

Being overweight super-sizes both risk and consequences of sleep-disordered breathing

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Overweight individuals are not just at greater risk of having sleep-disordered-breathing (SDB), they are also likely to suffer greater consequences, according to new research.

According to the study, to be published in the October 15 issue of the [American Journal of Respiratory and Critical Care Medicine](#), an official publication of the American Thoracic Society, excess weight increased the severity of [oxygen](#) desaturation in the blood of individuals with SDB during and after apneas and hypopneas.

"We knew that excess body weight is strongly related to more frequent breathing events—apneas and hypopneas—in persons with SDB," said lead author Paul E. Peppard, Ph.D., assistant professor of population health sciences at the University of Wisconsin-Madison. "In this study, we wanted to go a step further and measure how much the excess weight contributes to the severity of individual breathing events."

Dr. Peppard and colleagues recruited 750 adults from the Wisconsin Sleep Cohort study, an ongoing epidemiological investigation into the natural history of SDB, to have their breathing, blood-oxygen levels and sleep analyzed. Participants were also evaluated on several measures of physique—body mass index (BMI), neck -circumference and waist-to-hip ratio.

Among the participants in the overnight study, 40 percent of whom were obese, there were more than 37,000 SDB events. The researchers found

that a number of factors influenced the severity of blood oxygen desaturation associated with these events, including age, gender, [body position](#) and sleep phase (REM or non-REM sleep). However, even after these other factors were accounted for, the researchers found that BMI predicted the degree to which the body's tissues were "starved" of oxygen during apneas and hypopneas. In fact, each 10-point increase in BMI predicted a 10 percent increase in the severity of [oxygen depletion](#) associated with SDB events.

"This means that if, for example, a six-foot tall, 160-pound 45-year-old man (BMI= 22), had an apnea that produced a six-percent reduction in oxygen saturation, then a man with the same characteristics who weighed 235 pounds (BMI=32) would be expected to have a 6.6 percent reduction in blood oxygen saturation during a similar event," explained Dr. Peppard. "This increased risk of more severe oxygen desaturation is not just associated with clinical obesity—any increase in weight above a BMI of approximately 25 appears to increase the risk and severity of SDB," he noted.

Mary Morrell, Ph.D., from the Imperial College London, who collaborated on the study, pointed out that of all the factors found to influence the severity of oxygen desaturation, being overweight is one of the only factors that is modifiable, suggesting it as a logical target for SDB interventions.

"These results reinforce the importance of excess weight as a risk factor for the development, progression and severity of SDB," said Dr. Peppard. "Clinicians should consider the possibility that particularly overweight patients might be experiencing severer consequences of SDB even if they have the same number of breathing events as less overweight patients."

While these findings represent an important step in understanding the

consequences and risk factors associated with [excess weight](#) and SDB, Dr. Peppard emphasizes that more research is required to fully understand the issue. "Ongoing studies are looking into how, and to what degree, repeated oxygen desaturations produce poor clinical outcomes," he said. "We also need to assess the impact of the obesity epidemic on sleep apnea prevalence and severity in the general population. Our research group—the Wisconsin Sleep Cohort Study—is presently working on the latter question. Multiple research groups spanning basic science to population-level sciences are working on the former."

Source: American Thoracic Society ([news](#) : [web](#))

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