



Sleep Debt Can Make You Hungrier, More Prone to Diseases

By Monica Aggarwal, MD, FACC, and Jyothi Rao, MD
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The following is an adapted excerpt from [Body on Fire](#) by Monica Aggarwal, MD, and Jyothi Rao, MD, a new book that offers in-depth analysis of the ways in which inflammation triggers chronic illness and the tools for fighting it. In this chapter, they explore the health consequences of sleep debt.

Sleep disorders affect 50 to 70 million Americans. The National Sleep Foundation recommends that adults ages 18 to 64 get between seven and nine hours of restorative sleep in order to maintain health. Unfortunately, inadequate sleep is common in our society. The most obvious symptom is daytime fatigue; over time it can cause a depressed mood, irritability, and poor concentration. Lack of sleep can also lead to difficulty with weight loss and metabolic issues, such as diabetes and hypertension.

Appetite and Sleep

Our appetite for high-calorie foods increases with sleep deprivation. That trend is partly due to your body's extra demands for calories and energy, simply because you are awake longer.

Several hormones associated with weight management also are affected. Ghrelin is a hormone secreted by the stomach that stimulates appetite and has been shown to increase with sleep loss. Therefore, you are hungrier when you sleep less. Leptin is the hormone that tells your body that it is full and your appetite decreases. In [one study](#), just two nights of sleep deprivation (sleeping only four hours) increased ghrelin production by 28 percent and decreased leptin production by 18 percent. The results would suggest that just two days of sleeping four hours can make you hungrier and reduce your body's ability to know you are full.

Sleep loss also changes how we utilize energy. [One study](#) showed that sleep deprivation slowed down fat loss by 55 percent compared with a control group that had similar caloric intake but no sleep deprivation. This may be one reason why so many sleep-deprived people are unable to lose weight in spite of restricting their calories.

Sleep Debt and Disease

Mounting studies show that short sleep periods, poor sleep quality, and sleep deprivation are associated with [diabetes](#), [metabolic syndrome](#), and [obesity](#). This can be attributed to several issues, including hormones affected by poor sleep.

Insulin is one such hormone that seems affected by sleep. Insulin regulates glucose metabolism, the process of using sugar for energy. [Sleep deprivation](#) for as little as a week has been shown to cause changes in the body that can mimic the insulin resistance seen with type 2 diabetes.

[One study](#) examined glucose levels of adult men after a four-day period of sleep deprivation (just four hours of sleep per night) and found a 40 percent reduction in glucose clearance compared with their clearance rates after six nights getting up to 12 hours sleep. Additionally, after the sleep-deprivation period, researchers found a decrease in glucose effectiveness, where the glucose is unable to dispose of itself. The findings suggest that people who sleep less may be at higher risk of elevated blood sugars and potentially for [insulin resistance](#) and [diabetes](#).

Sleeping less may actually lead to early death. [In an observational study](#), men who slept for fewer than six hours a night had a shorter lifespan than those who slept more. (This was after adjusting for hypertension and diabetes.) There also appears to be a [higher incidence of other cardiovascular risk factors](#) in sleep-deprived people, such as hypertension, obesity, diabetes, heart disease, and stroke. These illnesses are likely triggered by the inflammation caused by sleep debt.

Sleep Hygiene Tips*

The follow practices can help you get a good night's sleep:

- Exercise can promote good sleep, but some people can have a hard time falling asleep when they exercise at night because of the endorphin-adrenalin release. The takeaway: Exercise, but

(continued)

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exercise early.

- Avoid eating too close to bedtime, especially if you have issues with heartburn.
- Keep your bedroom dark during the night.
- Try to get natural light during the day.
- Switch off your electronics at least one hour before bed.

*adapted from the National Sleep Foundation