

Associations of dietary selenium intake with cognitive function: A population-based prospective study



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KEY TAKE AWAYS: Our study provides new epidemiological evidence for a positive association between dietary selenium intake and cognitive function in older adults. Further prospective cohorts and mechanistic investigations are warranted to test causal relationships and elucidate the underlying pathways.

BACKGROUND

The relationship between dietary selenium intake and cognitive function is not yet fully understood.

METHODS

- **Data and participants:** Utilizing data from the Rugao Longevity and Ageing Study (RLAS) in 2021–2023, we examined this association among Chinese adults aged 70 years and older.
- **Exposure:** Average daily intakes of dietary selenium intake were assessed using a 36-item Food Frequency Questionnaire (FFQ) and adjusted for total energy intake using the residual methods.
- **Outcome:** Cognitive function was evaluated with the Mini-Mental State Examination (MMSE), with scores standardized as z_scores.
- **Analysis:** Linear mixed models were applied to assess the corresponding associations.

RESULTS

Table 1. Multivariable-adjusted associations between dietary selenium intake and MMSE z_score in RLAS

Models	Selenium intake quartiles				P trend
	Q1 (n=263)	Q2 (n=263)	Q3 (n=262)	Q4 (n=263)	
Model 1, β (95% CI)	ref.	0.18 (0.05, 0.31)	0.17 (0.04, 0.30)	0.21 (0.08, 0.34)	0.003
Model 2, β (95% CI)	ref.	0.15 (0.04, 0.26)	0.13 (0.01, 0.24)	0.15 (0.04, 0.27)	0.016
Model 3, β (95% CI)	ref.	0.15 (0.04, 0.26)	0.13 (0.01, 0.24)	0.16 (0.04, 0.27)	0.015

Model 1 was adjusted for age, age square, sex, and total energy intake.
Model 2 was adjusted for variables in Model 1 plus BMI, education level, physical activity, smoking status, and alcohol status.
Model 3 was adjusted for variables in Model 2 plus hypertension, diabetes, hyperlipidemia, and follow-up year.

- Among 1,051 study participants (mean age 80.3 ± 4.3 years, 49.5% female), the median dietary selenium intake was 25.6 ug/d (interquartile range: 20.6–30.2).
- In fully adjusted models, higher selenium intake was associated with better cognitive performance (p for trend = 0.015). Compared to the lowest quartile (Q1), participants in Q2, Q3, and Q4 exhibited higher cognitive function z_scores, with β (95% CI) values of 0.15 (0.04–0.26), 0.13 (0.01–0.24), and 0.16 (0.04–0.27), respectively (all p < 0.05).

CONCLUSION

Higher dietary selenium intake was associated with better cognitive function in older adults, suggesting a potential association that merits further exploration to confirm causality and identify the mechanisms involved.