

## Gender-Specific Association between Obstructive Sleep Apnea and Cognitive Impairment among Adults: A Population-based UK Biobank Study

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**Abstract :** Although much has been done to investigate the influence of obstructive sleep apnea (OSA) on cognitive function, little attention has been paid to the role which gender differences play in this association. In the present study, we aim to explore the gender-specific association between OSA and cognitive impairment. Participants from UK biobank who have completed at least one of the five baseline cognitive tests (visuospatial memory, prospective memory, fluid intelligence, short numeric memory and reaction time) were included and were further categorized into three groups: (1) OSA, (2) self-reported snoring but without OSA, and (3) healthy controls (without OSA or snoring). Multivariable regression analysis was performed to examine the associations among snoring, OSA and performance of each of the five cognitive domains. A total of 267,889 participants (47% male, mean age: 57 years old) were included in our study. In the multivariable regression analysis, female participants in the OSA group had a higher risk of having poor prospective memory (OR: 1.24, 95% CI: 1.02–1.50,  $p = 0.03$ ). Meanwhile, among female participants, OSA were inversely associated with the performances of fluid intelligence ( $\beta$ : -0.29, 95% CI: -0.46–0.13,  $p < 0.001$ ) and short-numeric memory ( $\beta$ : -0.14, 95% CI: -0.35–0.08,  $p = 0.02$ ). In contrast, among male participants, no significant association was observed between OSA and impairment of the five cognitive domains. Overall, OSA was significantly associated with cognitive impairment in female participants rather than in male participants, indicating that more special attention and timely interventions should be given to female OSA patients to prevent further cognitive impairment.

**Keywords :** obstructive sleep apnea (OSA), cognitive impairment, gender-specific association, UK biobank

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