Poor sleep may increase markers of poor brain health: Study

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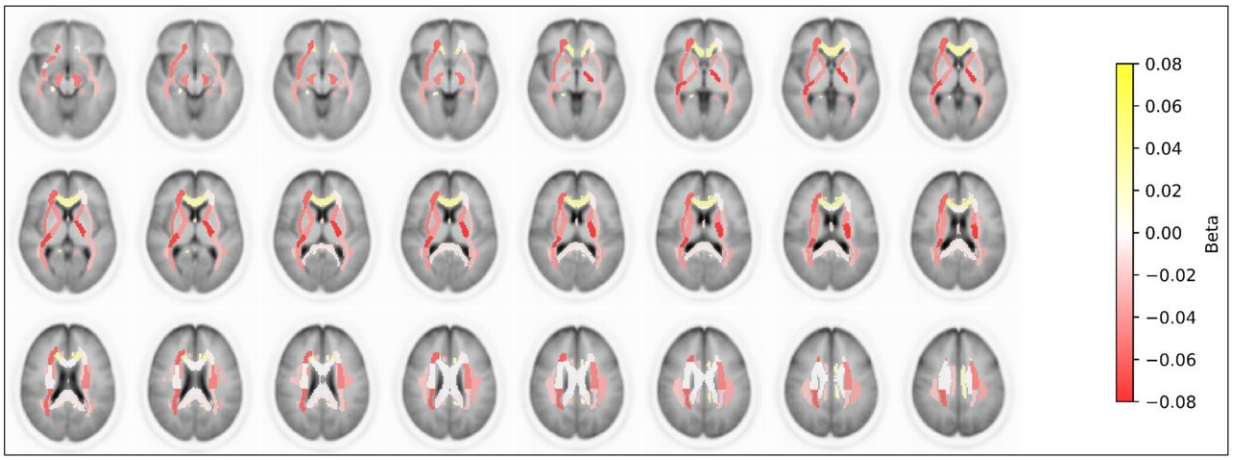

Brain map statistics of white matter tracts for associations between short sleep and fractional anisotropy (FA). Credit: *Journal of the American Heart Association* (2023). DOI: 10.1161/JAHA.123.031514

Getting either too much or too little sleep is associated with changes in the brain that have been shown to increase the risk of stroke and dementia later in life, a recent study finds. The research is published in the *Journal of the American Heart Association*.

"Conditions like stroke or dementia are the end-stage result of a long process that ends tragically," says Santiago Clocchiatti-Tuozzo, MD, T32 postdoctoral fellow in the Falcone lab at Yale School of Medicine and

first author of the study. "We want to learn how to prevent these processes before they happen."

In one of the largest neuroimaging studies of its kind to date, the Yale team examined brain images of close to 40,000 healthy, middle-aged participants to evaluate how sleeping habits might impact two measures of brain health: white matter hyperintensities (WMH), which are lesions on the brain indicating brain aging, and fractional anisotropy, which measures the uniformity of water diffusion along nerve axons. More WMH, larger WMH, and lower fractional anisotropy are associated with increased risk of stroke and dementia.

Researchers found that compared with optimal sleep (7–9 hours per night), participants with short sleep had higher risk of WMH presence, larger WMH volume where WMH was present, and lower fractional anisotropy. Long sleep (averaging more than 9 hours per night) was associated with lower fractional anisotropy and with larger WMH volume, but not with risk of WMH presence.

"These findings add to the mounting evidence that sleep is a prime pillar of brain health," says Clocchiatti-Tuozzo. "It also provides evidence toward helping us understand how sleep and sleep duration can be a modifiable risk factor for brain health later in life."

Researchers say the study highlights middle age as an important time to adjust our sleeping habits to support brain health. "Sleep is starting to become a trending topic," Clocchiatti-Tuozzo says. "We hope this study and others can offer insight into how we can modify sleep in patients to improve brain health in years to come."

Cyprien Rivier, Daniela Renedo, Victor Torres Lopez, Jacqueline Geer, Brienne Miner, Henry Yaggi, Adam de Havenon, Seyedmedhi Payabvash, Kevin Sheth, Thomas Gill and Guido Falcone were co-

authors of the study.

More information: Santiago Clocchiatti-Tuozzo et al, Suboptimal Sleep Duration Is Associated With Poorer Neuroimaging Brain Health Profiles in Middle-Aged Individuals Without Stroke or Dementia, *Journal of the American Heart Association* (2023). DOI: 10.1161/JAHA.123.031514