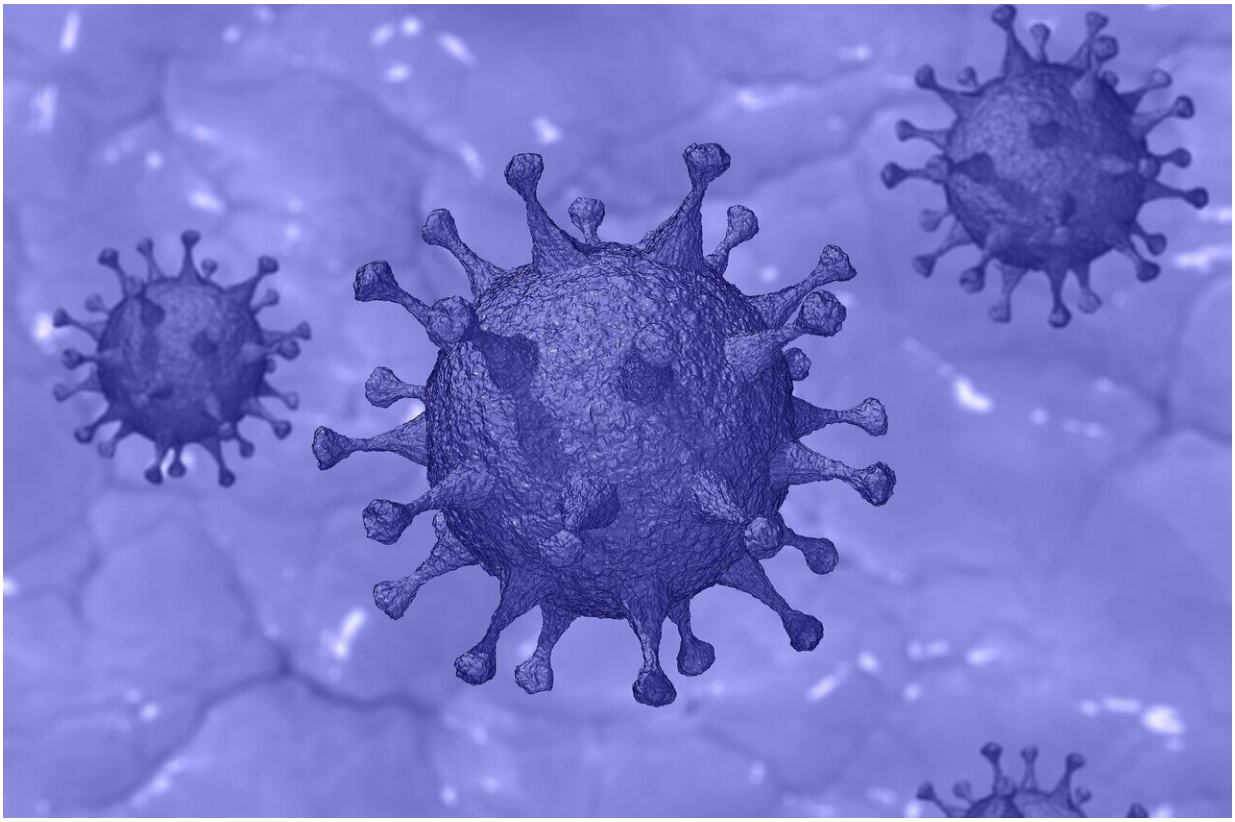
More severe OSA associated with COVID-19 risk, but longer use of PAP reduces risk

May 18 2021



Credit: CC0 Public Domain

The more severe a patient's obstructive sleep apnea (OSA), the greater their risk of contracting COVID-19, according to research presented at the ATS 2021 International Conference. The study also found that the

longer patients used positive airway pressure (PAP) each night, the more they lowered their COVID-19 risk.

Dennis Hwang, MD, medical director KP SBC Sleep Medicine, Kaiser Permanente and co-chair, sleep medicine, Southern California Permanente Medical Group, and colleagues examined a database of patients who were evaluated for sleep disorders by Kaiser Permanente Southern California between 2015 and 2020. They looked at COVID-19 infection rates and all-cause hospitalizations and mortality based on OSA status and whether patients adhered to PAP therapy.

OSA patients who used their PAP (primarily CPAP) devices for two hours or more a night were considered "treated," with increasing gradations of "treatment" classified for every two hours PAP was used. The apnea hypopnea index (AHI) was used to define OSA severity. Statistical tools were used to calculate the association of various demographic considerations, such as gender, race/ethnicity and age, with health factors.

The medical records of 81,932 patients were included in the analysis. 1,493 patients had confirmed COVID-19 infection, with 224 hospitalizations. Sixty-one of the COVID-hospitalized patients were in the ICU and/or died.

The authors stated, "'Untreated' OSA (and increasing OSA severity) was associated with higher COVID-19 rate and lower rate when 'treated.' Greater PAP adherence, when therapy was used at least four hours a night during the pandemic period, also showed a reduced infection rate.

The researchers also conducted an analysis of various factors that might have affected results. This analysis confirmed a higher infection rate with OSA versus no OSA and the benefit of PAP versus being "untreated." They also found obesity, higher scores on the Charlson

Comorbidity Index (which classifies patients based on how many co-occurring chronic illnesses they have), Black or Hispanic ethnicity, and Medicaid enrollment were also associated with higher COVID-19 infection rates.

Surprisingly, although the elderly are generally more susceptible to infection with SARS-CoV-2 (the virus that causes COVID-19), increasing age in the study was associated with reduced infection rate. "We were also surprised that OSA patients with high adherence with PAP had lower infection rates than patients who did not even have OSA," Dr. Hwang stated. "This further supports a direct physiologic benefit of PAP therapy."

"We believe that the relationship between OSA and higher risk of COVID-19 infection may be due to both biological and behavioral factors," said Dr. Hwang. "The higher rate of infection with more severe OSA and the shared medical risk factors between OSA and COVID-19 such as male gender, obesity and presence of cardiovascular diseases supports a biological influence, perhaps through impact on respiratory function, airway inflammation and sleep fragmentation. On the other hand, while older age clearly increases COVID-19 severity, our finding that older age was associated with a reduced infection rate support a behavioral explanation. Patients with OSA tend to be older, and older patients may be more adherent to social distancing, masking and less risky social behaviors."

He added, "Likewise, we believe that the relationship between good PAP adherence and lower COVID-19 infection rate may also have a direct biological and indirect behavioral explanation. Reduced upper and lower airway obstruction, improved lung expansion, improved mobilization of secretions and PAP heated humidification may be potential protective mechanisms. However, the relationship between infection risk and demographic factors such as increased age, racial/ethnic minority status

and lower economic status suggest that there is a socioeconomic influence at work."

Dr. Hwang noted that the study was conducted before the severe winter 2020-2021 COVID surge, when rates of infection spiked. "A preliminary analysis of an updated dataset suggests that OSA significantly increased the risk of hospitalization, although the impact of PAP requires further analysis."

More information: conference.thoracic.org/progra … search.php?sid=P7492

Provided by American Thoracic Society