



## Mediterranean diet score is associated with greater allocentric processing in the EPAD LCS cohort: A comparative analysis by biogeographical region

*Sarah Gregory, Craig W. Ritchie, Karen Ritchie, Oliver Shannon, Emma J. Stevenson and Graciela Muniz-Terrera*

**Background:** Adherence to the Mediterranean diet (MedDiet), a primarily plant-based eating pattern, has been associated with lower dementia incidence. Much of the research has focused on Alzheimer's disease (AD) dementia and mild cognitive impairment (MCI), with less research looking at the preclinical symptomatically silent stages that pre-empt MCI and AD dementia. Although there is evidence from studies conducted globally, no studies have compared the effects of the MedDiet within and outside of the Mediterranean region in one cohort.

**Methods:** Our study explored cross-sectional and longitudinal associations between MedDiet and cognition in the pan-European EPAD LCS, comparing those living within and outside of the Mediterranean region (as classified by European Union biogeographical definitions). After deriving MEDAS scores to quantify adherence to the MedDiet, we used linear regression and linear mixed effects models to test for associations between the MEDAS score and cognitive function measured by the Four Mountains Test (FMT) and the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS). We additionally calculated MEDAS continuous and PYRAMID scores to provide alternative measures of MedDiet adherence.

**Results:** We included 1826 participants, mean age 65.69 ( $\pm 7.42$ ) years, majority female (56.2%) with family history (65.8%) and minority APOE $\epsilon 4$  carriers (38.9%). Higher MEDAS scores were associated with better performance on the FMT both cross-sectionally ( $n = 1,144$ ,  $\beta: -0.11$ , SE: 0.04,  $p = 0.007$ ) and longitudinally (slope: 0.10, 95% CI: 0.04–0.17,  $p: 0.002$ ). The effect was marginally greater in the Mediterranean region in the cross-sectional analysis, with a stronger effect emerging longitudinally. In exploratory analyses, the association between MEDAS and FMT scores was only seen in female participants. A sensitivity analysis excluding Toulouse and Perugia, as cities near, but not within, the biogeographical region, found significant associations between higher MEDAS and MEDAS continuous scores, and a number of RBANS total and index scores.

**Conclusion:** MedDiet adherence is associated with better FMT scores, with effects seen most strongly in the Mediterranean region from longitudinal data. Our sensitivity analysis suggested a more global cognitive benefit of MedDiet adherence. This study highlights the need to further explore for whom and for what brain health outcomes the MedDiet confers benefit. This evidence would identify a window of opportunity in the life-course to maximise the benefit and better inform public health campaigns and patient-level interventions.

Front. Aging, 09 December 2022

Sec. Nutrition in Aging and Healthy Longevity

<https://doi.org/10.3389/fragi.2022.1012598>

