

Mediterranean Diet, Alzheimer Disease Biomarkers, and Brain Atrophy in Old Age

Tommaso Ballarini, PhD, Debora Melo van Lent, PhD, Julia Brunner, MSc, et al.,
on behalf of the DELCODE Study Group

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Correspondence

Dr. Ballarini
tommaso.ballarini@dzne.de

Study Question

Is following a Mediterranean-like diet (MeDi) associated with cognitive function, in vivo amyloid and phosphorylated-tau CSF markers of Alzheimer disease ($A\beta_{42/40}$ ratio, pTau181), and brain atrophy?

What Is Known and What This Paper Adds

Several lines of evidence suggest that MeDi adherence protects against cognitive decline, brain atrophy, and amyloid pathology. This investigation's results confirm that MeDi may be a protective factor against memory impairment and mediotemporal atrophy and suggest that these associations might be explained by a decrease of amyloid and tau-pathology.

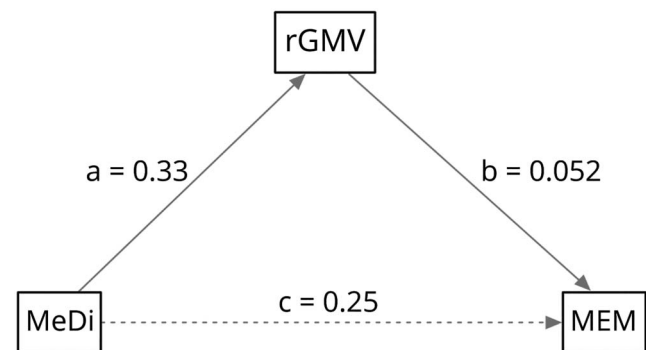
Methods

For this cross-sectional study, the investigators analyzed data from 512 individuals (52.7% female; mean age, 69.5 ± 5.9 years) who participated in the German DZNE Longitudinal Cognitive Impairment and Dementia Study (DELCODE). This sample comprised 169 cognitively normal participants and 343 individuals at risk of developing Alzheimer disease (AD), including 53 first-degree relatives of patients with AD, 209 patients with subjective cognitive decline, and 81 patients with mild cognitive impairment. MeDi adherence was assessed using the Food Frequency Questionnaire. Brain volume outcomes were generated via voxel-based morphometry on T1-MRI and cognitive performance with a comprehensive neuropsychological test battery. $A\beta_{42/40}$ ratio and pTau181 levels were measured in 226 participants. Linear regression models were used to assess the association between adherence to the MeDi, cognition, brain atrophy, CSF biomarkers, and their interplay.

Results and Study Limitations

Participants with greater MeDi adherence had larger mediotemporal gray matter volumes, better memory performance,

Figure Mediation Relationships Between MeDi and Memory



Schematic showing significant (solid lines) and nonsignificant (dashed lines) paths between variables. rGMV = regional gray matter volume in the bilateral hippocampi and parahippocampi.

higher $A\beta_{42/40}$ ratios, and lower pTau181 levels. Mediotemporal gray matter volumes mediated the association between MeDi adherence and memory, and MeDi adherence favorably moderated the associations between $A\beta_{42/40}$ ratios, pTau181 levels, and mediotemporal gray matter atrophy. A limitation of the present study is that its cross-sectional design precludes any causal inferences. Furthermore, the MeDi pattern in this German cohort might differ from the 1 in Mediterranean regions.

Study Funding and Competing Interests

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