

Sleep apnea linked to increased risk of dementia in elderly women

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characterized by disrupted breathing and sleep and a reduction in the intake of oxygen -- are about twice as likely to develop dementia in the next five years as those without the condition, according to a multi-center study led by researchers from the University of California, San Francisco.

The findings, published in the August 10, 2011 issue of the [Journal of the American Medical Association](#), showed for the first time what sleep specialists have long suspected but hadn't proved: that sleep apnea, also known as sleep-disordered breathing, can deprive the brain and other organs of the oxygen they need and, may, over time, trigger declines in cognitive ability.

"This is the first study to show that sleep apnea MAY lead to [cognitive impairment](#)," said study leader Kristine Yaffe, MD, professor of psychiatry, neurology and epidemiology at UCSF and chief of [geriatric psychiatry](#) at SFVAMC. "It suggests that there is a biological connection between sleep and cognition and also suggests that treatment of sleep apnea might help prevent or delay the onset of dementia in [older adults](#)."

"While we cannot conclude from these results that SDB causes cognitive impairment, our study suggests that it may at least be a contributing factor," said Yaffe.

The senior author of the study is Katie Stone, PhD, of the California Pacific Medical Center Research Institute.

In people with sleep apnea, the airways leading from the lungs to the nose and mouth collapse as the individuals sleep, interfering with the ability to inhale. People with sleep apnea usually snore, sometimes loudly, and are wakened many times a night for tiny fragments of time as they gasp for air.

While previous research had found an association between sleep apnea and dementia, those studies weren't structured to follow the impact of sleep apnea on people who had normal cognitive abilities at the onset. The strength of the new findings comes from the fact that the 298 subjects began the study without dementia or measurable cognitive impairments, allowing researchers to measure the relationship between sleep apnea and mental acuity.

These women, drawn from a larger, ongoing study examining osteoporosis in more than 10,000 women over 65, were first examined at clinics in Pittsburgh and Minneapolis and given tests that assessed their mental and cognitive abilities. Those who were found to be suffering from dementia or mild cognitive impairment at the initial assessment weren't included in the study.

About four years later, sleep specialists came to the study subjects' homes and monitored the women as they slept using specialized equipment that measured brain activity, heart rhythm, leg movements, airflow, breathing activity in their chest and abdomen and the oxygen content of blood as it passed through their fingers.

These instruments allowed researchers to track how often the women experienced apneas (the complete blockage of airflow) or hypopneas (a reduction of airflow of 30 percent or more) and how much time they spent in an oxygen-deprived state.

About five years after their first visit, the women returned to the clinics

and were given a larger battery of tests that measured their [cognitive abilities](#), memory and verbal fluency. The tests included the Mini-Mental State Examination, the California Learning Verbal Test and a test of executive function called Trails B.

Women whose test results suggested they had dementia or mild cognitive impairment had their records reviewed by a panel of clinical experts who decided whether to confirm the diagnosis.

When Yaffe and her colleagues tabulated the results of the study, they found that about one third (35.2 percent) of all the women developed dementia or mild cognitive impairment. They also found that those with sleep apnea were almost twice as likely to become cognitively impaired.

Among the women found to suffer from sleep-disordered breathing, 44.8 percent of them developed dementia or mild cognitive impairment, compared with 31.1 percent of those who didn't have impaired breathing and sleep.

The findings suggest that the key factor leading to diminished cognition was oxygen deprivation, also called hypoxia. Women who had frequent episodes of low oxygen or spent a large portion of their sleep time in a state of hypoxia were more likely to develop cognitive impairment. By contrast, no independent connection was seen between [dementia](#) and the number of times patients were awakened in their struggle to breathe.

Some previous studies have suggested that providing oxygen therapy to patients with Alzheimer's disease and sleep apnea slows their cognitive decline. The new findings suggest that providing oxygen therapy to elderly people with [sleep apnea](#) may reduce the chances of them becoming cognitively impaired or delay the onset of mental decline.

Provided by University of California, San Francisco

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