

EPIDEMIOLOGY

Adiposity and the risk of dementia: A population-based study

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Abstract

Background: A higher body mass during mid-life is a well-established risk factor for dementia, while a higher body mass during late-life has been linked to a decreased dementia risk. Yet, body mass may be an inaccurate measure of adiposity, especially in elderly. We therefore differentiated between body mass, fat mass, fat free mass, android fat mass and gynoid fat mass and examined the association between these measures and the risk of dementia. We also determined trajectories of body composition before the diagnosis of dementia.

Method: In the population-based Rotterdam Study, body composition was measured using dual X-ray absorptiometry every 4-5 years between 2002-2016. Incident dementia was recorded until 2020. We assessed the association between the first body composition measure and the risk of dementia using Cox models, adjusted for sex, age, height, education, smoking, alcohol intake, physical activity, depressive symptoms, and APOE ε4 status. Trajectories of body composition for patients before dementia diagnoses were constructed using linear mixed models and for dementia-free participants, matched on birth year and sex. All analyses were done for men and women separately.

Result: Of the 3,408 men (mean age 66.4 years) and 4,563 women (mean age 66.5 years) with at least one body composition measure available, 293 men and 526 women developed dementia during a mean follow-up of 10.3 years. Higher body mass, fat mass, android fat mass and gynoid fat mass, but not fat free mass, tended to associate with a decreased risk of dementia in both men and women (**Figure 1**). After excluding the first five years of follow-up only the association of gynoid fat mass in women remained statistically significant (hazard ratio [95% confidence interval]: 0.85 [0.75-0.97]). No major differences in trajectories of body composition were observed, although a slight trend of a decrease in total, android and gynoid fat mass was observed in women up to 2 years before diagnosis.

Conclusion: A higher body mass, fat mass, android fat mass and gynoid fat mass were associated with a decreased risk of dementia. These results may be explained by reverse causality or competing risks, although a protective effect of adiposity cannot be excluded.

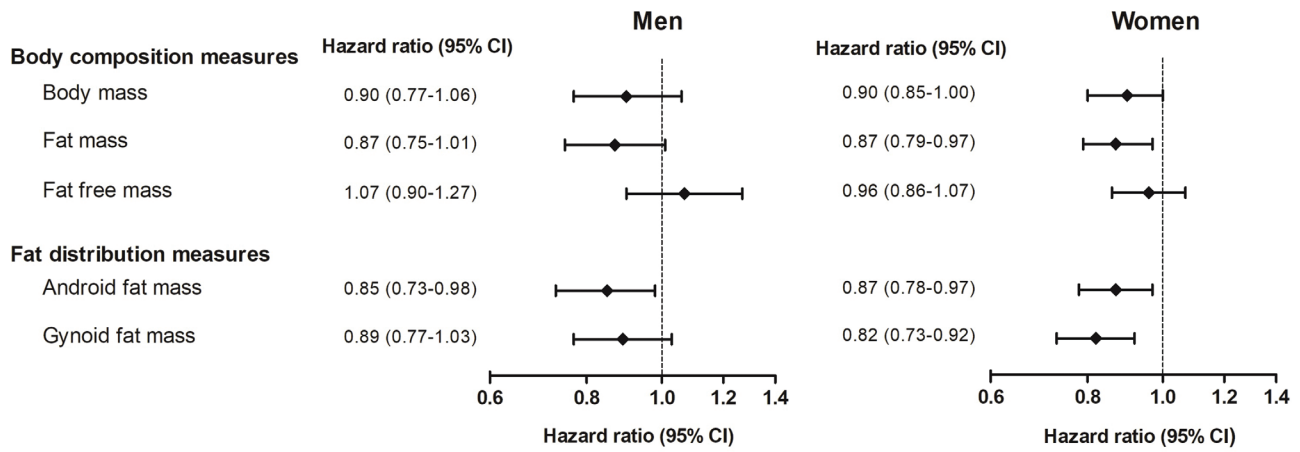


Figure 1. Body composition at baseline in association with the risk of dementia.

Hazard ratios per standard deviation increase in body composition measures. Abbreviation: CI, confidence interval