

## A Fish a Week Keeps the Brain at Its Peak

By Anahad O'Connor.

CHICAGO -- Eating fish at least once a week could help lower older patients' risk of developing dementia, researchers said here.

Those who ate baked or broiled -- but not fried -- fish on a weekly basis had a greater volume of gray matter in areas of the brain associated with Alzheimer's disease than people who didn't eat fish as often, Cyrus Raji, MD, PhD, of the University of Pittsburgh, and colleagues reported at the Radiological Society of North America meeting here.

Preserving brain volume was also associated with lower rates of developing cognitive impairment, he said.

"Fish consumption benefits gray matter volume, potentially reducing the risk of [Alzheimer's disease and dementia] long-term," Raji said during a press briefing.

- Note that this study was published as an abstract and presented at a conference. These data and conclusions should be considered to be preliminary until published in a peer-reviewed journal.
- In this study, eating fish at least once a week appeared to help lower older patients' risk of developing dementia.
- Note that the study was based on MRI scans that showed greater volume of gray matter in the frontal lobes and the temporal lobes, areas of the brain associated with Alzheimer's disease.

Although a National Institutes of Health panel decided last year that nothing conclusively prevents Alzheimer's disease, researchers continue to investigate whether a healthy diet, or specific components thereof, can have any beneficial effects.

For their study, Raji and colleagues assessed 260 people, mean age 71, when they enrolled in the Cardiovascular Health Study between 1989 and 1990. At that time, they filled out questionnaires on dietary intake; 163 reported eating fish at least weekly, and some did so as often as four times a week.

All patients had an MRI 10 years later to assess brain volume, and then had follow-up cognitive testing between 2002 and 2003.

The researchers found that patients who ate fish at least once a week had greater volume

in the frontal lobes and the temporal lobes, including the hippocampus and the posterior cingulate gyrus – "areas responsible for memory and learning, which are severely affected in Alzheimer's disease," Raji said.

Five years after the MRI, they found that 30.8% of patients who had low fish intake had developed mild cognitive impairment or dementia, compared with just 3.2% of those who had the highest fish intake and the greatest preservation of brain volume.

They also saw that 47% of patients with brain atrophy who didn't eat fish had abnormal cognition five years later compared with 28% of those who ate more fish and had more gray matter volume, Raji reported.

"That's an impressive reduction in the risk of developing mild cognitive impairment of Alzheimer's," Raji said.

In further analyses, the researchers found that mean scores for working memory -- a function severely impaired in Alzheimer's disease -- were significantly higher among those who ate fish weekly ( $P=0.02$ ), and those findings persisted even after accounting for potential confounders ( $P=0.03$ ).

This "simple lifestyle choice" of eating more fish increases the brain's "resistance" to Alzheimer's disease, Raji said, potentially via a few mechanisms: Fish are rich in omega-3 fatty acids, which can help increase blood flow to the brain and can also act as an antioxidant, thereby reducing inflammation, he said.

Omega-3s may also prevent the accumulation of amyloid plaques in the brain, he added.

He noted that fatty fish like salmon have more omega-3s, while smaller fish, such as cod, have less.

Although dietary intake of fish was measured only twice -- once at baseline and again in 1995 -- Raji said patients tended to maintain their levels of consumption, and he suspects that the observed benefits "are more likely to be observed if eating fish is a long-term habit as opposed to a short-term approach."

Mary Mahoney, MD, of the University of Cincinnati, who was not involved in the study, told MedPage Today that future studies should investigate whether omega-3s specifically are leading to benefits in brain volume.

"We're making the assumption" that fish is a marker for healthy lifestyle, she said. "If we could just cut to the chase and look at the protective mechanism, that would be better."

Zaven Khachaturian, PhD, an Alzheimer's expert from Potomac, Md., told MedPage Today that the findings are preliminary and should be replicated in a larger sample.

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"It would be safe to say that this study provides another hypothesis about the possible beneficial effect of a diet rich in fish ingredients and a delay of cognitive decline," Khachaturian said.

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