

The Dream Diet: Losing Weight While You Sleep

[Can more sleep really help us control our weight? Three top experts explore the possibilities.](#)

Lose weight while you sleep. It sounds like something you'd hear on a late night infomercial -- just around the time you are reaching for that bag of cookies because, well, you can't sleep.

But as wild as the idea sounds, substantial medical evidence suggests some fascinating links between sleep and weight. Researchers say that how much you sleep and quite possibly the quality of your sleep may silently orchestrate a symphony of hormonal activity tied to your appetite.

"One of the more interesting ideas that has been smoldering and is now gaining momentum is the appreciation of the fact that sleep and sleep disruption do remarkable things to the body -- including possibly influencing our weight," says David Rapoport, MD, associate professor and director of the Sleep Medicine Program at the New York University School of Medicine in New York City.

While doctors have long known that many hormones are affected by sleep, Rapoport says it wasn't until recently that appetite entered the picture. What brought it into focus, he says, was research on the hormones leptin and ghrelin. First, doctors say that both can influence our appetite. And studies show that production of both may be influenced by how much or how little we sleep.

In fact, have you ever experienced a sleepless night followed by a day when no matter what you ate you never felt full or satisfied? If so, then you have experienced the workings of leptin and ghrelin.

How Hormones Affect Your Sleep

Leptin and ghrelin work in a kind of "checks and balances" system to control feelings of hunger and fullness, explains Michael Breus, PhD, a faculty member of the Atlanta School of Sleep Medicine and director of The Sleep Disorders Centers of Southeastern Lung Care in Atlanta. Ghrelin, which is produced in the gastrointestinal tract, stimulates appetite, while leptin, produced in fat cells, sends a signal to the brain when you are full.

So what's the connection to sleep? "When you don't get enough sleep, it drives leptin levels down, which means you don't feel as satisfied after you eat. Lack of sleep also causes ghrelin levels to rise, which means your appetite is stimulated, so you want more food," Breus tells WebMD.

The two combined, he says, can set the stage for overeating, which in turn may lead to weight gain.

Studies: Those Who Sleep Less Often Weigh More

How the hormones leptin and ghrelin set the stage for overeating was recently explored in two studies conducted at the University of Chicago in Illinois and at Stanford University in California.

In the Chicago study, doctors measured levels of leptin and ghrelin in 12 healthy men. They also noted their hunger and appetite levels. Soon after, the men were subjected to two days of sleep deprivation followed by two days of extended sleep. During this time doctors continued to monitor hormone levels, appetite, and activity.

The end result: When sleep was restricted, leptin levels went down and ghrelin levels went up. Not surprisingly, the men's appetite also increased proportionally. Their desire for high carbohydrate, calorie-dense foods increased by a whopping 45%.

It was in the Stanford study, however, that the more provocative meaning of the leptin-ghrelin effect came to light. In this research -- a joint project between Stanford and the University of Wisconsin -- about 1,000 volunteers reported the number of hours they slept each night. Doctors then measured their levels of ghrelin and leptin, as well as charted their weight.

The result: Those who slept less than eight hours a night not only had lower levels of leptin and higher levels of ghrelin, but they also had a higher level of body fat. What's more, that level of body fat seemed to correlate with their sleep patterns. Specifically, those who slept the fewest hours per night weighed the most.

Eating and Sleep Apnea: The New Connection

As a result of these and other studies, researchers began to theorize that getting more sleep just might be the answer to society's burgeoning waistline. But before you trade the cost of your gym membership for a pricey new mattress, take note: Experts also say the relationship is not as obvious as it seems.

The reason: Enter the somewhat mysterious nocturnal ailment known as "obstructive sleep apnea." People with sleep apnea may stop breathing for up to a minute, sometimes hundreds of times during the night while sleeping, says Dominic Roca, MD, director of the Connecticut Center for Sleep Medicine at Stamford Hospital.

Though the exact cause of the problem remains unknown, Roca and others believe that in most instances physical abnormalities inside the mouth and neck cause the soft tissue in the rear of the throat to collapse. This briefly closes off air passages many times during a night, causing disruption in breathing and a tendency to snore.

The end result: Although you may go to bed early and think you are getting a good night's rest, the disruption in breathing prevents you from getting deep sleep. Eight hours of disrupted shut eye can leave you feeling like you had only four.

"You wake up feeling tired and continue to feel tired all day," Roca tells WebMD.

The Link Between Sleep Apnea and Weight

So what does sleep apnea have to do with weight gain?

First, says Roca, patients who suffer from sleep apnea are more likely to be obese. However, studies show they do not have the usual low leptin levels associated with being overweight. In fact, Roca says that folks with sleep apnea have uncharacteristically high levels of leptin.

What's more, when their apnea is treated, leptin levels drop -- and somehow that helps them to lose weight.

"I've had about thirty patients who, when successfully treated for their sleep apnea were able to lose weight -- possibly because they had more energy, so they were more active and they just ate less," says Breus.

So why does low leptin seem to cause weight gain in some folks while allowing others to lose weight? One theory says that it may not be the level of this hormone that matters so much as a person's individual response to it. In much the same way that obese people can become resistant to insulin, folks with apnea may be resistant to the fullness signal that leptin sends to the brain.

"It's like the body is trying to tell them to stop eating, but their brain just isn't getting the message," says Breus.

Another theory: The overall response to leptin may be more individual than we think. Experts say our environment, dietary habits, exercise patterns, personal stress levels, and particularly our genetics may all influence the production of leptin and ghrelin, as well as our response to them.

The fact that we just don't know causes at least some experts to view all the research on sleep and weight with a cautious or skeptical eye.

"There is a serious challenge to the closing of the loop. That isn't to say that what we know about leptin and ghrelin is not important, or that when we finally do understand it that it won't be crystal clear -- but right now it just isn't," Rapoport tells WebMD.

Breus agrees: "I think we are likely to find that bad sleep matters but that it's likely to be bad sleep plus some other problems. I don't think we know what they are yet."

Sleep: You Can't Lose

Until doctors do know more, most experts agree that if you are dieting, logging in a few extra hours of sleep a week is not a bad idea, particularly if you get six hours of sleep or less a night. You may just discover that you aren't as hungry, or that you have lessened your craving for sugary, calorie-dense foods.

"One thing I have seen is that once a person is not as tired, they don't need to rely on sweet foods and high carbohydrate snacks to keep them awake -- and that automatically translates into eating fewer calories," says Breus.

If, on the other hand, you already sleep a lot, or you increase your sleep and feel even more tired, you should talk to your doctor. Experts say you may be one of the thousands of people with undiagnosed sleep apnea.

Says Roca: "As research continues, more and more data comes to the forefront to suggest that you simply can't cut back on sleep without paying some price."

By Colette Bouchez

WebMD Weight Loss Clinic Published Friday, February 04, 2005.

SOURCES: David Rapoport, MD, associate professor and director of the Sleep Medicine Program, NYU School of Medicine, New York City. Michael Breus, PhD, Atlanta School of Sleep Medicine; clinical director of The Sleep Disorder Centers of Southeastern Lung Care, Atlanta. Dominic Roca, MD, director of the Connecticut Center for Sleep Medicine, Stamford Hospital. *Annals of Internal Medicine*, 2004; vol 141: pp 846-850. *PLOS Medicine*, December 2004; vol 1. *Journal of Clinical Endocrinology and Metabolism*; vol 89: pp 5762-5771. *American Journal of Physiology -- Heart and Circulatory Physiology*, July 2000; vol 279: pp H234-H237.