

Losing just six hours of sleep could increase diabetes risk, study finds

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Losing a single night's sleep may affect the liver's ability to produce glucose and process insulin, increasing the risk of metabolic diseases such as hepatic steatosis (fatty liver) and type 2 diabetes. The findings of

the mouse study are published ahead of print in the *American Journal of Physiology—Endocrinology and Metabolism*.

Sleep deprivation has been associated with eating more, moving less and having a higher risk of developing type 2 diabetes. However, a team of researchers from Toho University Graduate School of Medicine in Japan, explained, "It was not clear whether [glucose intolerance](#) was due to the changes in food intake or energy expenditure or to the sleep deprivation itself."

The researchers studied two groups of mice: One group was kept awake for six hours each night ("sleep deprivation"), while the control group was allowed to sleep as desired. The research team offered unlimited high-fat food and sugar water—mimicking lifestyle-related food choices that people make—to both groups prior to the study. During the sleep/wake period, the animals had limited opportunity for physical activity.

The researchers measured [glucose levels](#) and fat content of the liver immediately after the trial period. Blood glucose levels were significantly higher in the sleep deprivation group than controls after one six-hour session of wakefulness. Triglyceride (fat) levels and the production of glucose in the liver also increased in the sleep deprivation group after a single wake period. Elevated liver triglycerides are associated with [insulin resistance](#), or the inability of the body to process insulin properly. In addition, lack of sleep changed the expression of enzymes that regulate metabolism in the liver in the sleep deprivation group. These findings suggest that "intervention studies designed to prevent sleep deprivation-induced [hepatic steatosis](#) and insulin resistance should be performed in the future," the researchers wrote.

More information: Fumika Shigiyama et al, Mechanisms of sleep deprivation-induced hepatic steatosis and insulin resistance in mice,

American Journal of Physiology-Endocrinology and Metabolism (2018).
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