

LETTER TO THE EDITOR

Response to the Letter to the Editor on the association between selenium intake and cognitive function among older adults in the US: National Health and Nutrition Examination Surveys 2011–2014

(Received 13 September 2023 – Accepted 15 September 2023)

Journal of Nutritional Science (2023), vol. 12, e106, page 1 of 2

doi:10.1017/jns.2023.87

Dear Editor,

We appreciate the opportunity to respond to the letter to the editor by Patel *et al.* regarding our recently published article on the ‘Association between Selenium Intake and Cognitive Function among Older Adults in the US: National Health and Nutrition Examination Surveys 2011–2014’.⁽¹⁾ We are grateful to the authors for taking an interest in our work and providing constructive feedback.

In the letter, the authors acknowledged the importance of the study and provided a critical assessment of the study design. The authors suggested additional factors that can influence the effect of selenium such as the use of medications, diet, and the presence of viral infections. Medications such as chemotherapeutic and psychoactive agents and viral infections may potentiate reactive oxygen species (ROS) production, whereas a diet rich in antioxidants may help to neutralise excessive ROS.^(2–6) Therefore, these are indeed important factors that can change neuronal structure and function by manipulating signalling pathways associated with ROS, in turn, can provide a better understanding of the relationship between selenium intake and cognitive function.

Our main goal in the currently published article⁽¹⁾ was to provide an association of selenium intake on cognitive function among community-dwelling older adults. From our analyses, we found the prevalence of inadequate selenium intake was roughly 5%. Additionally, selenium intake was highly related to overall energy intake. In this population-based study, participants with inadequate selenium intake had an average energy intake of 851 kcal. If the two-dietary recalls were representative of usual intake over time, then risk factors for malnutrition should be considered in any future

analyses.⁽⁷⁾ We are aware that dietary analysis is important to assess the interaction among nutrients and consequently the effect of selenium. However, this extensive analysis may be more appropriate to be approached as a separate dedicated study in the future. In addition, our study was a secondary analysis of the 2011–2014 National Health and Nutrition Examination Survey (NHANES) data which limited us from including the specific factors mentioned by the authors such as history of COVID infection, and use of anthracycline and platinum derivatives. Moreover, NHANES stopped conducting cognitive assessments after the year 2014.

We want to thank the authors again for their thoughtful critique and their commitment to advancing scientific discourse. The issues raised merit further investigation in future research efforts. There are limited epidemiological studies that have explored the potential neuroprotective effects of adequate selenium intake on cognitive function. We hope that our study can serve as a steppingstone for more comprehensive studies that can elucidate the complex relationship between selenium intake, cognitive function, and the various factors including nutritional, biological, medical, and socioeconomic status that can influence this association.

Khondoker Adeba Ferdous, Linda L. Knol and Han-A. Park*

Department of Human Nutrition and Hospitality Management, College of Human Environmental Sciences, The University of Alabama, Tuscaloosa, AL 35487, USA

*Corresponding author: Han-A. Park,
email: hpark36@ches.ua.edu



References

1. Ferdous KA, Knol LL & Park H-A. Association between selenium intake and cognitive function among older adults in the US: National Health and Nutrition Examination Surveys 2011–2014. *J Nutr Sci.* 2023;**12**:e57.
2. Vitali M, Ripamonti CI, Roila F, *et al.* Cognitive impairment and chemotherapy: a brief overview. *Crit Rev Oncol/Hematol.* 2017;**118**:7-14.
3. Rodríguez Martín B, Fernández Rodríguez EJ, Rihuete Galve MI, *et al.* Study of chemotherapy-induced cognitive impairment in women with breast cancer. *Int J Environ Res Public Health.* 2020;**17**:8896.
4. Lappin JM & Sara GE. Psychostimulant use and the brain. *Addiction.* 2019;**114**:2065-2077.
5. Sim HI, Kim DH & Kim M. Cellular messenger molecules mediating addictive drug-induced cognitive impairment: cannabinoids, ketamine, methamphetamine, and cocaine. *Future J Pharm Sci.* 2022;**8**:19.
6. Morris MC, Tangney CC, Wang Y, *et al.* MIND diet slows cognitive decline with aging. *Alzheimers Dement.* 2015;**11**:1015-1022.
7. Yu W, Yu W, Liu X, *et al.* Associations between malnutrition and cognitive impairment in an elderly Chinese population: an analysis based on a 7-year database. *Psychogeriatrics.* 2021;**21**:80-88.