

Poor sleep in seniors linked to hardened brain arteries

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Poor sleep quality in elderly persons is associated with more severe arteriosclerosis in the brain as well as a greater burden of oxygen-starved tissue (infarcts) in the brain - both of which can contribute to the risk of stroke and cognitive impairment. The findings are reported in the American Heart Association's journal *Stroke*.

The relationship between cardiovascular disease and so-called "fragmented" sleep has been studied in the past, but this is the first study to look specifically for an association between [sleep fragmentation](#) and detailed microscopic measures of [blood vessel damage](#) and infarcts in autopsied brain tissue from the same individuals.

Fragmented sleep occurs when sleep is interrupted by repeated awakenings or arousals. In this study, sleep was disrupted on average almost seven times each hour.

Researchers examined autopsied brains of 315 people (average age 90, 70 percent women) who had undergone at least one full week of around-the-clock monitoring for rest or activity, from which sleep quality and circadian rhythms were quantified. In all, 29 percent of the patients had suffered a stroke, while 61 percent had signs of moderate to severe damage to their blood vessels in the brain.

Researchers found that greater sleep fragmentation was associated with 27 percent higher odds of having severe arteriosclerosis. Moreover, for each additional two arousals during one hour of sleep, researchers

reported a 30 percent increase in the odds that subjects had visible signs of oxygen deprivation in their brain.

These findings were independent of other [cardiovascular risk factors](#), such as body mass, smoking history, diabetes, and hypertension, or other medical conditions such as Alzheimer's disease, pain, depression or heart failure, researchers said.

"The forms of brain injury that we observed are important because they may not only contribute to the risk of stroke but also to chronic progressive cognitive and motor impairment," said Andrew Lim, M.D., lead investigator and an assistant professor of neurology at the University of Toronto, and a neurologist and scientist at Sunnybrook Health Sciences Center, in Toronto, Canada.

"However, there are several ways to view these findings: sleep fragmentation may impair the circulation of blood to the brain, poor circulation of blood to the brain may cause sleep fragmentation, or both may be caused by another underlying risk factor," he said.

The findings suggest that sleep monitoring may potentially be another way to identify seniors who may be at risk of stroke, but further work is needed to clarify several points: whether [brain](#) blood vessel damage is a consequence or a cause of sleep fragmentation; the role of specific contributors to sleep fragmentation such as [sleep apnea](#) and the underlying biological mechanisms.

Provided by American Heart Association

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