

A somewhat systematic review of previous systematic reviews and meta-analyses about nutrition and Alzheimer's

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A team from the International Education College of Zhejiang Chinese Medical University, Hangzhou, China, has conducted a review of

systematic reviews and meta-analysis studies around the topic of nutrition in disease.

In the paper "Effect of nutrition in Alzheimer's disease: A [systematic review](#)," published in *Frontiers in Neuroscience*, the researchers compiled past systematic reviews and meta-analyses studies of randomized [clinical trials](#) investigating the association between nutritional interventions and Alzheimer's disease published between 2018 and 2022.

Excluding research not performed in humans and studies that included other forms of dementia or pharmacological interventions, the current meta-study selected 38 studies, of which 17 were randomized clinical trials, and 21 were systematic reviews or meta-analyses.

The compiled review of past results showed that specific nutritional interventions had been observed to correlate with a slowdown in the rate of Alzheimer's disease progression, improving cognitive function.

While a typical meta-analysis will compile many individual studies into one for analysis, there is a risk that a systematic review of multiple meta-data studies could artificially weight specific study findings if they are included multiple times across the different meta-analyses.

For instance, a 2012 Australian study, "[Adherence to a Mediterranean diet and Alzheimer's disease risk in an Australian population](#)," appears in multiple meta-studies analyzed by the current study. The 149 Alzheimer's patients from that study could have a boosted signal in the overall assessment if it were not accounted for.

Additionally, the paper points to two meta-studies that found no association between omega-3 [fatty acids](#) and reduced Alzheimer's symptoms. The current paper states, "Meta-analyses performed by Zhu et al. and Araya-Quintanilla et al. found no decreased risk of dementia or

improved cognitive function with supplementation of these fatty acids."

What may be important to know is that both of these meta-analyses included the same study from 2015, titled "[Intakes of fish and polyunsaturated fatty acids and mild-to-severe cognitive impairment risks: A dose-response meta-analysis of 21 cohort studies](#)," which is itself a meta-analysis that could contain studies included in other meta-analyses covered by the current study.

Interestingly, the authors state, "...the objective of this systematic review was to identify and map the updates of the last 5 years regarding the [nutritional status](#) and nutritional interventions associated with AD patients." While the meta-analysis studies and systematic reviews they selected may have been published in the past five years, they are retrospective studies. The research contained within those papers is often more than a decade old.

The authors point out studies that find vitamin D supplementation improves cognitive function, while other studies find no connection. The paper cites meta-studies that show omega-3 fatty acids do not improve cognitive and functional decline, and references another meta-analysis that found supplementation with these nutrients can improve [cognitive decline](#), functional connectivity, and brain atrophy.

Often a systematic review asks a specific question and provides some analysis of the combined works selected. In the current study, the analysis aspect is unclear, though it does illustrate that more primary research is needed, if only to prevent further [meta-analysis](#) of past [meta-analyses](#).

More information: Inmaculada Xu Lou et al, Effect of nutrition in Alzheimer's disease: A systematic review, *Frontiers in Neuroscience* (2023). [DOI: 10.3389/fnins.2023.1147177](https://doi.org/10.3389/fnins.2023.1147177)

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