Although evidence indicates the beneficial effects of dietary patterns on cognitive health, the data on the relationship between long-term consumption of olive oil and death related to dementia are very limited. Most previous studies on the relationship between consumption of olive oil and cognition have been conducted in Mediterranean countries, where the olive oil intake is typically higher than in the United States (US). Therefore, in this study, the US authors examined the link between total olive oil consumption and the risk of dementia-related mortality in two large samples comprising 92 ,383 US adult participants, who were followed up for over 28 years. The researchers also included genotyping of the *APOE ε4* allele to reduce potential confounding attributed to this risk factor for Alzheimer's disease.

A previous large cohort study of the same research group revealed that the consumption of olive oil of more than 7 grams *per* day was associated with a lower risk of total and cause-specific mortality, including a 29% lower risk of mortality from neurodegenerative diseases. The French three-city study, performed on 6947 participants, demonstrated that people with the highest olive oil intake were 17% less likely to experience a four-year cognitive decline related to visual memory. The Prevencion con Dieta Mediterranea (PREDIMED) randomized trial provided evidence that higher consumption of olive oil, combined with adherence to a Mediterranean diet, for 6.5 years was more protective from cognitive decline than a low-fat control diet. A recent large prospective cohort study, conducted by researchers from the United Kingdom, Sweden, and Australia, demonstrated that participants with the highest adherence to the Mediterranean diet had a 23% lower risk for all-cause dementia than those with the lowest level of adherence.
https://discovermednews.com/the-mediterranean-diet-is-associated-with-a-lower-risk-of-dementia/

The Mediterranean diet is a centuries-old approach to meals that is traditional to the countries bordering the Mediterranean Sea. It is characterized by a higher consumption of legumes, whole grains, vegetables, fruits, nuts, seeds, and olive oil, a moderate consumption of fish, poultry, and dairy foods, and a low consumption of processed foods and red meat. Olive oil, as part of the Mediterranean diet, exerts anti-inflammatory and neuroprotective effects due to its high content of monounsaturated fatty acids and other compounds with antioxidant properties such as vitamin E and polyphenols. According to previous studies, olive oil reduces the incidence of cardiovascular diseases by affecting endothelial function, lipid metabolism, oxidative stress, platelet aggregation, and inflammation.

About the study

This study included two large cohorts, the Nurses' Health Study I, and the Health Professionals Follow-Up Study. The Nurses' Health Study I began in 1976 and recruited 121 ,700 US female registered nurses aged 30 to 55. The Health Professionals Follow-Up Study was established in 1986 and included 51, 525 male health professionals aged 40 to 75. The exclusion criteria were: a history of cardiovascular disease or cancer at baseline, missing data on olive oil consumption, or implausible total energy intakes (<500 or >3500 kcal *per* day for women, and <800 or >4200 kcal *per* day for men).

Olive oil intake was assessed using the food frequency questionnaires (FFQs) from 1990 and every four years after that. Olive oil intake was categorized as follows: (1) never or less than once per month, (2) greater than 0 to less than or equal to 4.5 grams *per* day, (3) greater than 4.5 grams *per* day to less than or equal to 7 grams *per* day, and (4) greater than 7 grams *per* day. The equivalent of one tablespoon of olive oil was considered to be 13.5 grams.

Additionally, researchers assessed the joint associations of diet quality (adherence to the Mediterranean diet and Alternative Healthy Eating Index- AHEI) and olive oil consumption with the risk of dementia-related mortality. A modified version of the 9-point Alternative Mediterranean Index (AMED) score was used to assess adherence to the Mediterranean diet. Higher AHEI scores indicate better overall diet quality. Other important data included body weight, smoking, physical activity, body mass index (BMI), multivitamin use,

menopausal status, postmenopausal hormone use in women, family history of dementia, self-report of chronic diseases, history of depression, and socioeconomic status.

As the apolipoprotein E ε4 (*APOE ε4*) allele is known to interfere with lipid and glucose metabolism, *APOE* genotyping was conducted in a subset of 27, 296 participants.

Deaths related to dementia were determined by reviewing medical and autopsy reports, or death certificates. According to the International Classification of Diseases, Eighth Revision (ICD-8), dementia deaths are assigned by codes 290.0 (senile dementia, simple type), 290.1 (presenile dementia), and 331.0 (Alzheimer's disease).

Results

At the baseline, the study included 92, 383 participants, 60 582 (65.6%) were women. The mean age was 56.4 years.

In both cohorts, the Nurses' Health Study I and the Health Professionals Follow-Up Study, the mean olive oil intake was 1.3 grams *per* day. The mean adherence score for the Mediterranean diet was 4.5 points in the Nurses' Health Study I and 4.2 points in the Health Professionals Follow-Up Study. The mean AHEI diet quality score was 52.5 points in the Nurses' Health Study I and 53.4 points in the Health Professionals Follow-Up Study.

The participants who consumed more olive oil (more than 7 grams *per* day) at baseline had an overall higher caloric intake, but not a higher BMI, had a better diet quality, had higher alcohol intake, were more physically active, and were less likely to smoke than those never consuming olive oil or less than once per month.

During 28 years of follow-up, a total of 4751 deaths related to dementia were recorded, with 3473 deaths in the Nurses' Health Study I group and 1278 deaths recorded in the Health Professionals Follow-Up Study. Individuals who were homozygous for the apolipoprotein ε4 (*APOE ε4*) allele were 5.5 to 9.4 times more likely to die from dementia than individuals who were not carriers of the APOE e4 allele.

In both cohorts, the Nurses' Health Study I and the Health Professionals Follow-Up Study, it was observed that a lower risk of dementia mortality was associated with a higher consumption of olive oil. Consuming more than 7 grams *per* day of olive oil was associated with a 28% lower risk of dementia-related death than never or rarely consuming olive oil. The results remained consistent after adjusting for *APOE ε4*. In joint analyses, participants

with the highest olive oil intake had a lower risk of mortality related to dementia, regardless of their AMED or AHEI scores.

Notably, consumption of olive oil in 5-gram increments was inversely associated with mortality related to dementia in women, but not in men. The authors noted that olive oil consumption may be protective of dementia and related mortality, especially in women.

The study results were independent of incident cardiovascular diseases, hypercholesterolemia, hypertension, and diabetes, which were not significant mediators of the association between olive oil intake and death related to dementia.

In modeled substitution analyses, substituting 5 grams of margarine and mayonnaise *per* day with the equivalent amount of olive oil was associated with a reduction of 8% to 14% in dementia mortality risk. The substitutions for other vegetable oils or butter were not significant.

Conclusion

This study, conducted in two large US prospective cohorts, found that the risk of dementia-related mortality was 28% lower in participants who consumed more than 7 grams *per* day of olive oil than in participants who never or rarely consumed olive oil. This association remained significant after adjustment for diet quality scores, including adherence to the Mediterranean diet.

According to the authors, these findings support diet recommendations advocating olive oil consumption as a potential strategy to reduce dementia mortality risk.

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