Unhealthy sleep linked to diabetes in a diverse population

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Persistently unhealthy sleep, either not enough or too much, is associated with a significantly increased risk of type 2 diabetes in a racially and economically diverse adult population, an international team of

researchers has reported.

While previous research has linked suboptimal sleep durations to increased diabetes risk, the current report, published in the journal *Diabetologia*, extended these findings to a large cohort of primarily low-income, middle- to older-age Black and white adults in the southeastern United States.

"Our study contributes new information to support the importance of sleep health in midlife, particularly maintaining regular sleep schedules over time, to reduce the risk of adverse cardiometabolic conditions," said Kelsie Full, Ph.D., MPH, a behavioral epidemiologist and assistant professor of Medicine at Vanderbilt University Medical Center.

Full and VUMC colleague Loren Lipworth, ScD, professor of Medicine in the Division of Epidemiology, co-authored the paper with first author Qian Xiao, Ph.D., MPH, from the University of Texas Health Science Center at Houston, and Martin Rutter, MD, professor of cardiometabolic medicine at the University of Manchester, United Kingdom.

Suboptimal sleep duration is defined as sleeping fewer than seven hours or more than nine hours a night.

Previous studies have found that Black adults are more likely than their white counterparts to experience long-term, unhealthy sleep patterns, as well as a disproportionately high burden of diabetes. Low-income people also are more likely to sleep poorly and develop diabetes.

The current study was based on questionnaires completed by approximately 36,000 adult participants in the Southern Community Cohort Study, which follows the health of a racially and economically diverse group of people in 12 southeastern states. Most members of the cohort were recruited through community health centers.

Unlike prior studies, which were conducted in predominantly white or exclusively Chinese populations with sleep assessment at a single point in time, approximately 62% of participants in the current study were Black, and their sleep durations were reported in two separate surveys administered an average of five years apart.

"One of the main strengths of our study was that we focused on long-term sleep pattern rather than one-time measurement," noted Xiao, associate professor of epidemiology, human genetics, and environmental sciences at the UT Health Science Center at Houston School of Public Health.

"Moreover, we conducted the study in a large cohort of predominantly low-income and Black populations, which have been traditionally understudied in health research," she said. "By focusing on longitudinal sleep patterns, we demonstrated the importance of maintaining a healthy sleep pattern over time for metabolic health."

The strongest association with diabetes was found among participants reporting more extreme changes and higher variability in their sleep durations. Highly variable periods of sleep have been linked in other studies to poorer control of blood glucose levels, as well as to obesity and diabetes.

The current findings "suggest that a highly variable sleep duration in disadvantaged populations may be an important contributing factor to racial and socioeconomic disparities in cardiometabolic health," the researchers concluded.

While an abnormally long sleep duration may not directly cause diabetes, it may reflect the presence of other diabetes risk factors, including diabetes-related fatigue. As such, "long sleep is still an important behavioral predictor of diabetes risk that may be used for risk prediction

and disease screening," they added.

The authors recommended further investigation to identify social and environmental factors, such as living in stressful, disadvantaged neighborhoods, which can disrupt normal, healthy sleep, and how sleep disruption may contribute to racial and socioeconomic disparities in health outcomes.

"Intervention studies are also needed to evaluate whether improving sleep health may reduce health disparities in the U.S.," they wrote.

More information: Qian Xiao et al, Long-term trajectories of sleep duration are associated with incident diabetes in middle-to-older-aged Black and White Americans, *Diabetologia* (2024). DOI: 10.1007/s00125-024-06202-8

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