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BACKGROUND & AIM

Cardiovascular health factors are associated with cognitive decline and risk of dementia, including Alzheimer disease (AD); however, this has been mostly studied in late life.

➤ **We investigated whether vascular and lifestyle factors are associated with AD plasma and imaging biomarkers in midlife.**

METHODS

Participants: 1,406 adults from the Coronary Artery Risk Development in Young Adults Study (mean age 45.0 ± 3.6 yrs) with baseline lifestyle/vascular factors and AD biomarkers measured 15 later.

Exposure: AHA Life's Essential 8 (LE8) categorized as poor (0–49), intermediate (50–79), or ideal (80–100) across 8 components: smoking, diet, BMI, sleep, glucose, blood pressure, cholesterol, and physical activity, measured at baseline.

Outcomes: Plasma p-tau217, A β 42/40, and SPARE-AD (MRI-based AD-like atrophy index).

Analysis: Linear regression adjusted for age, sex, race, education, and kidney function; biomarkers log-transformed and standardized.

- In the main sample, 267 (19.5%) participants had ideal LE8, 961 (67.9%) had intermediate, and 178 (12.6%) had poor LE8.
- Participants with poor LE8 were more likely to be female, Black, and have fewer years of education.
- Compared to ideal LE8, intermediate and poor LE8 were associated with lower A β 42/40. Those with poor LE8 also had higher SPARE-AD atrophy pattern (Figure 1).

RESULTS

Figure 1. Association between the Life's essential 8 and AD biomarkers and SPARE-AD.

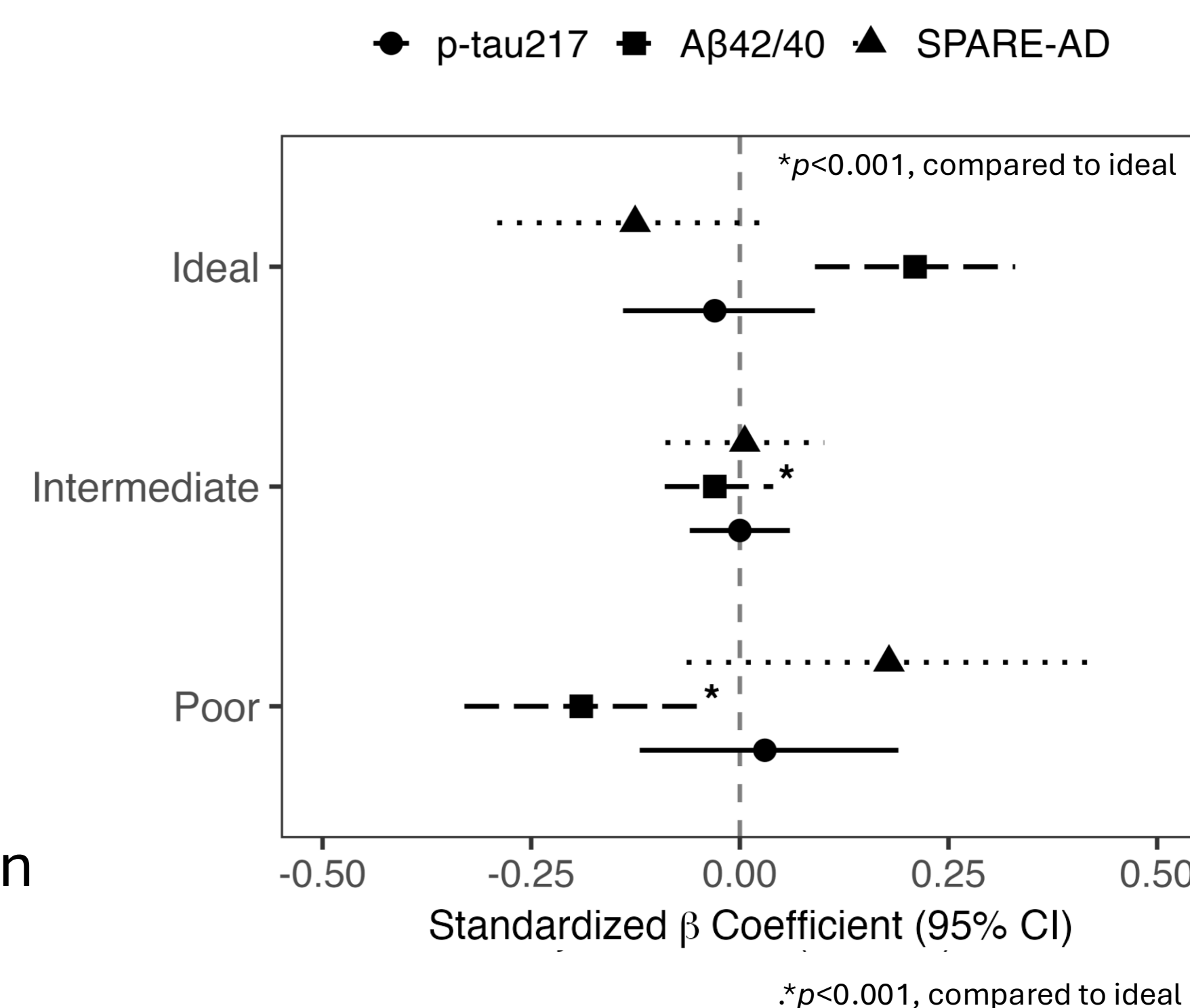
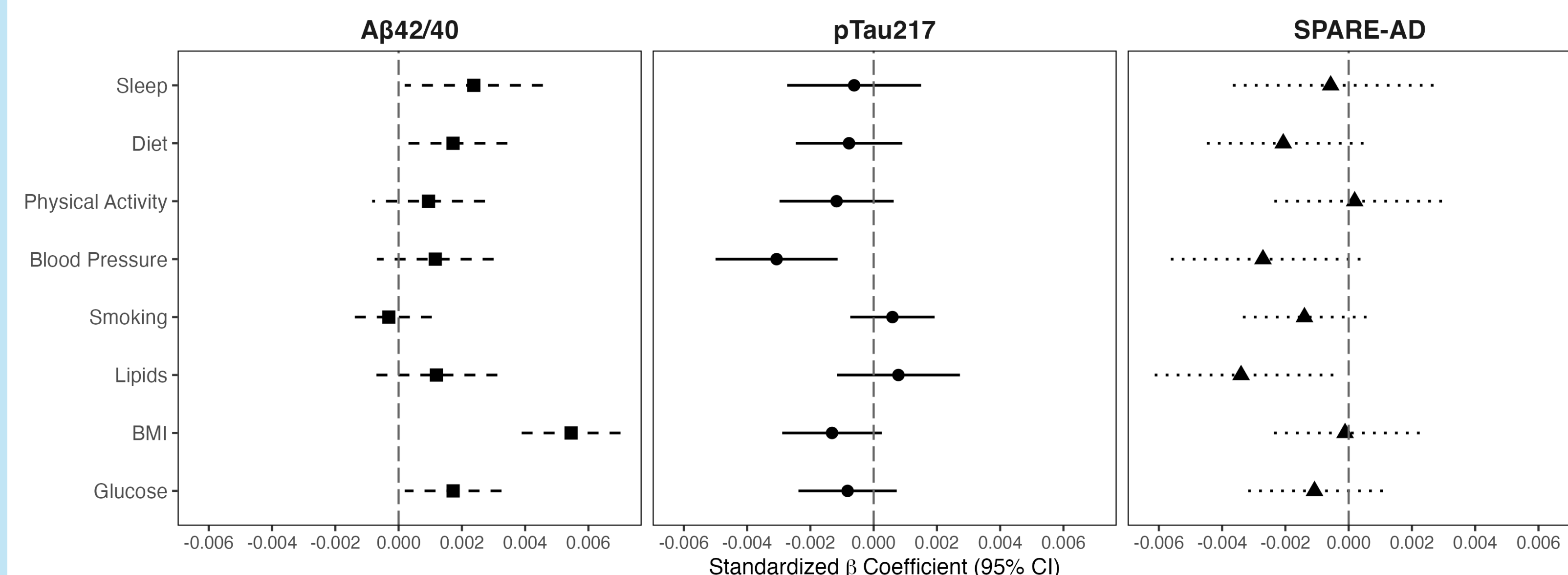


Figure 2. Association between the Life's essential 8 components and AD biomarkers and SPARE-AD.



- Of the individual LE8 components, more ideal diet, BMI, and glucose level were associated with more favorable A β 42/40; more ideal blood pressure with lower p-tau217; and more ideal cholesterol levels with less AD-like atrophy (Figure 2).

DISCUSSION

- Poor cardiovascular health in midlife is linked to more amyloid pathology and AD-like atrophy in the early 60s.
- These findings underscore the utility of the LE8 as a comprehensive measure of cardiovascular health linked to early AD biomarkers, while also highlighting that examining its individual components can inform more tailored intervention strategies.

TAKEAWAY

Poor cardiovascular health in midlife, as defined by the AHA LE8, is linked to less favorable early Alzheimer's disease biomarker profiles

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