# Cognitive Behavioral Treatment of Insomnia

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Chronic insomnia (symptoms for ≥ 6 months) is the most common sleep disorder, affecting 6% to 10% of adults in the general population, with even higher rates in patients with comorbid conditions (eg, hypertension, 44%; cardiac disease, 44.1%; breathing problems, 41.5%). Traditionally, chronic insomnia occurring with another condition has been considered secondary and rarely received direct treatment because treatment of the primary condition was expected to improve the insomnia. However, this approach often failed because chronic insomnia is maintained by behaviors, cognitions, and associations that patients adopt as they attempt to cope with poor sleep but that end up backfiring (eg, increasing caffeine, spending more time in bed, trying harder to sleep). Cognitive behavioral treatment of insomnia (CBTi) targets those behaviors, cognitions, and associations and is effective across a variety of populations, including those with medical and psychologic comorbidities. Thus, in 2005, a National Institutes of Health expert consensus panel on chronic insomnia recommended dropping the term "secondary insomnia" in favor of the term "comorbid insomnia." Because CBTi does not carry the risks associated with some sleep medications (eg, dependency, polypharmacy, cognitive and psychomotor impairment), it is an attractive option for patients with other conditions. Through the Society of Behavioral Sleep Medicine (www.behavioralsleep.org) and the American Board of Sleep Medicine (www.absm.org), it is possible to find practitioners with expertise in CBTi (as well as other aspects of behavioral sleep medicine) and other behavioral sleep resources. Given the currently limited number of trained practitioners, exploration of alternative delivery methods (eg, briefer protocols, self-help, Internet) to improve access to this highly effective treatment and expanded training in these treatments are warranted. *CHEST 2013; 143(2):554–565*

**Abbreviations:** CBTi = cognitive behavioral treatment of insomnia; ICD = implantable cardioverter-defibrillator; NIH = National Institutes of Health; SDB = sleep-disordered breathing

Insomnia is defined as complaints of difficulty initiating sleep, maintaining sleep, waking too early, and nonrestorative sleep despite adequate opportunity plus a complaint of impaired daytime functioning (eg, fatigue, depressed mood, poor concentration).[1] Acute insomnia lasts < 4 weeks and can be linked to a specific cause,[1] whereas chronic insomnia lasts for at least 6 months and may not have an easily identifiable cause.[2] Instead, chronic insomnia is believed to be perpetuated over time by changes in behaviors, cognitions, and associations that patients make as they attempt to compensate for poor sleep. (See "Etiology" section for more details.) Comorbid insomnia accounts for the majority of chronic insomnia cases. Thus, this review focuses on comorbid chronic insomnia with special emphasis on medical comorbidities (hypertension, cardiac disease, and breathing disorders).[3,4]

## PREVALENCE

General estimates vary depending on the criteria used to define insomnia, and prevalence rates tend to decrease as the stringency of the criteria increases.[5] Thirty percent of adults have insomnia when defined as reporting at least one insomnia symptom.[6] When

daytime impairment or distress is a required criterion, prevalence drops to 10%.[1] When the most stringent diagnostic criteria are applied,[7] prevalence remains substantial, but further drops to about 6% of adults.[5,8] The few studies examining racial differences in prevalence have reported rates of 16.4% to 28.3% in whites, 15.3% to 23.7% in blacks, and 13.4% to 17.1% in Hispanics.[9] When separated into age categories, blacks appear to have a greater prevalence of insomnia in middle age (30-59 years), whereas whites have a greater prevalence of insomnia across the life span (Table 1).[10] Overall, sex, age, and health and mental conditions appear to be the most significant risk factors for insomnia.[1,15] Older age has been associated with increased risk of insomnia.[15,16] However, research suggests that age itself is not the risk; instead, the risk is related to inactivity, sleep changes, decreased social activities, and increases in health conditions associated with aging.[17,18] Women are at least two times more likely to have insomnia than age-matched men,[10] and an increased prevalence of insomnia has been seen in adolescent girls compared with age-matched boys (Table 1).[11] The presence of a health or mental condition increases the risk, with insomnia seen in 37.8% of individuals with a comorbid condition but in only 8.4% of those without a comorbid condition.[12] Although there are numerous epidemiologic studies of insomnia, criteria for insomnia classification are highly varied among these studies. Therefore, the summary of prevalence data in Table 1 relies heavily on data collected from a single epidemiologic study by

Lichstein[10] in 2004. Some of the data generated by that study have appeared in the peer-reviewed literature,[12] but the bulk of findings to date have been published in Lichstein's book. Thus, it is important to note that the methodology used in Lichstein's study was highly rigorous and provides one of the best sources of information currently available on the prevalence of insomnia. In terms of methodology, Lichstein[10] used random-digit dialing to sample 50 men and women in each age decade from 20 to ≥ 80 years. Additionally, unlike the bulk of studies in this area, Lichstein's study used prospective data collection methods (2 weeks of sleep diaries) and stringent criteria for diagnosing insomnia.[10,12] The other studies in Table 1 were also selected because they used the strongest methodology and most stringent criteria available.

## ETIOLOGY

Prior to a 2005 National Institutes of Health (NIH) state of the science conference, insomnia was defined as primary or secondary.[1,4] If insomnia symptoms were related to another physical or psychologic condition, that condition was considered the primary diagnosis and insomnia the secondary diagnosis.[4] Thus, treatment focused on the primary diagnosis, and it was assumed that successful treatment of the primary condition would resolve the secondary insomnia. Currently, no evidence supports this assumption, and some evidence suggests that treating the primary condition of depression does not result in remission of insomnia.[19]

Table 1—*Prevalence of Insomnia by Sex, Age, Race, Health Condition, and Mental Disorder*

| Grouping | Prevalence of Insomnia, % | | | | |
| --- | --- | --- | --- | --- | --- |
| | Men | Women | Blacks | Whites | All |
| Age | | | | | |
| Adolescents (13-16 y; n = 1,014)[11] | 8.9 | 12.4 | … | … | … |
| 20-29 y (n = 772)[10] | 6.0 | 12.0 | 2.4 | 9.8 | … |
| 30-39 y (n = 772)[10] | 22.0 | 12.0 | 23.4 | 11.1 | … |
| 40-49 y (n = 772)[10] | 11.0 | 20.0 | 20.6 | 12.7 | … |
| 50-59 y (n = 772)[10] | 10.0 | 21.0 | 21.9 | 13.1 | … |
| 60-69 y (n = 772)[10] | 9.0 | 17.0 | 11.1 | 13.9 | … |
| 70-79 y (n = 772)[10] | 23.0 | 26.0 | 18.8 | 25.3 | … |
| 80-89+ y (n = 772)[10] | 23.0 | 41.0 | 22.2 | 35.1 | … |
| Health condition | | | | | |
| Hypertension (n = 772)[12] | … | … | … | … | 44 |
| Cancer (n = 772)[12] | … | … | … | … | 41.4 |
| Heart disease (n = 772)[12] | … | … | … | … | 44.1 |
| Diabetes (n = 772)[12] | … | … | … | … | 47.4 |
| Chronic pain (n = 772)[12] | … | … | … | … | 48.6 |
| Breathing problems (n = 772)[12] | … | … | … | … | 59.6 |
| Urinary problems (n = 772)[12] | … | … | … | … | 41.5 |
| GI problems (n = 772)[12] | … | … | … | … | 55.4 |
| Sleep-disordered breathing (n = 225)[13] | … | … | … | … | 54.9 |
| Neurologic disorders (n = 772)[12] | … | … | … | … | 7.3 |
| Mental disorder | | | | | |
| Depressive (n = 14,915)[14] | … | … | … | … | 64.6 |
| Anxiety (n = 14,915)[14] | … | … | … | … | 43.6 |