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The full report is titled "Insufficient Sleep Undermines Dietary Efforts to Reduce Adiposity." It is in the 5 October 2010 issue of *Annals of Internal Medicine* (volume 153, pages 435-441). The authors are A.V. Nedeltcheva, J.M. Kilkus, J. Imperial, D.A. Schoeller, and P.D. Penev.

Insufficient Sleep, Diet, and Obesity

What is the problem and what is known about it so far?

Obesity is a substantial risk factor for serious illnesses, such as cardiovascular disease and diabetes. Patients are usually advised to reduce their weight by restricting caloric intake (dieting) and increasing the amount of daily exercise. Some experts also believe that lack of sufficient sleep may contribute to obesity.

Why did the researchers do this particular study?

Researchers attempted to show that there is an association between how much a person sleeps and how much weight they lose when they restrict their food intake.

Who was studied?

10 otherwise healthy adults who were considered overweight on the basis of their height.

How was the study done?

Researchers designed their study in a way that ensured that they could keep accurate track of how much the participants were eating, exercising, and sleeping. Participants lived in a clinical research center. They ate and drank only what was given to them in the center, and the amount of calories provided was restricted so that weight loss should occur. Careful records were kept of weight, levels of hormones considered important in controlling appetite and weight, and how much hunger participants reported having.

What did the researchers find?

When participants' sleep was restricted to only 5.5 hours each night, they lost less body fat and more lean body mass than when they slept 8.5 hours—the opposite of what is considered optimal in a calorie-restriction (dieting) program. Participants with restricted sleep also reported feeling more hunger.

What were the limitations of the study?

Only 12 participants were enrolled, and only 10 completed the study (3 women and 7 men). All were nonsmokers aged 35 to 49 years, and none were morbidly obese. Participants reported usually sleeping 6.5 to 8.5 hours each day. Patients were followed for only 2 periods of 2 weeks each, much less than the average amount of time people would usually spend on a calorie-restriction program.

What are the implications of the study?

Patients attempting to lose weight should consider getting adequate amounts of sleep in addition to limiting caloric intake to ensure that they retain lean muscle mass and lose fat.

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