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RESPONSE TO LETTER

Enhancing the Robustness of MR Analysis on OSA and Migraine: Addressing Key Limitations [Response to Letter]

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Dear editor

We are happy to have received the letter from Dr Wei et al.[1] In the letter, Dr Wei et al pointed out the weaknesses of our study:[2]

Firstly. In this study, the results of the MR Egger approach were inconsistent with other research methods on the impact of migration without aura (MoA) on OSA risk. This might be attributed to the lack of multivariate Mendelian randomization analysis. The subsequent multivariate MR analysis with BMI revealed no significant impact of migraine (MI) or MoA on OSA, which rectified the research conclusions further. Furthermore, we will add further discussion on this inconsistency and adopt a more cautious attitude towards these inconsistent results in the future.

Secondly. Second, past study indicates a close association between BMI, OSA, and migraine. In this study, we incorporated BMI into the multivariate analysis. Thanks a lot for the directions from Wei et al. In future multivariate MR analyses, we will integrate a variety of environmental and lifestyle factors for multivariate MR analysis.

Thirdly. The MRlap software program and statistical approaches[3] were effective at compensating for bias in results (OSA on MA) caused by data overlap. In this investigation, we attempted to apply this strategy but were unsuccessful, which could be because the p-value criterion specified in the software for picking MR instruments was too severe, or the data in this study was too large. We will continue to test this strategy, and in future studies, we will pay close attention to tracking the original data to avoid sample overlap.

Finally, we are grateful to Professor Wei et al for their excellent advice, which we will include into our future research to enhance it even more.

Disclosure

The authors declare no conflicts of interest in this communication.

References

1. Wu X, Liang L, Wei Z. Enhancing the Robustness of MR Analysis on OSA and Migraine: addressing Key Limitations [Letter]. *Nat Sci Sleep*. 2025;2025:461–462.
2. Wang YP, Wei HX, Hu YY, Zhang C, Niu YM. Causal Association Between Obstructive Sleep Apnea and Migraine: a Bidirectional Mendelian Randomization Study. *Nat Sci Sleep*. 2025;17:183–194. doi:10.2147/NSS.S492630
3. Mounier N, Kutalik Z. Bias correction for inverse variance weighting Mendelian randomization. *Genet Epidemiol*. 2023;47(4):314–331. doi:10.1002/gepi.22522

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