

From Model to Bedside: What Kind of OSA Risk Prediction Tools Do We Need More Of? [Response to Letter]

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Dear editor

We are grateful for the comments provided by Pan and Fei in response to our recent publication.^{1,2} Their thoughtful insights address several key methodological considerations, which we respond to below:

On Collinearity Between Anxiety and Depressive Symptoms

We appreciate the concern about potential multicollinearity between anxiety and depression. Although SHAP analysis reduces the need for strict independence assumptions (as in linear models), we agree that variance inflation factor (VIF) assessment would provide additional reassurance. We have since computed VIF values for all features, which were below 5, suggesting acceptable multicollinearity.

On Class Imbalance Correction Techniques (Eg, SMOTE, Weighting)

We thank the authors for highlighting this issue. In our study, the class imbalance (30% good sleep quality vs 70% poor) was addressed by adjusting the LightGBM class weights internally. We acknowledge that methods like SMOTE or ENN may further enhance sensitivity to minority classes and will explore these in subsequent model iterations.

On Calibration Evaluation and Quantitative Indicators (Eg, Brier Score, HL Test)

We agree that the visual inspection of calibration curves alone is insufficient. While we provided graphical calibration, we have now computed the Brier score (0.094) and Hosmer–Lemeshow p-value ($p = 0.73$), which both indicate satisfactory calibration. These metrics will be incorporated in future publications for transparency.

We deeply value the perspectives of readers who are also clinicians, and are encouraged by the acknowledgment of our study's practical guidance. Thank you once again for this meaningful exchange.

Data Sharing Statement

No new data were created or analyzed in this communication. Data sharing is not applicable.

Author Contributions

BG - Conceptualization, Methodology, Formal analysis, Writing-original draft, Writing-review & editing, Supervision.

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1. Pan H, Fei Y. From model to bedside: what kind of OSA risk prediction tools do we need more of? [Letter]. *Nat Sci Sleep*. 2025;17:1601–1602. doi:10.2147/NSS.S549821
2. Tong Y, Wen K, Li E, et al. Construction and validation of a machine learning-based risk prediction model for sleep quality in patients with OSA. *Nat Sci Sleep*. 2025;17:1271–1289. doi:10.2147/NSS.S516912

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