

Study: Sleep apnea treatment reduces heart problems in patients with prediabetes

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A new study found that continuous positive airway pressure (CPAP) treatment at night can lower daytime resting heart rates in patients with prediabetes who have obstructive sleep apnea, reducing their risk of cardiovascular disease.

The study, published Oct. 1 in the *Journal of the American Heart Association*, was conducted by Esra Tasali, MD, Director of the Sleep Research Center at the University of Chicago Medicine, and Sushmita Pamidi, MD, a sleep physician-scientist at McGill University in Montreal.

The discovery could potentially help the 1 billion people worldwide with [obstructive sleep apnea](#), in which the prevalence of prediabetes and diabetes is over 60 percent. Furthermore, the vast majority of patients with obstructive sleep apnea are undiagnosed.

The study's findings are especially timely, given that people with diabetes or cardiovascular problems are among the most vulnerable to COVID-19.

"Any way we can improve cardiovascular health is

more important than ever these days," Tasali said.

This randomized controlled trial studied people with prediabetes, a condition where blood sugar levels are higher than normal but not high enough to be considered diabetic. Those who used CPAP treatment for two weeks had a drop in their resting heart rate by four to five beats per minute, compared to those who received placebo. Notably, with optimal CPAP treatment, their heart rates were not only lower at night, but also during the day.

"That's significant," Tasali said, noting that a drop of even one beat per minute in resting heart rate can lower the mortality rate and future risk of developing cardiovascular disease.

"A four- to five-beat-per-minute drop in heart rate that we observed is comparable to what you would get from regular exercise," she added. "Our breakthrough finding is the carryover of the lowered resting heart rate into the daytime and the cardiovascular benefit of that."

Resting heart rate is key to a person's health and well-being. A high resting heart rate signals increased stress to the heart. It is a strong predictor of heart problems and death, the doctors said. Prior research has shown that in middle-aged people, every beat-per-minute increase in resting heart rate is associated with a 3% higher mortality rate.

Obstructive sleep apnea is a disorder that causes people to repeatedly stop breathing at night, decreasing oxygen intake and disrupting their sleep. It is a serious health concern, increasing the risk of cardiovascular conditions such as high blood pressure, stroke and heart attack. It makes people sleepy during the day and heightens their "fight or flight" stress hormones, elevating their [resting heart rate](#) all day and night.

Doctors use CPAP to treat obstructive sleep apnea. It keeps a person's airway open and oxygen levels

steady during the night, thus lowers their [heart](#) rate. However, Pamidi isn't encouraging people to go online and buy the machine. Obstructive sleep apnea is a [medical diagnosis](#) that must be made by a doctor after a sleep study.

"Our recent findings urge people who have prediabetes, diabetes or sleeping problems to be screened for sleep apnea," Pamidi said.

Today, about 80% of sleep apnea cases are undiagnosed. An estimated 50% to 70% of people with prediabetes or diabetes have sleep apnea.

"The majority of patients don't make a connection as to how their sleep can affect their hearts. With regards to their sleep apnea, patients just think how sleepy they are the next day," Tasali said. "I always explain to my patients that sleep apnea can also be harmful to their cardiovascular health."

This study is the first to examine the impact of optimal CPAP treatment on daytime resting [heart rate](#)," said Pamidi. Before joining McGill, she was a clinical fellow and then faculty at UChicago Medicine's Division of Pulmonary and Critical Care Medicine.

In their earlier research, Tasali and Pamidi found that effective treatment of sleep [apnea](#) with CPAP improves blood sugar levels in prediabetic patients, reducing their risk of diabetes.

More information: Sushmita Pamidi et al, Optimal Continuous Positive Airway Pressure Treatment of Obstructive Sleep Apnea Reduces Daytime Resting Heart Rate in Prediabetes: A Randomized Controlled Study, *Journal of the American Heart Association* (2020). [DOI: 10.1161/JAHA.120.016871](#)

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