



Food for Thought: Exploring the Interplay Between Dietary Patterns and Socioeconomic Factors in Alzheimer's Disease Prevention

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Background

Alzheimer's disease (AD) is a neurodegenerative disorder characterised by cognitive and functional decline (Arora et al., 2023). While the **Mediterranean diet** may be protective, its adoption is challenging and financially driven in Western populations, where the **Western diet** is more common (Colaprico et al., 2024) (see Table 1 below).

	Contents	Benefits	Drawbacks
Alternate Mediterranean diet	Legumes, fish, vegetables & grains	Reduces AD risk	Expensive in the UK
Western Diet	Processed foods, red meat & dairy	Affordable in UK	Increases AD risk

Aim

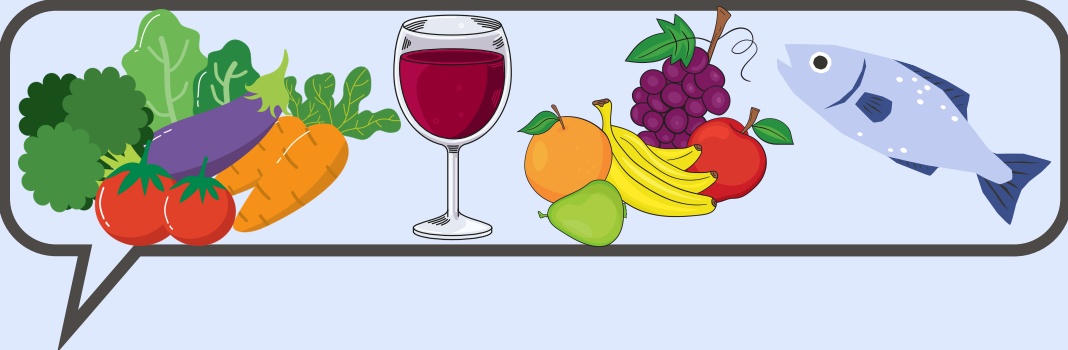
To determine the impact of Mediterranean and western diets alongside socioeconomic inequalities on dementia risk, providing evidence to inform effective prevention strategies.



Methods

Overview

- Design: Retrospective longitudinal cohort study.
- Population: Participants (n = 80,064) from the **UK Biobank** (2009 - 2012) who completed the **WebQ** dietary questionnaire and had data on AD, dementia, socioeconomic status, lifestyle and health.



- Measures: **Alternate Mediterranean Diet (AMED)** comprised of wholegrains, fruits, vegetables, legumes, nuts, fish, red meat, wine and MUFA/PUFA ratio. Score ranging from 0 to 9.
- Western Diet** comprises takeaways, processed and red meat, full-fat dairy products, fried potatoes, refined cereals, cakes and biscuits, confectionery, crisps, and soft drinks. Score ranging from 0 to 10.



Statistical Analysis:

Independent logistic regression predicting dementia with AMED and Western diet.

Model 1
(Unadjusted)

- Diet Score
- Dementia

Model 2
Model 1 +

- Age
- Sex

Model 3
Model 2 +

- Education
- Income

Model 4
Model 3 +

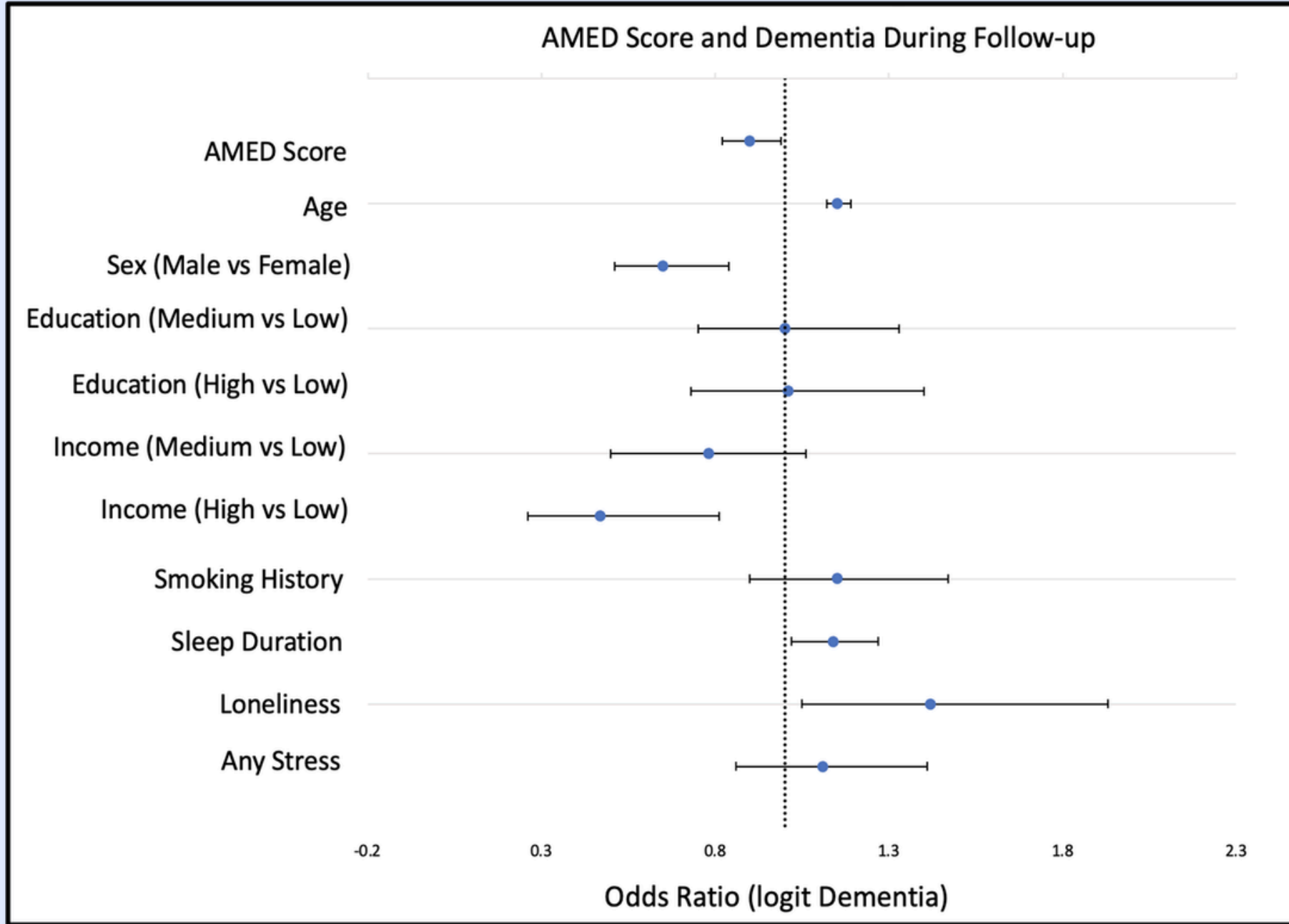
- Any Stress
- Sleep Duration
- Smoking History
- Loneliness

Results

There were 268 cases of dementia within the analytical sample of 80,064 participants aged 50 to 73 years old. 54% were females, 99% white, and 31% completed higher education. 44% earned more than £52k/year.

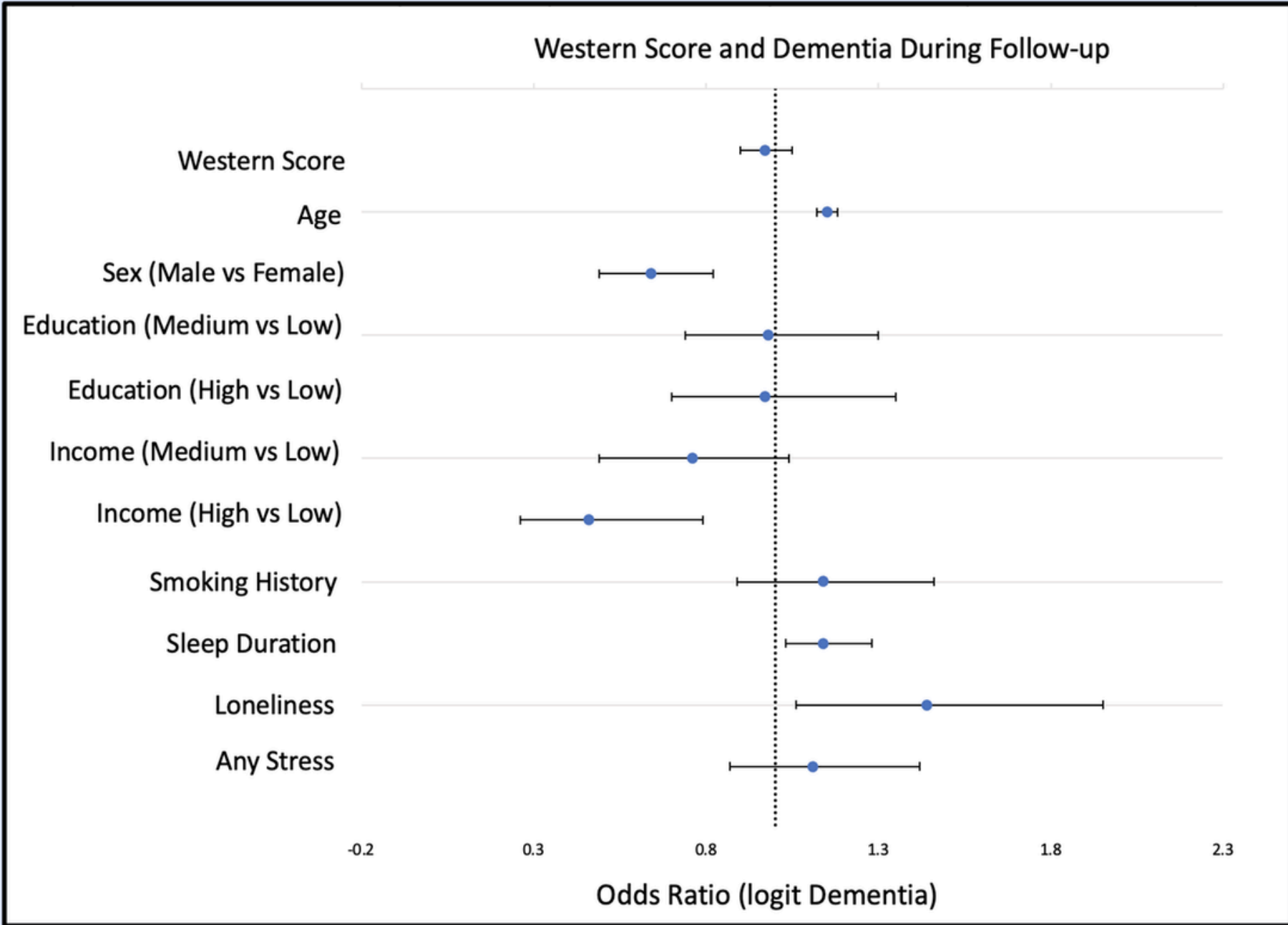
AMED diet was associated with reduced dementia risk (Odds Ratio 0.90; 95% Confidence intervals 0.82-0.99, p=0.025), but this association was explained by income in model 2 (see results for AMED and western model 4 below).

AMED Score (Model 4)



p-value AMED (0.025)

Western Score (Model 4)



p-value western (0.475)

The Western diet was not protective of dementia risk. The average estimated cost of the AMED diet per week in the UK is £45 while for the Western diet it is £30.

Limitations

Reduced participation in dietary assessments and limited ethnic variability. The olive oil consumption was not covered in the UK Biobank.

Conclusion and Implications

The protective role of AMED was linked to the level of income; therefore, prevention strategies cannot rely solely on promoting Mediterranean-style diets; they must also address barriers linked to income, affordability, and food environment. A Western-type diet was not protective.



Future Work

Assess: AMED vs. western individual components for cost effectiveness in relation to AD protection.

Develop: An affordable diet pattern protective of cerebrovascular health.

References

Arora et al., (2023). Diet and lifestyle impact the development and hprogression of alzheimer's dementia. doi:https://doi.org/10.3389/fnut.2023.1213223.
Colaprico et al., (2024). Cost and Cost-Effectiveness of the Mediterranean Diet: An Update of a Systematic Review.i doi:https://doi.org/10.3390/nu16121899.

