

Objective

Indoor air quality has recently been reported to be associated with obstructive sleep apnea (OSA). However, the association between carbon dioxide (CO₂) concentration and OSA severity remains unclear. This study therefore evaluated whether whole-night mean indoor CO₂ concentration and the cumulative time above 800 ppm were associated with sleep event indices and with the odds of severe OSA.

Methods

The data paired with indoor CO₂ concentration and polysomnography (PSG) parameters were retrieved. A total of 544 participants were classified into two groups: 279 with mild-to-moderate OSA and 265 with severe OSA. Exposure was characterized by the mean CO₂ concentration and, in a subgroup, by the cumulative time above 800 ppm. Linear and logistic regression examined associations between CO₂ exposure and the apnea-hypopnea index (AHI), oxygen desaturation index (ODI), arousal index (ArI), snoring index (SI), and the odds of severe OSA, with adjustment for age, sex, body mass index, and smoking.

Results

This study observed that each 100-ppm increase in mean CO₂ concentration was associated with an increase of 1.02 events/h in the AHI and 1.24 events/h in the ArI. The adjusted odds ratio for severe OSA was 1.16 per 100-ppm increase. In the subgroup analysis, the adjusted odds ratio for severe OSA was 1.26, and the cumulative time above 800 ppm was associated with the AHI and the ArI (adjusted beta, 0.86 and 1.24, respectively).

Conclusions

This study observed an association between indoor CO₂ concentration and OSA severity. Indoor CO₂ may therefore deserve consideration in the assessment of sleep-disordered breathing.

中文題目：探討室內二氧化碳濃度與阻塞性睡眠呼吸中止症表現之相關性：一項台灣的先導性研究

作者：許馨玫*、袁琦祐、陳俊宇、廖婷婷、劉安純、李映萱、張家源
(報告者請以*表示，如許美鈴*)

服務單位：睡眠中心