

OPTIMAL HEALTH UNIVERSITY™

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Missing Sleep Can Make You Fat

Your doctor at Hickory Chiropractic Clinic encourages patients to make getting enough sleep a top priority. Why? Because there are many health benefits to maintaining adequate sleep. It's well-known that sufficient sleep prevents a myriad of diseases, including cancer and heart disease. Spending time with the sandman also boosts cognitive function, work performance and athletic ability. And it wards off emotional stress, anxiety and depression. But here's another advantage you may not be aware of: getting enough zzz's can help you lose weight and stay trim.



One study found that adults who report fewer than four hours of sleep a night are a whopping 73 percent more likely to be obese, compared to adults who maintained adequate sleep.

And it isn't just adults whose lack of sleep affects their waistline. Skimping on sleep appears to be adding to the growing trend of obesity in children and adolescents.

For instance, one study presented at the meeting of the American College of Chest Physicians surveyed 255 high-school students. Teenage boys who slept seven hours or less on weekdays had an average body mass index that was 3.8 percent higher than those who slept more than seven hours. Likewise, teenage girls who slept seven hours or less had a body mass index that was 4.7 percent higher than girls who got more than seven hours of sleep per weekday.



What accounts for the connection between sleep, hunger and metabolism? Read on to learn about scientific evidence your doctor at Hickory Chiropractic Clinic has compiled explaining the physiological connection between sleep and body weight.

Brain Boggling

Research published in the *Journal of Clinical Endocrinology and Metabolism* shows that the right anterior cingulate cortex, a specific brain region that contributes to a person's appetite sensation, is more activated after one night of sleep loss than after one night of normal sleep.

The investigators used a special type of magnetic resonance imaging (MRI) called functional magnetic resonance imaging (fMRI), which is especially helpful at viewing brain activity. They studied the brains of 12 normal-weight males while they viewed images of high-calorie and low-calorie foods.

The researchers compared the results after a night with normal sleep with those obtained after one night without sleep (*J Clin Endocrinol Metab* 2012;Epub.)

Lead study author Christian Benedict explains: "After a night of total sleep loss, these males showed a high level of activation in an area of the brain that is involved in a desire to eat.

Bearing in mind that insufficient sleep is a growing problem in modern society, our results may explain why poor sleep habits can affect people's risk to gain weight in the long run. It may therefore be important to sleep about eight hours every night to maintain a stable and healthy body weight."

Digestion Disruption

Sleep deprivation alters the way the body digests foods — especially how it processes carbohydrates. Disrupting this delicate process hastens weight gain.

Hormone Havoc

Your doctor at Hickory Chiropractic Clinic explains to patients that missed sleep triggers hormonal changes — and consequential alterations to the brain and nervous system — that hinder weight loss.

Two key hormones called ghrelin and leptin are involved in appetite. Ghrelin causes hunger, while leptin signals the brain to stop eating when full. Lack of sleep throws these crucial hormones out of balance, causing increased hunger and the lack of a sensation of satiety or fullness. This imbalance also causes a craving for calorie-dense, high-carbohydrate foods.

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According to a study by researchers at the University of Chicago published in the *Annals of Internal Medicine*, people who slept only four hours a night for two nights had a 28 percent increase in the hunger hormone ghrelin and an 18 percent drop in the satiety hormone leptin, compared with levels after a night of nine hours of sleep. The ratio of ghrelin to leptin increased by 71 percent (*Ann Intern Med* 2004;141:846-50).

“This is the first study to show that sleep is a major regulator of these two hormones and to correlate the extent of the hormonal changes with the magnitude of the hunger change,” explains study coauthor, Eve Van Cauter, PhD. “It provides biochemical evidence connecting the trend toward chronic sleep curtailment to obesity and its consequences, including metabolic syndrome and diabetes.”

The 12 study volunteers, all healthy young men, reported a 24 percent jump in appetite with a surge in desire for sweets, such as candy and cookies; salty foods, such as chips and nuts; and starchy foods, such as bread and pasta. Desire for fruit, vegetables or dairy products increased much less.

“We don’t yet know why food choice would shift,” Van Cauter notes. “Since the brain is fueled by glucose, we suspect it seeks simple carbohy-

drates when distressed by lack of sleep.” At the same time, the added difficulty of making decisions while sleepy may weaken the motivation to select more nutritious foods, making it harder to push away the doughnuts in favor of a low-fat yogurt.

“Our modern industrial society seems to have forgotten the importance of sleep,” Van Cauter adds. “We are all under pressure to perform, in school, at work, in social and professional settings, and tempted by multiple diversions. There is a sense that you can pack in more of life by skimping on sleep. But we are finding that people tend to replace reduced sleep with added calories, and that’s not a healthy trade.”

The hormone orexin also plays a role in the sleep-hunger connection. It seems that orexin, which is important for healthy sleep patterns, activates a protein called HIF-1. This protein, which has long been known to stimulate cancerous tumor growth, also plays a role in metabolizing carbohydrates (*Genes Dev* 2007;21:2995-3005).

Exercise Eradicator

Fatigue is perhaps the most common excuse for skipping a workout. People who skimp on sleep are more likely to simply feel too tired to exercise, or not

exercise as vigorously or for as long as their more rested peers. This, in turn, leads to weight gain.

While exercise is vital to optimal health, don’t skip sleep in order to exercise. Rather, re-evaluate your schedule to allow time for both. Some research indicates that, for the purposes of weight loss, sufficient sleep may be as — or perhaps even more — important than exercise. That doesn’t mean you should give up working out, however, because exercise has many other health purposes. Rather, make both a priority, even if it means cutting back on work or other activities.

The Flip Side

While adequate sleep may lead to weight loss, the converse is also true: Losing weight may help ensure you’ll get your 40 winks, because overweight individuals have a propensity to suffer from sleep apnea syndrome. This condition causes patients to gasp for air throughout the night, disturbing their sleep.

How Much Is Enough?

The ideal amount of sleep typically ranges from seven to nine hours a night for most adults. That’s why the doctor recommends that, in general, adult patients aim for eight hours of shut-eye per night. Recommendations for children differ depending on their age, so ask the doctor for specific suggestions for your youngsters.

It is important to note that too much sleep is also associated with a bolstered risk of disease. So most adults should limit average sleep time to nine hours per night.

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