

Study links poor sleep to increased risk of COPD flare-ups

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Poor sleep is associated with a significantly increased risk of life-threatening flare-ups in people with chronic obstructive pulmonary disease, or COPD, according to a new study supported by the National

Institutes of Health. The risk for these flare-ups—sudden bouts of worsening breathing—was 25% to 95% higher in people who experienced poor sleep than in people who had good quality sleep. The findings suggest that poor sleep may be a better predictor of flare-ups than even a person's history of smoking.

The [observational study](#), one of the largest to look at the links between sleep quality and COPD flare-ups, was largely supported by the National Heart, Lung, and Blood Institute (NHLBI), part of the NIH. Its findings appear online on June 6 in the journal *Sleep*.

COPD, a progressive, incurable lung condition that makes breathing difficult, affects more than 16 million adults in the United States and is a leading cause of death. COPD flare-ups, also known as exacerbations, can last for days and even weeks and are triggered by a variety of factors ranging from pollutants to cold and flu viruses. Poor sleep can weaken the immune system of a healthy person and make them more susceptible to colds and the flu; and this vulnerability can increase in people with COPD.

Although scientists have long known that people with COPD often experience sleep disturbances, the role of [poor sleep](#) as a trigger of COPD exacerbations has been understudied, with major research on this topic providing conflicting evidence. The current study fills an important knowledge gap, investigators say.

"Among those who already have COPD, knowing how they sleep at night will tell me much more about their risk of a flare-up than knowing whether they smoked for 40 versus 60 years," said lead study author Aaron Baugh, M.D., a clinical fellow at the University of California San Francisco Medical School and a practicing pulmonologist. "That is very surprising and is not necessarily what I expected going into this study. Smoking is such a central process to COPD that I would have predicted

it would be the more important predictor in the case of exacerbations."

For the study, the researchers followed 1,647 people with confirmed COPD who were enrolled in the Subpopulations and Intermediate Outcome Measures in COPD Study (SPIROMICS), a multi-center U.S. [longitudinal study](#) funded by the NHLBI and the COPD Foundation and designed to evaluate COPD subpopulations, outcomes, and biomarkers. All the participants in this specific study were current or former tobacco smokers with a confirmed diagnosis of COPD, and they underwent at least one initial sleep evaluation upon enrollment.

The researchers recorded COPD flare-ups over a three-year follow-up period and compared these measurements against the sleep quality of the participants. The researchers used a common tool for analyzing self-reported sleep quality—a combination of seven sleep measures, including sleep duration, timing of sleep, and frequency of disturbances. The scores ranged from worse sleep quality to best sleep. The researchers reported their results after looking at how a person's risk for flare-ups changed after one year.

They found that in general, poor sleep quality was strongly associated with a higher total of COPD flare-ups. Compared to those participants with the best possible sleep, those who were at the threshold or at the base level of poor sleep had a 25% increased chance of having a COPD flare-up within the next year. Those with the worst sleep had a nearly 95% increased risk of having a COPD exacerbation within the next year.

While the findings apply to all races and ethnicities, the study has particular relevancy for Black Americans, Baugh said. That's because past studies show that this group tends to have poorer sleep quality than other races and ethnicities. As poorer sleep is now linked to worse COPD outcomes, the current study may help explain why Black

Americans as a group tend to do worse when they have COPD, compared to other racial and [ethnic groups](#), the researchers suggested. "Our work provides a strong rationale into paying more attention to sleep than we have in the past, from both a clinical and research perspective," said Baugh, who has a special interest in studying COPD disparities. "While we now know that sleep quality can predict future exacerbations, we don't know whether improving [sleep quality](#) will yield direct improvements in COPD outcomes. We encourage future studies that can look at the impact of interventions, whether at the individual or community level."

Marishka Brown, Ph.D., director of the NHLBI's National Center on Sleep Disorders Research, agreed that this study is an important milestone. "Sleep has not been extensively studied as a modifier of COPD outcomes," Brown said. "This study adds to a growing knowledge base demonstrating the harmful effects of poor sleep on health in general but can be particularly damaging in people with devastating preexisting conditions, such as COPD."

More information: Aaron Baugh et al, Risk of COPD exacerbation is increased by poor sleep quality and modified by social adversity, *Sleep* (2022). [DOI: 10.1093/sleep/zsac107](https://doi.org/10.1093/sleep/zsac107)

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