Regular napping linked to larger brain volume

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Daytime napping may help to preserve brain health by slowing the rate at which our brains shrink as we age, suggests a new study led by researchers at UCL and the University of the Republic in Uruguay.

The study, published in the journal *Sleep Health*, analyzed data from people aged 40 to 69 and found a causal link between habitual napping and larger total brain volume—a marker of good brain health linked to a lower risk of dementia and other diseases.

Senior author Dr. Victoria Garfield (MRC Unit for Lifelong Health & Ageing at UCL) said, "Our findings suggest that, for some people, short daytime naps may be a part of the puzzle that could help preserve the health of the brain as we get older."

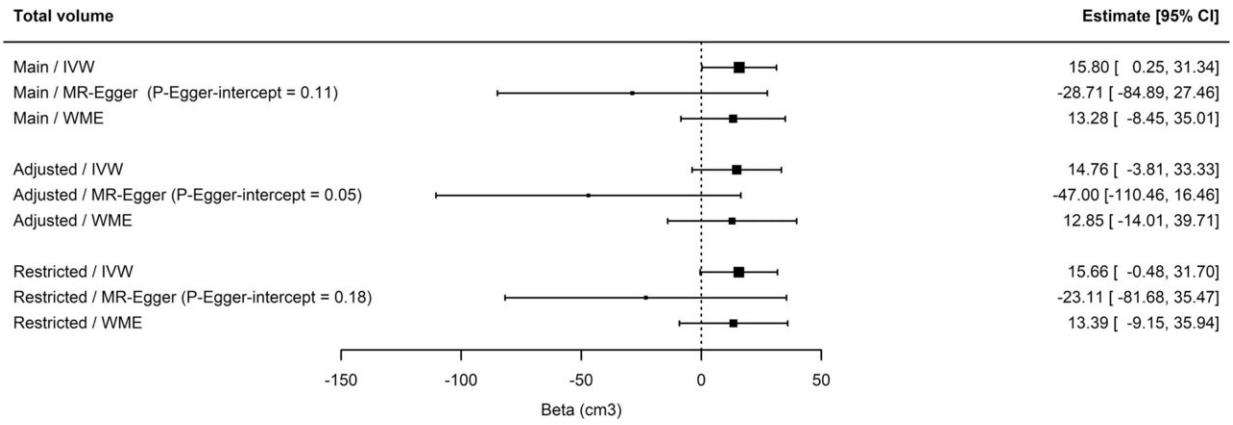
Previous research has shown that napping has cognitive benefits, with people who have had a short nap performing better in cognitive tests in the hours afterwards than counterparts who did not nap.

The new study aimed to establish if there was a causal relationship between daytime napping and brain health.

Using a technique called Mendelian randomization, they looked at 97 snippets of DNA thought to determine people's likelihood of habitual napping. They compared measures of brain health and cognition of people who are more genetically "programmed" to nap with counterparts who did not have these genetic variants, using data from 378,932 people from the UK Biobank study, and found that, overall, people predetermined to nap had a larger total brain volume.

The research team estimated that the average difference in brain volume between people programmed to be habitual nappers and those who were not was equivalent to 2.6 to 6.5 years of aging.

But the researchers did not find a difference in how well those programmed to be habitual nappers performed on three other measures of brain health and cognitive function—hippocampal volume, reaction time and visual processing.



Associations between daytime napping and total brain volume in UKB, including sensitivity analyses. Note: n = 35,080, instrument details: Main = 92-SNP main daytime napping instrument from Dashti et al, 2021, Adjusted = 47-SNP instrument adjusted for excessive daytime sleepiness, Restricted = 86-SNP instrument excluding individuals with self-reported sleep apnea, and 23&Me = 17-SNP instrument used as it has no sample overlap with UKB. IVW, inverse-variance weighted; WME, weighted median estimator; 95% CI, 95% confidence interval. Credit: *Sleep Health* (2023). DOI: 10.1016/j.sleh.2023.05.002

Lead author and Ph.D. candidate Valentina Paz (University of the Republic (Uruguay) and MRC Unit for Lifelong Health & Ageing at UCL) said, "This is the first study to attempt to untangle the causal relationship between habitual daytime napping and cognitive and structural brain outcomes. By looking at genes set at birth, Mendelian randomization avoids confounding factors occurring throughout life that may influence associations between napping and health outcomes. Our study points to a causal link between habitual napping and larger total brain volume."

Dr. Garfield added, "I hope studies such as this one showing the health benefits of short naps can help to reduce any stigma that still exists

around daytime napping."

The genetic variants influencing our likelihood to nap were identified in an earlier study looking at data from 452,633 UK Biobank participants. The study, led by Dr. Hassan Dashti (Harvard University and Massachusetts General Hospital), also an author on the new study, identified the variants on the basis of self-reported napping, and this was supported by objective measurements of physical activity recorded by a wrist-worn accelerometer.

In the new study, researchers analyzed health and cognition outcomes for people with these genetic variants as well as several different subsets of these variants, adjusted to avoid potential bias, for instance avoiding variants linked to excessive daytime sleepiness.

Genetic data and magnetic resonance imaging (MRI) scans of the brain were available for 35,080 individuals drawn from the larger UK Biobank sample.

In terms of study limitations, the authors noted that all of the participants were of white European ancestry, so the findings might not be immediately generalizable to other ethnicities.

While the researchers did not have information on nap duration, earlier studies suggest that naps of 30 minutes or less provide the best short-term cognitive benefits, and napping earlier in the day is less likely to disrupt night-time sleep.

More information: Valentina Paz et al, Is there an association between daytime napping, cognitive function, and brain volume? A Mendelian randomization study in the UK Biobank, *Sleep Health* (2023). DOI: 10.1016/j.sleh.2023.05.002

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