

# Antacid use correlated to dementia, though causality remains elusive

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Researchers at Copenhagen University Hospital and Aarhus University, Denmark, have looked into the potential association between proton pump inhibitors (PPIs), commonly used antacid medications to suppress stomach acid production, and increased dementia risk.

In a [paper](#), "Proton pump inhibitors and [dementia](#): A nationwide population-based study," published in *Alzheimer's & Dementia*, the researchers find significant correlations between PPI use, duration of use, and increased [dementia risk](#).

The study was conducted in a nationwide Danish cohort of 1,983,785 individuals aged 60 to 75 between 2000 and 2018 and only included individuals without a prior dementia diagnosis or treatment with dementia-specific drugs.

During the study, 99,384 individuals developed dementia, and 469,920 were used as a [control group](#). PPI use was associated with an increased risk of all-cause dementia, particularly for those aged 60 to 69 years at diagnosis. The 60 to 69 group had an incidence rate ratio of 1.25 to 1.59 depending on the duration of use and 1.36 overall for those ever using a PPI.

A more negligible risk was seen in the 70 to 79 and 80 to 89 groups, with 1.12 and 1.06 for ever use, respectively. No significant association between PPI use and dementia was observed for individuals over 89 years at diagnosis.

PPI exposure was associated with an increased rate of all-cause dementia occurring before 90 years of age, regardless of when PPI treatment

started. Longer cumulative duration of PPI use yielded higher risk estimates.

PPIs are commonly used to treat gastric acid-related conditions. Previous studies have shown conflicting results regarding the association between PPI use and dementia. PPIs have been associated with potential neurological adverse reactions, including effects on brain neurotransmitters, though the mechanisms and causality are unclear.

The findings suggest that PPI use is associated with an increased risk of dementia, particularly in younger individuals. This does not mean that PPI use causes dementia, as there is potential for a reverse causality, where acid production in the stomach is increased early in the development of dementia and PPI treatments are used to treat the symptom of a disease already in progression. It is also possible that PPI treatments are creating a disruption that leads to dementia.

The [enteric nervous system](#), [neuronal cells](#) embedded into the walls of the gastrointestinal system, is an essential part of the gut-brain connection with the potential for disruptions of one to affect the other. [Correlations have also been seen](#) between Alzheimer's disease and specific gut microbiota populations, which could further confound causal relationships.

The authors suggest that further research is needed to explore the mechanisms underlying this association and whether it varies among dementia subtypes.

**More information:** Nelsan Pourhadi et al, Proton pump inhibitors and dementia: A nationwide population-based study, *Alzheimer's & Dementia* (2023). [DOI: 10.1002/alz.13477](https://doi.org/10.1002/alz.13477)

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