Obstructive Sleep Apnea Associated With Increased Risk for Long COVID

Study suggests adults with both the sleep disorder and COVID-19 may benefit from clinical monitoring.

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Among people who have had COVID-19, adults with obstructive sleep apnea were more likely to experience long-term symptoms suggestive of long COVID than those without the sleep disorder, according to a large study supported by the National Institutes of Health (NIH).

In fact, multiple analyses of electronic health records (EHR) uncovered adults with sleep apnea may have up to a 75% higher risk of developing long COVID. The findings, part of the NIH's Researching COVID to Enhance Recovery (RECOVER) Initiative, were published in the journal SLEEP.

The research, which came from EHR data of more than 2.2 million Americans with COVID-19, suggests close monitoring after a COVID-19 infection may help adults with sleep apnea. The findings may also strengthen understanding of why some people are more likely to develop the post-viral syndrome after acute infection.

"We still have a lot to learn about the long-term effects of this virus, but this study could inform clinical care by identifying patients who may benefit from closer monitoring," said Marishka K. Brown, PhD, director of the National Center on Sleep Disorders Research at the National Heart, Lung, and Blood Institute (NHLBI).

"People with obstructive sleep apnea should also keep up with their vaccinations to minimize the risk of infection," said Lorna E. Thorpe, PhD, MPH, the study's senior author and director of the Division of Epidemiology in the Department of Population Health at New York University's Grossman School of Medicine, New York City.

The data for this analysis came from three RECOVER EHR research networks: the National COVID Cohort Collaborative (N3C), which included 1.7 million adults; PCORnet, which included 330,000 adults; and PEDSnet, a pediatric-focused research network participating in PCORnet, which included 102,000 children. All participants included in this analysis had tested positive for COVID-19 between March 2020 and February 2022.

Within each network, researchers used diagnostic codes from EHRs to identify participants who had obstructive sleep apnea, which occurred among 5% of adults and less than 2% of children. They also used machine learning to assess follow-up symptoms and medical visits to determine which people likely had long COVID. About 5% of adults in the N3C study, 17% of adults in PCORnet, and less than 5% of children in PEDSnet were suspected to have developed long COVID.

After controlling for similarities among patients, including COVID-19 severity, age, sex, race and ethnicity, and underlying medical conditions, researchers found adults with obstructive sleep apnea in N3C, the largest study, were 75% more likely to experience long COVID. For adults in PCORnet, the increased odds of having long COVID was 12%. No significant links between sleep apnea and long COVID in children were found after researchers controlled for other medical conditions, including obesity.

A follow-up analysis with additional patients confirmed these associations – showing a link between obstructive sleep apnea and increased odds for long COVID in adults.

“Part of the challenge is that many of the risk factors for sleep apnea are also risk factors for COVID-19 outcomes,” said Thorpe. “We don’t know entirely why we are seeing this association.”

The researchers also found women in the N3C study had an 89% increased likelihood of having long COVID if they had obstructive sleep apnea, compared to a 59% increased chance for men. The underlying associations aren’t clear.

However, women diagnosed with obstructive sleep apnea included in this study may have had more severe conditions than men. Severity of obstructive sleep apnea was not controlled for, but sleep apnea is more likely to be undiagnosed in women – which could create a sample with women who have more severe cases. Other studies have also found that women may be more likely to be diagnosed with long COVID and seek health care for the condition.

Long COVID is an umbrella term for one or more symptoms that people can experience for weeks, months, or years after a COVID-19 infection. Multiple definitions were included in this review. The Centers for Disease Control and Prevention defines long COVID as symptoms that last for at least four weeks after infection, while the World Health Organization defines long COVID as symptoms that persist for at least three months.

Obstructive sleep apnea occurs when the upper airway becomes blocked during sleep, which interrupts breathing. The condition affects about 1 in 8 adults adults but is often underdiagnosed.

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About RECOVER: The National Institutes of Health Researching COVID to Enhance Recovery (NIH RECOVER) Initiative is a $1.15 billion effort, including support through the American Rescue Plan Act of 2021, that seeks to identify how people recuperate from a COVID-19 infection, and who are

at risk for developing post-acute sequelae of SARS-CoV-2 (PASC). Researchers are also working with patients, clinicians, and communities across the United States to identify strategies to prevent and treat the long-term effects of COVID – including long COVID. For more information, please visit recovercovid.org.

HHS Long COVID Coordination: This work is a part of the National Research Action Plan, a broader government-wide effort in response to the Presidential Memorandum directing the Secretary for the Department of Health and Human Services to mount a full and effective response to long COVID. Led by Assistant Secretary for Health Admiral Rachel Levine, the Plan and its companion Services and Supports for Longer-term Impacts of COVID-19 report lay the groundwork to advance progress in the prevention, diagnosis, treatment, and provision of services for individuals experiencing long COVID.

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