proper sleep hygiene, behavioral or psychological techniques, and medical intervention. The best approach may vary from person to person, and it is important for a person with insomnia to consult with a healthcare provider when selecting treatment.

■ *Sleep Hygiene Rules*^{15;16}

Wake up at the same time every day, regardless of when you went to sleep.

Maintain a consistent bedtime.

Exercise regularly, preferably in the late afternoon, but not 2 to 4 hours of bedtime.

Perform relaxing activities before bed.

Keep your bedroom quiet and cool (avoid extreme temperatures).

Do not watch the clock at night.

Avoid caffeine and nicotine for at least six hours before bedtime.

Drink alcohol only in moderation and avoid use for at least 4 hours before bedtime.

Avoid napping; it may interfere with the ability to fall asleep at night.

Avoid electronics in bed

■ *Proper Sleep Hygiene*

Proper sleep hygiene can help people fall and stay asleep consistently.¹⁴ A medical care provider may recommend that the person with insomnia follow sleep hygiene guidelines (see sidebar, Sleep Hygiene Rules) to improve sleep habits.^{15;16} The person may also be advised to reduce alcohol intake and avoid certain medications or herbal supplements.¹⁵

■ *Behavioral Treatments for Insomnia*

Nonmedical remedies for insomnia can be as effective as medication. Behavioral treatments may also result in long-term improvements in sleep that are not seen with the use of medications alone.² The American Academy of Sleep Medicine recommends a number of psychological and behavioral treatments, including cognitive behavioral therapy (CBT) and stimulus control therapy.¹⁰

CBT aims to reduce negative beliefs about sleep and sleep loss. Behavioral components may include stimulus control therapy, sleep restriction, relaxation therapy, and other techniques.^{17;18} CBT often requires multiple treatment sessions.¹⁹ Stimulus control therapy trains a person to link the bed and bedroom with sleep and to establish a consistent sleep-wake cycle.

■ *Medical Treatments for Insomnia*

For some people with insomnia, a combination of behavioral and medical treatments may be the best way to manage symptoms.

Sleep Aids

Using sleep aids (prescription and over-the-counter medications) to treat insomnia can be risky. Prescription sleep aids that were developed before 2005 are potentially addictive, toxic in overdose, and lose effectiveness with regular use. They may also cause drowsiness, which can affect work performance and contribute to accidents, particularly when combined with alcohol. **Prescription sleep aids approved to treat insomnia after 2005 are safer, more effective, and less addictive**, but still have safety concerns.²

Over-the-counter sleep aids have limited effectiveness and often induce next-day sleepiness. As a result, they can also lead to poor work performance and accidents.¹⁵

Over-the-counter (OTC) medications and herbal supplements

Many people with sleep problems take OTC antihistamines to sleep. While these drugs block receptors in the brain that make people alert, they lead to sedation in 10-25 percent of users, and have not been shown to help with insomnia. Even for people who find relief at first, antihistamines lose their effectiveness with chronic use.

Melatonin is a naturally occurring hormone that can be purchased without a prescription. It appears to play a role in controlling the body's sleep and wake cycles. Melatonin may improve the quality of sleep, particularly getting to sleep, but more research is needed on its effectiveness in treating insomnia. Melatonin's best use is to promote sleep for those engaged in shift work, and recovering from "jet lag."²² Antihistamines and melatonin have relatively benign safety profiles and are indicated for milder insomnia and (prolonged release melatonin) in older patients.²⁰



Some over-the-counter herbal supplements (e.g. mimosa, California poppy, chamomile, kava, passionflower, skullcap, chaste tree, hops, sour date, withania, wu ling, and valerian) have been suggested as sleep aids. A 2015 review found that placebo-controlled trials had not found chamomile, kava, wu ling, or valerian effective.²¹ However, except for valerian, only one small trial had evaluated each drug so the evidence for lack of effectiveness is weak. No credible studies have assessed if sour date and chaste tree in combination reduce insomnia symptoms.²²

Prescription Medications

Prescription medications, as a treatment for insomnia, should ONLY be taken under the supervision of a health care provider.² Prescription drugs that have been found to help people fall and stay asleep include barbiturates and benzodiazepines. These drugs also come with serious health risks, including fatal drug interactions or overdose; increased risk of a drug use disorder; memory, cognitive, and psychomotor impairments; falls; and accidents, including motor vehicle crashes.²³

More recently developed insomnia drugs (introduced since 2005) target different sleep regulating mechanisms and symptoms and have different side effects. The new compounds (e.g., zaleplon, eszopiclone, and zolpidem), which are similar in chemical structure to benzodiazepines, may have better safety profiles than benzodiazepines.²

Another promising class of drugs inhibits the “wakefulness” component of the sleep-wake cycle. These drugs, such as suvorexant, allow the prescribing physician many options for safely tailoring therapy to patient needs. These drugs may also improve daytime function. Their side effects are associated with the direct sedating effects of the drugs, taking doses greater than clinical doses, or taking these drugs in combination with alcohol or other sedating drugs.²

Antianxiety medications, sedating antidepressants, and antipsychotics have been used off-label to help people sleep. Without information on appropriate uses and safe doses for these medications, however, their use as sleep aids is considered potentially dangerous.^{20;24}

Other Treatments

Beyond proper sleep hygiene, behavioral interventions, and medical treatments, several other commonly used strategies may improve sleep. While these approaches may help people get more sleep in the near-term, they should be exercised with caution as they can also contribute to the problem.

Napping

While napping does not make up for inadequate or poor quality sleep, it can restore alertness, enhance performance, and reduce mistakes and accidents.

Keeping naps short is important, however, as naps longer than 10 minutes can leave people with sleep inertia (feeling groggy and disoriented).²⁵ Additionally, a long nap or a nap taken too late in the day may adversely affect the length and quality of nighttime sleep.

Sleep inducing foods

Folk wisdom suggests a variety of food ingredients may induce sleep. These ingredients include tryptophan (e.g., in turkey), serotonin, melatonin, magnesium, calcium, and potassium.^{26;27} While consuming foods containing these ingredients may be a nice ritual to aid in getting to sleep, the evidence is mixed regarding their helpfulness in improving sleep.

Exercise

Studies suggest that exercise significantly improves the sleep of people with insomnia.²⁸⁻³⁰ However, little is known about what types of exercise work best, how much exercise is needed, and what time of day is best for exercise to improve sleep in people with insomnia.

Conclusions

Insomnia is a common problem among U.S. workers and can contribute to absenteeism, performance challenges, on-the-job injuries, and reduced quality of life. While most people with insomnia try to cope with symptoms on their own, it is dangerous for people to self-medicate with drugs—especially those that are not prescribed for them. A health care provider can determine if treatable underlying medical conditions are contributing to symptoms, and can recommend the best treatment course for each individual. Behavioral approaches may be the best first strategy in treating insomnia. Combining behavioral approaches and medications to treat insomnia may help patients who do not respond to a single approach.



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