Prevalence, Associated Risks, and Treatment Patterns of Insomnia

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Insomnia, the most commonly reported sleep problem, affects about one third of the adult American population. Insomnia impairs the individual's functioning, diminishes his or her quality of life, and contributes to accidents, health care costs, and problems at work. Insomnia is frequently comorbid with physical and mental illness, as either a consequence or a contributing factor. In particular, considerable research supports a strong association between insomnia and depression. Because the majority of individuals who have trouble sleeping attempt to treat the problem independently using over-the-counter medications or alcohol, insomnia is undertreated by health care providers, despite its serious consequences.
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Insomnia is the most commonly reported sleep complaint.[1] Insomnia may describe difficulty falling asleep, difficulty staying asleep, poor sleep quality, and/or inadequate sleep duration despite adequate opportunity for sleep. According to the *Diagnostic and Statistical Manual of Mental Disorders*[2] of the American Psychiatric Association, a diagnosis of insomnia may be primary or comorbid with another disorder. When confronted with a patient's sleep complaints in practice, the physician is challenged to determine whether the sleep disturbance is caused by, or is causing, a medical or psychiatric condition. Associated health risks and far-reaching daytime consequences of insomnia underline the importance of proper treatment. Symptoms of insomnia may even signal an opportunity for prevention of an impending depressive episode in individuals with diagnosed affective disorders.

PREVALENCE OF INSOMNIA

About one third of the adult American population is affected by insomnia.[3,4] Of the 1000 adults interviewed by telephone for the 1991 National Sleep Foundation Survey, a total of 36% reported an occasional (27%) or a chronic (9%) sleep problem.[3] Those with occasional insomnia reported 5.2 nights of difficult sleep in a typical month, versus 16.4 nights of difficult sleep reported by those with chronic insomnia. Confirming the Foundation's results, a number of other major studies[3,5–7] have found the prevalence of chronic insomnia to hover around 10% in the adult population (Figure 1).[8]

It is to be expected that the various symptoms of insomnia (difficulty falling asleep, difficulty staying asleep, and nonrefreshing sleep) will coexist in most individuals who have trouble sleeping, just as the primacy of certain symptoms over others varies between populations. In the National Sleep Foundation Survey,[3] the most commonly reported sleep problem was waking up feeling unrefreshed (72%), followed by waking up in the middle of the night (67%) and difficulty getting back to sleep after waking up (57%). Difficulty falling asleep, the symptom perhaps most commonly associated with insomnia in the popular mind, was reported by 56% of those with sleep problems. A study by the World Health Organization[9] that asked respondents only about falling asleep, staying asleep, waking too early, and sleeping too much determined that the most common sleep complaints were difficulty initiating and maintaining sleep.

The literature strongly suggests that undiagnosed sleep problems are very common in the general population. Further, insomnia tends to have a chronic course. Approximately 85% of patients reporting severe insomnia reported moderate or severe insomnia when asked again 2 years later.[10]

RISK FACTORS FOR INSOMNIA

Risk factors for insomnia may be demographic, behavioral or environmental, medical, or psychiatric. There is some suggestion that insomnia may be heritable.[11] Epidemiologic research indicates that sleep problems are more common among older people and women than among younger people and men.[8] Research further suggests that widowed or separated persons and those who are

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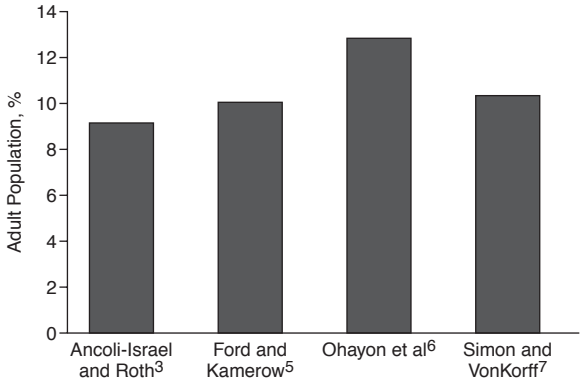
Figure 1. Prevalence of Chronic Insomnia Across 4 Major Studies[a]



[a]Adapted with permission from Roth and Roehrs.[8]

unemployed or have low socioecomonic status report higher rates of sleep disturbance than others.[5]

Insomnia may be precipitated by factors like stress and perpetuated by behavioral factors, such as light exposure or an unstable sleep schedule. Shift work or other lifestyle factors that disrupt circadian rhythm increase the risk of sleep disturbance.[8]

The presence of a medical[10] or psychiatric illness[5] also increases insomnia risk. In a survey[5] of 811 respondents, 40% of those with insomnia, compared with 16% of those without, met the diagnosis for one or more psychiatric disorders. Although it is difficult to discern whether a psychiatric disorder precipitates insomnia or whether insomnia makes an individual vulnerable to the emergence of a psychiatric disorder, other research[1,4] supports the association between sleep problems and psychiatric illness (Table 1). Gender-adjusted odds ratios of population-based data led to the conclusion that, by far, the strongest lifetime psychiatric association with sleep disturbance was major depression, even when the diagnosis of depression did not rely upon the presence of sleep disturbance as a depressive symptom.[1]

CONSEQUENCES OF INSOMNIA

Along with chronicity, daytime consequences are far-reaching and important indicators of the severity of insomnia. Among the potential daytime consequences, the increased occurrence of accidents poses the greatest health risk. Research[12,13] has indicated that people with insomnia are 2.5 to 4.5 times more likely than controls to have an accident. Léger and colleagues[14] found that within a French sample of 8625 community respondents, 8% of severe insomniacs versus 1% of good sleepers had been involved in an industrial accident in the past 12 months. A New Zealand study[15] of injury accidents involving motor vehicles found that, when other factors were controlled for, drivers who identified any degree of sleepiness while behind the wheel had an 11-fold risk of an injury accident compared with drivers who felt entirely alert. Drivers who reported having had 5 or fewer hours of sleep in the last 24 hours were at significantly greater risk of a vehicle crash than drivers who had slept longer than 5 hours.

Table 1. Lifetime Prevalence of Psychiatric Disorders With or Without Insomnia[a]

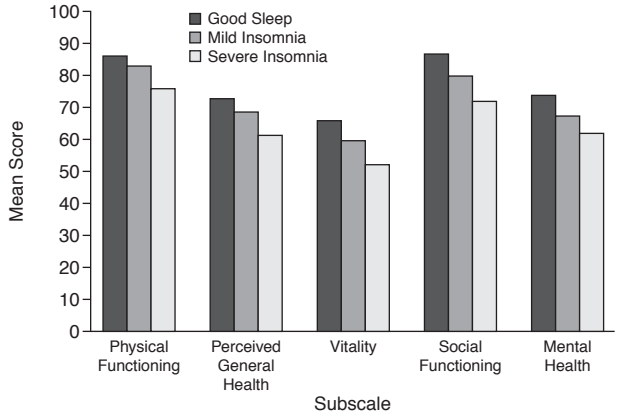
Disorder	Insomnia, % (N = 167)	No Sleep Disorder, % (N = 676)
Any disorder	70.7	40.8
Any anxiety	35.9	19.1
Major depression	31.1	2.7
Nicotine dependence	31.1	13.8
Alcohol abuse or dependence	30.0	16.7
Phobia	25.2	17.8
Multiple (≥ 3) disorders	24.6	4.4
Drug abuse or dependence	14.4	7.7
Generalized anxiety disorder	7.8	1.2
Panic disorder	6.0	1.2
Obsessive-compulsive disorder	5.4	1.0

[a]Adapted with permission from Breslau et al.[1]

In a study by Kuppermann et al.,[4] the health insurance and absenteeism records of 369 employees of a telecommunications company were examined (with employee consent) alongside the results of a telephone screen for employees' mental health, physical health, demographic characteristics, work-related issues, and sleep quality. Individuals reporting a current sleep problem were more than 4 times as likely (42.0% versus 10.4%) to have a possible mental health problem as those who reported no current sleep problem. Respondents with a current sleep problem were also significantly more likely than those without to report gastrointestinal problems, frequent headaches, and muscle, neck, or back pain. Although the troubled sleepers were more likely to have been absent due to illness in the previous month, had lower job performance scores, and reported being less satisfied with their jobs in univariate analyses, only the measure of job performance was statistically significant after multivariate analysis. Clearly, overall quality of life suffers when sleep is poor. When Léger and colleagues[16] asked people with severe insomnia, people with mild insomnia, and people with good sleep to complete the 36-item Short Form Health Survey of the Medical Outcomes Study, those with insomnia reported poorer quality of life across all queried dimensions than good sleepers did (Figure 2). Further, those with severe insomnia reported lower quality of life than did those with mild insomnia.

Simon and VonKorff[7] examined insomnia in a health maintenance organization population. Before their data on all covered lives were adjusted for age, gender, and chronic disease, days of restricted activity due to illness and days spent in bed were approximately twice as common—and health care expenditures approximately 60% higher—among patients with insomnia compared

Figure 2. Quality of Life in People With Mild or Severe Insomnia Compared With Those With Good Sleep[a,b]



[a]Data from Léger et al.[16]
[b]Based on the 36-item Short Form Health Survey of the Medical Outcomes Study (SF-36) scores.

with patients without insomnia. Patients with insomnia had greater medical comorbidity and a higher prevalence of depression as well. Insomnia is a common symptom of depression, and it appears that insomnia is a major risk factor for depression. Both insomnia and depression are associated with functional disability and increased health care utilization, which in turn are associated with increased costs to individuals, employers, and society.

Walsh and Engelhardt[17] determined that in 1995 the direct costs of insomnia in the United States totalled $13.96 billion. Health care services (not including medications) totalled $11.96 billion and accounted for the largest proportion of these costs, with nursing home care accounting for 90% of this figure. Disrupted sleep is very common in the elderly and frequently disrupts the sleep of caregivers in turn, necessitating the elder's placement in a nursing home setting. Insomnia among the elderly may contribute to nursing home placement in other ways as well. Research by Koski et al.[18] reported that insomnia and tiredness were associated with serious falls among the independent elderly. When data were adjusted for age and sex, insomnia remained a major risk factor for injurious falls in the elderly, to a greater degree than peripheral neuropathy. The authors concluded that impaired perception and reduced protective reactions were consequences of insomnia that increased the risk of injurious falls, and further, that insomnia in the sample population was associated with poor self-rated health, headache, dizziness, loneliness, and polypharmacy.

The relationship between depression and insomnia appears to be circular, in that each may induce or worsen the other. Data examined by Ford and Kamerow[5] indicated that the risk of psychiatric consequences of insomnia increases over time. A more chronic course of insomnia was associated with higher rates of psychiatric disorders, and, after data were adjusted for sex, age, socioeconomic status, race, and marital status, the strongest association was with depression. Looking deeper into the chronology of this relationship, Ohayon and I[19] found that insomnia symptoms appeared prior to the first episode of a mood disorder in 41% of patients, concomitantly with the first episode of a mood disorder in 29.4% of patients, and after the first episode of a mood disorder in 28.9% of patients. In 56.2% of cases, insomnia symptoms preceded symptoms of a mood disorder relapse, which suggests an opportunity for disease and relapse prevention.

MEDICATION USE

Hypnotics as well as other drugs are prescribed for insomnia.[20] Sedating antidepressants such as amitriptyline and trazodone are increasingly being used for insomnia despite the lack of efficacy data and concerns about their safety. The majority of people with sleep problems do not discuss insomnia with their doctors.[5] As a result, alcohol and over-the-counter sleep aids are more widely used by troubled sleepers than prescription medications.[21] A Detroit area survey[21] found that 25.9% of community respondents had used any substance as a sleep aid in the past 12 months. Approximately 18% of the sample reported using medications (57% of these being over-the-counter), and 13% reported using alcohol to fall asleep. On the whole, however, use of alcohol or medication,[21] including prescription drugs like hypnotics,[22] is reported to be of brief duration (< 1 week) by the majority of users. The choice of substance used as a sleep aid seems to be affected by sociodemographic characteristics. For example, research has indicated that most chronic benzodiazepine users tend to be elderly,[23] and more men than women use alcohol to induce sleep. Choice of sleep aid has daytime consequences, since those who used alcohol to fall asleep tended to report higher levels of daytime sleepiness than those who used medications.[21]

CONCLUSION

Insomnia tends to be a chronic condition and affects approximately 30% of the general population. Insomnia impairs cognitive and physical functioning and compromises quality of life. Compared with good sleepers, people who experience sleep disturbances are more prone to accidents, consume more health care services, have higher rates of absenteeism at work, and are at greater risk for medical and psychiatric disorders—most notably depression. A psychiatric disorder such as depression or anxiety may be a consequence of—as well as a risk factor for—disrupted sleep. Research suggests that the majority of individuals who have trouble sleeping attempt to treat the problem themselves, without seeking a physician's help. Therefore,

despite its complex relationships with physical and mental health and its serious daytime consequences, insomnia appears to be underrecognized and undertreated by health care providers. Continued research and clinical attention to insomnia as both a primary and a secondary disorder are warranted on the basis of insomnia's prevalence, associated risks, and serious consequences.

Drug name: trazodone (Desyrel and others).

Disclosure of off-label usage: The author has determined that, to the best of his knowledge, trazodone and amitriptyline are not approved by the U.S. Food and Drug Administration for the treatment of insomnia.

REFERENCES

1. Breslau N, Roth T, Rosenthal L, et al. Sleep disturbance and psychiatric disorders: a longitudinal epidemiological study of young adults. Biol Psychiatry 1996;39:411–418
2. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. Washington, DC: American Psychiatric Association; 1994
3. Ancoli-Israel S, Roth T. Characteristics of insomnia in the United States: results of the 1991 National Sleep Foundation Survey. Sleep 1999;22 (suppl 2):S347–S353
4. Kuppermann M, Lubeck DP, Mazonson PD, et al. Sleep problems and their correlates in a working population. J Gen Intern Med 1995;10:25–32
5. Ford DE, Kamerow DB. Epidemiologic study of sleep disturbances and psychiatric disorders: an opportunity for prevention? JAMA 1989;262: 1479–1484
6. Ohayon MM, Caulet M, Lemoine P. Comorbidity of mental and insomnia disorders in the general population. Compr Psychiatry 1998;39:185–197
7. Simon GE, VonKorff M. Prevalence, burden, and treatment of insomnia in primary care. Am J Psychiatry 1997;154:1417–1423
8. Roth T, Roehrs T. Insomnia: epidemiology, characteristics, and consequences. Clin Cornerstone 2003;5:5–15
9. Üstün TB, Privett M, Lecrubier Y, et al. Form, frequency and burden of sleep problems in general health care: a report from the WHO Collaborative Study on Psychological Problems in General Health Care. Eur Psychiatry 1996;11(suppl 1):5S–10S
10. Katz DA, McHorney CA. Clinical correlates of insomnia in patients with chronic illness. Arch Intern Med 1998;158:1099–1107
11. Heath AC, Kendler KS, Eaves LJ, et al. Evidence for genetic influences on sleep disturbance and sleep patterns in twins. Sleep 1990;13:318–335
12. National Sleep Foundation. Sleep in America: A Survey of US Adults. A Report Prepared by the Gallup Organization for the National Sleep Foundation. Los Angeles, Calif: National Sleep Foundation; 1991
13. Balter MB, Uhlenhuth EH. New epidemiologic findings about insomnia and its treatment. J Clin Psychiatry 1992;53(12, suppl):34–39
14. Léger D, Guilleminault C, Bader G, et al. Medical and socio-professional impact of insomnia. Sleep 2002;35:621–625
15. Connor J, Norton R, Ameratunga S, et al. Driver sleepiness and risk of serious injury to car occupants: population based case control study. BMJ 2002;324:1125–1130
16. Léger D, Scheuermaier K, Paillard M, et al. SF-36: evaluation of quality of life in severe and mild insomniacs compared with good sleepers. Psychosom Med 2001;63:49–55
17. Walsh JK, Engelhardt CL. The direct economic costs of insomnia in the United States for 1995. Sleep 1999;22(suppl 2):S386–S393
18. Koski K, Luukinen H, Laippala P, et al. Risk factors for major injurious falls among the home-dwelling elderly by functional abilities. Gerontology 1998;44:232–238
19. Ohayon M, Roth T. Place of chronic insomnia in the course of depressive and anxiety disorders. J Psychiatr Res 2003;37:9–15
20. Walsh JK, Schweitzer PK. Ten-year trends in the pharmacological treatment of insomnia. Sleep 1999;22:371–375
21. Johnson EO, Roehrs T, Roth T, et al. Epidemiology of alcohol and medication as aids to sleep in early adulthood. Sleep 1998;21:178–186
22. Mellinger GD, Balter MB, Uhlenhuth EH. Insomnia and its treatment. Arch Gen Psychiatry 1985;42:225–232
23. Rumble R, Morgan K. Hypnotics, sleep, and mortality in elderly people. J Am Geriatr Soc 1992;40:787–791