Reviewers report

Title: Association between intake of vitamin B and cognitive function in elderly Koreans with cognitive impairment

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Reviewer: Bo Qin

Reviewers report:

The paper describes the association between several B vitamins intake and cognitive function in elderly Koreans. The research question posed by the authors is important since modifiable lifestyle changes e.g. dietary interventions may be effective in postponing the onset of pathological cognitive decline. Results from observational studies on this topic have been inconsistent.

Major Compulsory Revisions

Regarding the clarity of the research question

1. Please indicate clearly if the B vitamins intake was from diet, or both diet and supplement sources in the methods part and throughout the paper. For example, you can use ‘total folic acid intake’ when referring both sources, or ‘dietary B vitamins’ when only referring dietary sources.

2. Separating the analysis by food vs. supplementary sources is necessary. Such information would be helpful for the design of clinical trials and dietary guidelines.

Methods

3. Please provide brief rationale for the covariates selected to be adjusted in the model. How they were measured should be described in Methods.

4. In addition to total energy intake, I did not find other dietary covariates considered in the model. Higher B vitamins intake may represent an overall healthy eating behavior, or may associate with other antioxidants or vitamin intake that may benefit cognitive function. That is to say, the observed association may not be due to B vitamins, but other food/nutrients intake that associate with B vitamins intake. Please address this issue.

5. What was the range of energy intake? Consider to remove outliers if there is any in the sensitivity analysis.

Discussion

6. It may be too early to state “supplementation for groups with MCI and AD may be necessary” considering the current analysis did not evaluate the supplementary sources alone, and the cross-sectional nature of the study.

7. Due to the observational nature, please acknowledge residual confounding is possible.

8. The authors mentioned that the causal inference was hard to achieve with the current data, which is good, but please spend few sentences to elaborate more:
Is reverse causation a potential big concern? e.g. is it possible that patients who were suffering from MCI or AD were more likely to give the advice to take more B vitamin supplements which contributes to the observed association?

Tables

9. Please provide the mean (SD) value of each test scores in Table 3 to help readers interpret the beta coefficients.

Minor Essential Revisions

10. Under the section of “Correlation between dietary vitamin B intake and plasma concentrations of folate, vitamin B12, and Hcy”: please provide the magnitudes of correlation.

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.