

## Section Editors

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# Are sleep disorders associated with cognitive decline?

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**WHAT DID THE AUTHORS STUDY?** Sleep is necessary for the best physical and mental health. As we age, the amount or quality of sleep we get may change. Sleep disorders are more common in older people. In addition, sleeping problems occur more often in those with cognitive or thinking problems like dementia.

Research shows a connection between sleep disorders and cognitive problems or dementia in older adults.<sup>1</sup> Sleep disorders are often evaluated with a test called polysomnography. Polysomnography is an overnight sleep test that checks breathing patterns, oxygen levels, pulse, and brain waves. Few studies have used these detailed measures to assess sleep. Instead, less reliable tests like surveys are often used. Dr. Haba-Rubio and coauthors<sup>2</sup> studied both subjective data (survey) and objective data (polysomnography) to see if sleep and cognition are somehow related.

**HOW WAS THE STUDY DONE?** The study was done in Lausanne, Switzerland, between 2003 and 2006. The researchers gathered information from 580 patients older than 65 years. Sleep patterns were evaluated by surveys given to patients. Polysomnograms were also used. The polysomnogram recorded a full night's sleep at home and showed possible disruptions. These results were then interpreted by sleep experts.

Experts also looked at all the patients' cognitive function using special tests and surveys. Patients had to answer questions about their ability to perform daily tasks. From these test scores, the study group was divided into those with cognitive impairment (291 patients) and those with normal cognitive abilities (289 patients).

**WHAT DID THE STUDY SHOW?** The 291 patients with cognitive impairment had higher sleepiness scores on their surveys and more disrupted sleep on

their polysomnograms. After the authors reviewed these findings, they concluded that the cognitive impairment was related to sleep-disordered breathing (SDB). The most common form of SDB is called obstructive sleep apnea. This causes abnormal breathing during sleep that can lead to drops in oxygen levels. Patients with SDB performed worse on cognitive tests. The authors of the study used these results to suggest that SDB can be a warning sign for future dementia.

**WHY IS THIS IMPORTANT?** With advances in medicine, people have been living longer and there is a growing elderly population. As we age, cognitive problems and dementia become more common and have greatly affected patients and their caregivers. Understanding the risk factors for dementia is critical. We must pay closer attention to those with SDB, as they may be at higher risk for dementia. This is an important finding because SDB is common and treatable.

**WHAT IS NOT KNOWN YET?** The exact association between SDB and cognitive decline is not clear but is thought to be related to periods of reduced oxygenation to the brain. We need more research to try to determine if SDB leads to dementia, or if these changes in sleep are simply a result of the dementia. If evidence suggests that SDB causes or contributes to dementia, further research should examine if early treatment of SDB can slow or prevent cognitive impairment.

## REFERENCES

1. Spira AP, Blackwell T, Stone KL, et al. Sleep disordered breathing and cognition in older women. *J Am Geriatr Soc* 2008;56:45–50.
2. Haba-Rubio J, Marti-Soler H, Tobback N, et al. Sleep characteristics and cognitive impairment in the general population: the HypnoLaus study. *Neurology* 2017;88:463–469.

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# About sleep-disordered breathing and obstructive sleep apnea

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**WHAT IS SLEEP-DISORDERED BREATHING?** Sleep-disordered breathing includes conditions that cause difficulty breathing while you sleep. There are various types but the most common among these is obstructive sleep apnea.

Obstructive sleep apnea can cause you to stop breathing repeatedly during sleep. This may occur only a few times per night, or in severe cases, hundreds of times per night. As you fall asleep your muscles relax, including the muscles of the upper airway. This can cause an obstruction in the airway if there is collapse of tissue in the back of the throat. This collapse can lead to a pause in breathing, also called apnea, which is usually temporary. The airway becomes blocked which limits the amount of air reaching your lungs and can reduce your oxygen levels. Your organs, especially the brain, are highly dependent on oxygen. When this blockage happens you may also snore or make choking noises while breathing.

**WHAT ARE THE SIGNS OF OBSTRUCTIVE SLEEP APNEA?** Some common signs of sleep apnea include the following:

1. Loud or frequent snoring
2. Pauses in breathing while sleeping
3. Choking noises while sleeping
4. Waking up after sleep but not feeling refreshed
5. Increased daytime sleepiness
6. Falling asleep easily during monotonous activity (i.e., watching TV)
7. Difficulty concentrating
8. Morning headaches
9. Memory loss

**WHAT ARE THE RISK FACTORS FOR OBSTRUCTIVE SLEEP APNEA?** The main risk factor for sleep apnea is being overweight or obese. Other risk factors include having a large neck size, male sex, middle age, high blood pressure, smoking, and a family history of sleep apnea.

**HOW IS SLEEP APNEA DIAGNOSED?** A sleep medicine doctor can diagnose sleep apnea by taking

a careful history to look for common symptoms and then performing a sleep study (polysomnogram). The sleep study can be done at home or in a sleep laboratory.

**WHAT ARE THE TREATMENTS FOR SLEEP APNEA?**

1. Weight loss is a conservative treatment for sleep apnea. It is thought to work by reducing extra neck tissue, which may be causing collapse of the airway.
2. Behavioral changes can help improve apnea symptoms. These include quitting smoking and not drinking alcohol. Alcohol relaxes throat muscles, which can cause airway collapse.
3. Positional therapy is a behavioral strategy that encourages people to sleep on their side rather than on their back. It involves wearing a brace to help maintain a side sleeping position. It alerts the sleeper (via vibration) if he or she moves to a back sleeping position.
4. Continuous positive airway pressure (CPAP) involves using a machine that provides continuous flow of air to maintain an open airway. This is most beneficial when used regularly during sleep.
5. Oral appliance therapy is used in patients who cannot tolerate CPAP. It involves using an oral device that resembles a mouth guard. The device holds the tongue or jaw in position to prevent the airway from collapsing. A dentist can help fit you for an oral appliance.
6. Upper airway surgery is sometimes considered when CPAP and oral appliances are ineffective. This can also be considered if there is a definite surgically correctable problem that is obstructing the airway such as very large tonsils or adenoids.

## FOR MORE INFORMATION

Sleep health information resource from the American Academy of Sleep Medicine  
[www.sleepeducation.org](http://www.sleepeducation.org)

American Sleep Apnea Association  
[www.sleepapnea.org](http://www.sleepapnea.org)

# Neurology®

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