

NEUROPSYCHIATRY AND BEHAVIORAL NEUROLOGY

Association between mediterranean-like diet, longitudinal cognitive decline, and medial temporal atrophy over time in cognitively unimpaired older adults with or without SCD

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Abstract

Background: Previous findings evaluating longitudinal cognition in relation to the MeDi diet are inconsistent, and few studies have examined it in relation to the presence/absence of subjective cognitive decline (SCD). Our current aims are to test whether adherence to the MeDi diet is associated with the risk of clinical progression, future cognitive decline, and atrophy over time in Alzheimer's disease (AD)-sensitive regions in cognitively unimpaired (CU) older adults with or without SCD.

Methods: This longitudinal study includes 171 controls and 228 SCD patients recruited from memory clinics in the DELCODE study. All participants underwent serial neuropsychological assessments and MRI scans for up to 7 years, and had available MeDi adherence scores based on the clustered Food Frequency Questionnaire (range: 0-9). Clinical progression to incident-MCI status was determined by consensus diagnosis, global cognitive decline was assessed using the PACC5 cognitive composite, and medial temporal lobe (MTL) gray matter volume was estimated using the Freesurfer longitudinal pipeline. We used multivariate Cox regression and linear mixed-effects modeling to address our objectives. Gray matter volumes were corrected for total intracranial volume, and all analyses were adjusted for demographics.

Results: In SCD patients, we found that higher adherence to the MeDi diet was associated with a lower risk of clinical progression to incident-MCI (**Fig. A2**), and less global cognitive decline (**Fig. B2**), and MTL atrophy over time (**Fig. C2**; mainly driven by less parahippocampal and amygdala atrophy). Higher adherence to the MeDi diet was also associated with better baseline cognition and MTL volumes in these patients. This was not significant in the HC group (**Fig. A1-C1**), possibly because they experienced less cognitive decline over time than the SCD group (both $p < 0.001$; not significant for MTL atrophy). Further adjustment for kcal intake, body mass index, and physical activity yielded similar results, although sometimes only at trend levels.

Conclusion: In SCD patients seeking medical help, better adherence to a MeDi diet pattern may reduce future cognitive decline and MTL atrophy. These novel data provide a rationale for dietary intervention studies in this population, and support counseling SCD patients on the benefits of MeDi (and other lifestyle factors) for cognitive health.

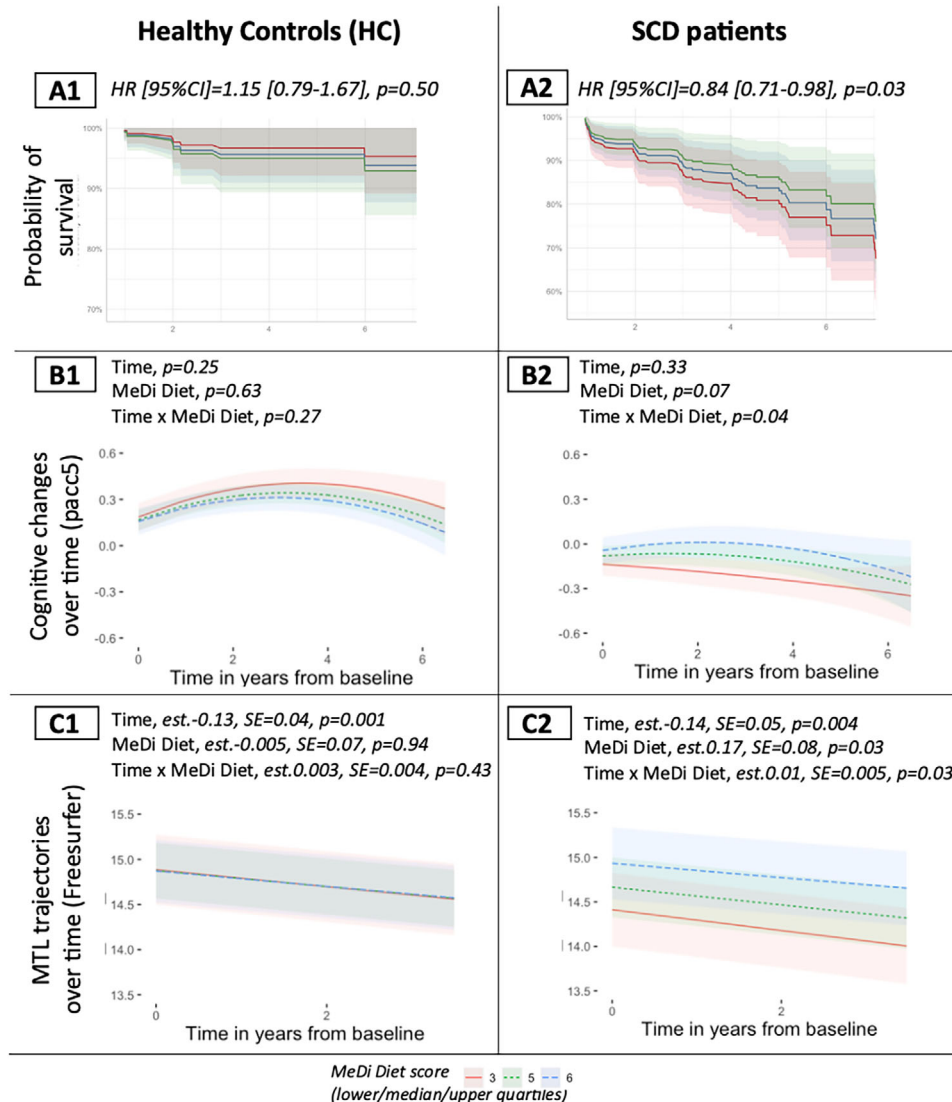


Figure. Plots derived from multivariate cox regression and linear mixed-effects models evaluating the risk of clinical progression to incident-MCI (A), and global cognitive changes (B) and medial temporal lobe (MTL) trajectories over time (C) according to Mediterranean-like Diet adherence (MeDi scores) in Healthy controls (A1-C1) versus SCD patients (A2-C2).