

# MIND diet and cognitive decline

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A recent study indicates that following the MIND diet could significantly reduce the risk of Alzheimer's disease (AD), even for those who do not follow it precisely. It can also slow cognitive decline in individuals with AD, independent of brain pathology levels ([1]).

The Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) diet is a hybrid of the Mediterranean diet with the Dietary Approaches to Stop Hypertension (DASH) diet, tailored for brain health. It consists of 10 "brain-healthy food groups" and five unhealthy food groups (Table 1). It is rich in nutrients (e.g., folate, vitamin E, lutein-zeaxanthin, flavonoids) that are known for their anti-inflammatory, antioxidant, and pro-cognition properties ([2],[3],[4]).

## Table 1 MIND Diet ([5])

Avoid
Red meats (< 4 meals/week)
Butter and margarine (<1 tablespoon/day)
Cheese (< 1 serving/week)
Pastries and sweets (< 5 servings/week)
Fried or fast food (< 1 time/week)



In the current study, the food intake of 923 participants (aged 58 – 98) in the Rush Memory and Ageing Project (MAP) was analysed. MAP is an open cohort study that began in 1997, monitoring retirement communities in the Chicago area ([5]). Participants were scored on how closely their food intake matched either the MIND diet, Mediterranean diet or DASH diet, and incidence of AD was assessed over an average follow-up period of 4.5 years ([1]).

Researchers were able to use the diet information in conjunction with data from comprehensive cognitive tests conducted at a time close to the participants' deaths, as well as post-mortem analyses to identify brain changes associated with AD and other conditions known to result in age-related cognitive decline.

Food intake closely following either of the three diets was associated with lower risk of AD: Mediterranean diet (54% reduced risk); MIND diet (53% reduced risk); DASH diet (39% reduced risk). However, participants who adhered moderately to the Mediterranean or DASH diets showed no reduced risk for AD, while those with moderate adherence to the MIND diet still had a 35% lower risk of developing the disease ([1]).

When excluding participants who changed their diet at some point during follow-up, results indicate that following the MIND diet for a longer duration offers the highest protection against AD ([1]).

The hallmark of AD in the ageing brain are abnormal clumps of proteins (amyloid plaques and tangles). These plaques and tangles in the brain build up in between nerve cells and typically interfere with thinking and problem-solving skills. Some people have enough plaques and tangles in their brains to have a post-mortem diagnosis of AD; however, they do not develop clinical dementia in their lifetime. In the current study, the association between the MIND diet score and cognitive function was independent of the level of AD-related brain pathologies. Similarly, the levels of brain pathologies associated with other conditions did not influence the association between the MIND diet score and cognitive function ([1]).

The current study builds on previous evidence indicating that the MIND diet can slow down agerelated cognitive decline ([5]) and reduce the risk of AD ([6]). It has also recently been demonstrated that a higher intake of fruits, vegetables and flavonoids is associated with a lower risk of subjective cognitive decline ([7],[8]). Neuroimaging studies have shown that dietary choices can lead to changes in brain structure. For example, lower adherence to the Mediterranean diet was associated with increased atrophy on the specific brain regions for AD ([9]).

In addition, older adults who engage in physical activity ([10]) and activities that provide mental stimulation ([11]) are likely to have better cognitive performance independent of their levels of AD-related brain pathologies.

### Limitations

Results were based on participants' self-reporting of their dietary patterns. To address the potential inaccuracies in the dietary reports, the researchers averaged the MIND diet score



obtained from assessments conducted over multiple years. In addition, to minimize the possibility of these reports being inaccurate due to cognitive impairment, the researchers re-analysed the data after excluding individuals with mild cognitive impairment at the onset of data collection. The association between the MIND diet and cognitive function remained even after restricting the analysis to individuals without mild cognitive impairment.

Another limitation of this study is the generalisability of the findings which was conducted among older Caucasian participants.

#### Conclusion

Effective pharmacological interventions to prevent or slow the progression of AD dementia are lacking ([12]). Therefore, identifying modifiable lifestyle factors that lower the risk of faster cognitive decline is of great interest in AD research. Higher adherence to the MIND diet is associated with better cognitive function independently of AD pathology and other common age-related brain pathologies, suggesting that adherence to the MIND diet may build cognitive resilience in older adults.



### References

- 1 Dhana K, James BD, Agarwal P, Aggarwal NT, Cherian LJ, Leurgans SE, et al. MIND diet, common brain pathologies, and cognition in community-dwelling older adults. J Alzheimers Dis. 2021;83(2):683–92.
- 2 La Fata G, Weber P, Mohajeri MH. Effects of vitamin E on cognitive performance during ageing and in Alzheimer's disease. Nutrients. 2014 Nov 28;6(12):5453–72.
- 3 Morris MC, Schneider JA, Tangney CC. Thoughts on B-vitamins and dementia. J Alzheimers Dis. 2006 Aug;9(4):429–33.
- 4 Morris MC. Nutrition and risk of dementia: overview and methodological issues. Ann N Y Acad Sci. 2016 Mar;1367(1):31–7.
- 5 Morris MC, Tangney CC, Wang Y, Sacks FM, Barnes LL, Bennett DA, et al. MIND diet slows cognitive decline with aging. Alzheimer's & Dementia. 2015 Sep;11(9):1015–22.
- 6 Morris MC, Tangney CC, Wang Y, Sacks FM, Bennett DA, Aggarwal NT. MIND Diet Associated with Reduced Incidence of Alzheimer's Disease. Alzheimers Dement. 2015 Sep;11(9):1007–14.
- 7 Yeh T-S, Yuan C, Ascherio A, Rosner BA, Willett WC, Blacker D. Long-term Dietary Flavonoid Intake and Subjective Cognitive Decline in US Men and Women. Neurology. 2021 Sep 7;97(10):e1041–56.
- 8 Yuan C, Fondell E, Bhushan A, Ascherio A, Okereke OI, Grodstein F, et al. Long-term intake of vegetables and fruits and subjective cognitive function in US men. Neurology. 2019 Jan 1;92(1):e63–75.
- 9 Mosconi L, Murray J, Tsui WH, Li Y, Davies M, Williams S, et al. Mediterranean Diet and Magnetic Resonance Imaging-Assessed Brain Atrophy in Cognitively Normal Individuals at Risk for Alzheimer's Disease. J Prev Alzheimers Dis. 2014 Jun;1(1):23–32.
- 10 Buchman AS, Yu L, Wilson RS, Lim A, Dawe RJ, Gaiteri C, et al. Physical activity, common brain pathologies, and cognition in community-dwelling older adults. Neurology. 2019 Feb 19;92(8):e811–22.
- 11 Wilson RS, Boyle PA, Yu L, Barnes LL, Schneider JA, Bennett DA. Life-span cognitive activity, neuropathologic burden, and cognitive aging. Neurology. 2013 Jul 23;81(4):314–21.
- 12 Cummings J. Lessons Learned from Alzheimer Disease: Clinical Trials with Negative Outcomes. Clin Transl Sci. 2018 Mar;11(2):147–52.