MIND diet trial finds no significant cognitive improvements or changes in brain morphology

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Research into the effects of the MIND diet led by the Rush Alzheimer's Disease Center, Chicago, has found no significant improvement after three years compared to a control diet group with mild caloric restriction. In a paper, "Trial of the MIND Diet for Prevention of Cognitive Decline in Older Persons," published in the *New England Journal of Medicine*, the researchers detail the outcome of a study

investigating if the MIND diet could improve cognition and brain health as potential protection against cognitive decline and Alzheimer's disease.

Researchers conducted a randomized trial with a sample size of 604 older adults with a family history of dementia, a body-mass index greater than 25, and a reported suboptimal diet. The participants were divided into two groups, one following the MIND diet and the other following a control diet with mild caloric restriction.

The study assessed cognitive function using a global measure of cognition and brain imaging outcomes, including total brain volume, hippocampal volume, and white-matter hyperintense volume.

Changes in cognition and brain MRI outcomes from baseline to year three did not differ significantly between those who followed the MIND diet and those who followed the control diet with mild caloric restriction.

The MIND diet, based on Mediterranean and DASH diets, has been previously associated with preserving brain health. Observational studies generally support the positive effects of a healthy diet, particularly the consumption of green leafy vegetables, nuts, berries, and olive oil, on brain health and reducing Alzheimer's disease pathology.

The authors point out that previous meta-analyses of diet trials have shown mixed results, and the observed effects are only sometimes replicated in randomized trials. The authors suggest a few possibilities for the discrepancies. One is research bias and confounding or mixing of effects in an observational study where important related factors might be ignored.

An extreme example of confounding would be a study examining the

relationship between ice cream sales and incidents of people drowning. While the two are correlated in that they rise and fall together statistically over time, the missing critically related factor would be summer heat causing increased swimming activity and ice cream consumption.

In a diet study, this could be in comparing the health of people who already eat a diet with nuts, fresh fruit, and whole grains compared to people who eat more refined foods. Confounding factors could be wealth disparities reflected in diet, such as living in food deserts, shift work or health care access.

In the current study, the researchers sought to partially avoid this confounding by only recruiting individuals with a similar suboptimal diet and body mass, switching them to a designated diet plan.

Another possibility for the stochastic results of diet studies could be in the design or execution of the experiments. Differences in diet duration or follow-up periods, the presence of unscreened for preexisting medical conditions and participant conformity to the study diets all could play a role in mixed study results.

While both groups in the current study showed a slight improvement in the cognitive testing scores by the end of the three years, the authors suggest that exposure to repeated cognitive testing could account for the improvement as it is an effect observed in previous randomized trials.

More information: Lisa L. Barnes et al, Trial of the MIND Diet for Prevention of Cognitive Decline in Older Persons, *New England Journal of Medicine* (2023). DOI: 10.1056/NEJMoa2302368