

One sleepless night can induce insulin resistance in healthy people

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According to a new study accepted for publication in The Endocrine Society's *Journal of Clinical Endocrinology & Metabolism* (JCEM), just one night of short sleep duration can induce insulin resistance, a component of type 2 diabetes.

"[Sleep duration](#) has shortened considerably in western societies in the past decade and simultaneously, there has been an increase in the prevalence of [insulin resistance](#) and type 2 diabetes," said Esther Donga, MD of the Leiden University Medical Center in The Netherlands and lead author of the study. "The co-occurring rises in shortened sleep and diabetes prevalence may not be a coincidence. Our findings show a short night of sleep has more profound effects on metabolic regulation than previously appreciated."

Previous studies have found that reductions in sleep duration over multiple nights result in impaired glucose tolerance, but this is the first study to examine the effects of only a single night of partial sleep restriction on insulin sensitivity.

In this study, researchers examined nine healthy subjects, once after a night of normal sleep duration (approximately eight hours), and once after a night of four hours of sleep. Insulin sensitivity of each study participant was measured using the hyperinsulinemic euglycemic clamp method. This method uses catheters to infuse glucose and insulin into the bloodstream and then determines insulin sensitivity by measuring the amount of glucose necessary to compensate for an increased insulin level without causing hypoglycemia.

"Our data indicate that [insulin](#) sensitivity is not fixed in healthy subjects, but depends on the duration of sleep in the preceding night," said Donga. "In fact it is tempting to speculate that the negative effects of multiple nights of shortened sleep on glucose tolerance can be reproduced, at least in part, by just one sleepless night."

Donga adds that further studies are needed to evaluate whether interventions aimed at improving sleep duration may be beneficial in stabilizing [glucose](#) levels in patients with diabetes.

More information: The article, "A single night of partial sleep deprivation induces insulin resistance in multiple metabolic pathways in healthy subjects," will appear in the June 2010 issue of JCEM.

Provided by The Endocrine Society

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