

# Vitamin D deficiency directly linked to dementia

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Dementia is one of the major causes of disability and dependency among older people worldwide, affecting thinking and behaviors as you age. But what if you could stop this degenerative disease in its tracks?

A world-first study from the University of South Australia could make this a reality as new genetic research shows a direct link between [dementia](#) and a lack of vitamin D.

Investigating the association between vitamin D, neuroimaging features, and the risk of dementia and stroke, the study found:

- low levels of vitamin D were associated with lower brain volumes and an increased risk of dementia and stroke
- genetic analyses supported a causal effect

of vitamin D deficiency and dementia.

- in some populations as much as 17% of dementia cases might be prevented by increasing everyone to normal levels of vitamin D (50 nmol/L).

Dementia is a chronic or progressive syndrome that leads to deterioration in cognitive function. About 487,500 Australians live with dementia and it is the country's second leading cause of death. Globally, more than 55 million people have dementia with 10 million new cases diagnosed every year.

Published in *The American Journal of Clinical Nutrition*, the genetic study analyzed data from 294,514 participants from the U.K. Biobank, examining the impact of low levels of vitamin D (25 nmol/L) and the [risk of dementia](#) and stroke.

Nonlinear Mendelian randomization (MR)—a method of using measured variation in genes to examine the causal effect of a modifiable exposure on disease—were used to test for underlying causality for neuroimaging outcomes, dementia, and stroke.

Senior investigator and Director of UniSA's Australian Center for Precision Health, Professor Elina Hyppönen, says the findings are important for the prevention of dementia and appreciating the need to abolish vitamin D deficiency.

"Vitamin D is a hormone precursor that is increasingly recognized for widespread effects, including on brain health, but until now it has been very difficult to examine what would happen if we were able to prevent vitamin D deficiency," Prof Hyppönen says.

"Our study is the first to examine the effect of very low levels of vitamin D on the risks of dementia and stroke, using robust genetic analyses among a large population.

"In some contexts, where vitamin D deficiency is relatively common, our findings have important

implications for dementia risks. Indeed, in this U.K. population we observed that up to 17% of dementia cases might have been avoided by boosting vitamin D levels to be within a normal range."

The findings are incredibly significant given the high prevalence of dementia around the world.

"Dementia is a progressive and debilitating disease that can devastate individuals and families alike," Prof Hyppönen says. "If we're able to change this reality through ensuring that none of us is severely vitamin D deficient, it would also have further benefits and we could change the health and well-being for thousands."

"Most of us are likely to be ok, but for anyone who for whatever reason may not receive enough [vitamin](#) D from the sun, modifications to diet may not be enough, and supplementation may well be needed."

**More information:** Shreeya S Navale et al, Vitamin D and brain health: an observational and Mendelian randomization study, *The American Journal of Clinical Nutrition* (2022). [DOI: 10.1093/ajcn/nqac107](#)

Provided by University of South Australia

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