

Weight loss critical to reducing cardiovascular risk in obese OSA patients

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Obesity and obstructive sleep apnea (OSA) tend to co-exist and are associated with a variety of cardiovascular risk factors, including inflammation, insulin resistance, abnormal cholesterol, and high blood pressure. While effective therapies are available for OSA, researchers are still unclear about what interventions are most effective in reducing the burden of risk factors for cardiovascular disease associated with OSA in obese patients. New research from a multidisciplinary team at the Perelman School of Medicine at the University of Pennsylvania now reveals that the single most important factor for improving cardiovascular health in obese OSA patients is weight loss. The study results will be published in the *New England Journal of Medicine*.

"In the U.S. almost 1 in 5 adults has sleep apnea, which is associated with an increased risk for a variety of cardiovascular complications. Sleep apnea and obesity are strongly associated. We performed this study to find out to what degree obesity and OSA contribute to the burden of [cardiovascular risk factors](#) and to quantify the reduction in these risk factors achieved by [weight loss](#), therapy for sleep apnea, or the combination of both" said lead study author Julio Chirinos, MD, PhD, assistant professor of Medicine at Penn.

In the trial, the investigators randomly assigned 181 participants with obesity, moderate-to-severe [obstructive sleep apnea](#) and high C-reactive protein levels (CRP) (an inflammatory marker associated with heart disease) for 24 weeks to either weight loss therapy, CPAP therapy, or the combination of weight loss and CPAP. The authors then evaluated

the incremental effect of combination therapy with CPAP and weight loss over each therapy alone, on subclinical inflammation, [insulin resistance](#), dyslipidemia and blood pressure in obese subjects with OSA.

They found no significant effect of combination therapy over either therapy alone when it came to reducing CRP levels. Weight loss alone significantly reduced CRP, insulin resistance, dyslipidemia and [high blood pressure](#). In stark contrast, they did not observe a significant effect of CPAP on CRP, insulin sensitivity or dyslipidemia, even among subjects who adhered to therapy. "These data argue against an independent causal relationship between obstructive sleep apnea and these cardiovascular risk factors in this population and suggest that CPAP is not an effective therapy to reduce the burden of these particular risk factors. These findings also indicate that weight loss therapy should be a central component of strategies to improve the cardiovascular risk factor profile of obese patients with OSA," said Chirinos.

Despite the lack of an effect of CPAP therapy on the [risk factors](#) mentioned above, both CPAP and weight loss reduced blood pressure. Furthermore, among subjects who adhered to therapy, CPAP provided an incremental effect over weight loss-only (i.e., participants randomized to combination therapy had a more pronounced effect on blood pressure than participants receiving either therapy alone). "The design of this trial allowed us to conclude that both obesity and [sleep apnea](#) are causally related to high blood pressure," Chirinos added.

In addition, the results suggest that adhering to a regimen of weight loss and CPAP therapy will result in larger reductions in blood pressure as compared with either therapy alone.

The study opens several questions for future research. "Effective weight reduction interventions as applied in our study are costly and require a

multidisciplinary team with expertise in weight loss. Future research should assess how to best deliver effective weight loss programs for these patients. In addition, more research on strategies to enhance CPAP adherence or to identify subjects that are most likely to demonstrate an important reduction in [blood pressure](#) with CPAP would be desirable," said Chirinos.

Provided by University of Pennsylvania School of Medicine

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