



Letter to the Editor

Response to letter regarding “hearing loss, diet, and cognitive decline: Interconnections for dementia prevention”

Dear Editor,

We would like to respond to the Letter to the Editor by Zhao et al. regarding our publication “Hearing loss, diet, and cognitive decline: interconnections for dementia prevention.”

Firstly, we thank the author for their interest in our work. The author raises concerns about the reliance on self-reported hearing loss and the lack of information on its severity and progression. We agree that pure-tone audiometry is the gold standard for accessing auditory function. As acknowledged in our manuscript, self-reported hearing loss has been validated in large, population-based studies [1,2], and offers a pragmatic approach for epidemiologic research. In addition, this limitation was noted in our manuscript in the discussion section (Page 7, first paragraph, lines 10–16).

Similarly, the Food Frequency Questionnaire (FFQ) used in this study has been previously validated [3]. The FFQ is widely used in large-scale epidemiological studies to assess dietary intake and overall diet quality. In particular, the FFQ used to assess overall diet quality, such as DASH and Mediterranean diet, has also been validated and published previously [4]. Nonetheless, we acknowledge the inherent limitations of FFQs and have addressed these in the manuscript (Page 7, first paragraph, lines 3–7). Additionally, we recognize the potential for residual confounding despite our adjustment for a wide range of covariates, which is also discussed in our limitations section.

Lastly, the author notes that cognitive decline may precede hearing loss and thus raise the possibility of reverse causation. We considered this and examined cognitive trajectories prior to the onset of self-reported hearing loss. As described in the Methods section, the annual rate of cognitive decline prior to hearing loss was -0.0624 standard units (SU), compared to -0.0623 SU among those who never reported hearing loss ($P = 0.97$). These results showed nearly identical rates of cognitive decline prior to hearing loss onset between groups, which provided reassurance that reverse causation is highly unlikely to account for the results.

In summary, we thank the author again for their comments. To our knowledge, this is the first study to examine the interrelationships among diet, auditory function, and cognitive health in a diverse population of older adults. While we acknowledge the inherent limitations

of observational studies, our study applied a robust analytical approach and demonstrated that a healthful diet is associated with lower risk of developing hearing loss, which may, in turn, play a protective role in preventing cognitive decline. We agree that future studies incorporating objective hearing assessments and longer follow-up will be important to further advance this area of research.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CRediT authorship contribution statement

Xiaoran Liu: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Writing – original draft, Writing – review & editing. **Uzma S. Akhtar:** Conceptualization, Writing – review & editing.

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Xiaoran Liu*

Rush Institute for Healthy Aging, Rush University Medical Center, 1700 W Van Buren, Suite 245, Chicago, IL, 60612, USA
Department of Internal Medicine, Rush University Medical Center, 1620 W Harrison St, Chicago, IL, 60612, USA

Uzma S. Akhtar

Communication Disorders & Sciences, Rush University, 1611 W Harrison St UNIT 530, Chicago, IL 60612, USA

*Corresponding author at: Rush Institute for Healthy Aging, Department of Internal Medicine, Rush University Medical Center, Triangle Building, Room 225F, 1700 W Van Buren St., Chicago, Illinois 60612, USA.

E-mail address: Xiaoran_Liu@rush.edu (X. Liu)