

# Alcohol interferes with body's ability to regulate sleep, researchers find

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University of Missouri School of Medicine researchers Pradeep Sahota, M.D., and Mahesh Thakkar, Ph.D., studied alcohol's effects on sleep for more than five years. The researchers have found that drinking alcohol to fall asleep interferes with sleep homeostasis, the body's sleep-regulating mechanism. Credit: Justin Kelley/University of Missouri Health System

Researchers from the University of Missouri School of Medicine have found that drinking alcohol to fall asleep interferes with sleep homeostasis, the body's sleep-regulating mechanism.

Alcohol is known to be a powerful somnogen, or sleep inducer, and approximately 20 percent of the U.S. adult population drinks [alcohol](#) to help fall asleep. The researchers, led by Mahesh Thakkar, Ph.D., associate professor and director of research in the MU School of Medicine's Department of Neurology, have studied alcohol's effects on sleep for more than five years. They found that alcohol interferes with the brain's built-in system for regulating a person's need for sleep.

"The prevailing thought was that alcohol promotes sleep by changing a person's circadian rhythm—the body's built-in 24-hour clock," Thakkar said. "However, we discovered that alcohol actually promotes sleep by affecting a person's sleep homeostasis—the brain's built-in mechanism that regulates your sleepiness and wakefulness."

Sleep homeostasis balances the body's need for sleep in relation to how long a person has been awake. If an individual loses sleep, the body produces adenosine, a naturally occurring sleep-regulating substance that increases a person's need for sleep. When a person goes to sleep early, sleep homeostasis is shifted and he or she may wake up in the middle of the night or early morning. The researchers found that alcohol alters the sleep homeostatic mechanism and puts pressure on an individual to sleep. When this happens, the sleep period is shifted, and a person may experience disrupted sleep.

"Based on our results, it's clear that alcohol should not be used as a sleep aid," said Pradeep Sahota, M.D., chair of the MU School of Medicine's Department of Neurology and an author of the study. "Alcohol disrupts sleep and the quality of sleep is diminished. Additionally, alcohol is a diuretic, which increases your need to go the bathroom and causes you to wake up earlier in the morning."

In addition to studying alcohol's impact on sleep homeostasis, the researchers explored how [alcohol withdrawal](#) affects sleep. The

investigators found that after extended periods of frequent drinking, subjects would fall asleep as expected, but would wake within a few hours and would be unable to fall back asleep. When the subjects were not given alcohol, the researchers found that subjects showed symptomatic insomnia.

"During acute alcohol withdrawal, subjects displayed a significant increase in wakefulness with a reduction in rapid eye movement and non-rapid eye movement sleep," Thakkar said. "This caused insomnia-like symptoms and suggests an impaired sleep homeostasis."

The researchers hope to use these findings to explore other effects of alcohol consumption.

"Sleep is an immense area of study," Thakkar said. "Approximately one-third of our life is spent sleeping. Coupled with statistics that show 20 percent of people drink alcohol to sleep, it's vital that we understand how the two interact. If you are experiencing difficulty sleeping, don't use alcohol. Talk to your doctor or a [sleep](#) medicine physician to determine what factors are keeping you from sleeping. These factors can then be addressed with individualized treatments."

Provided by University of Missouri-Columbia

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