

Gender differences in the changes of sleep-related physical and mental symptoms following CPAP treatment in patients with OSA

Abstract

Background and Objective: Daytime sleepiness, poor memory and sleep quality, anxiety, and depression are prominent symptoms in patients with obstructive sleep apnea (OSA). However, the prevalence of OSA in females is often underestimated, leading to underdiagnosis and undertreatment. Continuous Positive Airway Pressure (CPAP) therapy is widely recognized as the gold standard treatment for OSA.

Nevertheless, OSA patients exhibit considerable variability in the improvement of reported symptoms following CPAP treatment. Therefore, the objective of this study was to investigate gender differences in the changes of sleep-related physical and mental symptoms after CPAP treatment among patients with OSA.

Methods: A prospective study with a repeated measurement design was conducted at a sleep outpatient clinic within a medical center. The study included individuals diagnosed with moderate to severe OSA, as determined by the apnea and hypopnea index (AHI) of 15 or higher per hour, as measured by polysomnography. Snoring and daytime sleepiness were evaluated using the Epworth Sleepiness Scale (ESS), while poor sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI). The level of anxiety and depression was measured using the Hospital Anxiety and Depression Scale (HADS), and cognitive status was evaluated using the Mini-Mental State Examination (MMSE). Measurements were taken at four different time points: before initiating CPAP (T0, baseline), 2-4 weeks into CPAP treatment (T1), at 3 months of CPAP treatment (T2), and at 6 months of CPAP treatment (T3). Repeated measures analysis was used to investigate the changes in physical and mental symptoms among OSA patients following CPAP treatment.

Results: A total of 62 participants were included in the study, with a mean age of 56.0 years. The male to female ratio roughly was 4:1 with respect to 50 males and 12 females. Overall, the baseline of self-reported symptoms indicated daytime sleepiness, poor sleep quality, and high levels of anxiety and depression. Upon treatment with CPAP, there was a progressive reduction in both physical and mental symptoms. However, cognitive function remained relatively stable throughout the duration of CPAP treatment. When analyzing gender differences, we observed that females had lower sleep quality compared to males prior to starting CPAP treatment (mean PSQI score: 11.0 vs. 7.9, $p = .026$). In the fully adjusted repeated measurement analysis model, the findings consistently demonstrated that females exhibited a significant still poor in sleep quality (Risk ratio [RR]: 0.778, 95% CI, 0.668-0.905, $p = .001$) and improvement in cognitive function (Risk ratio [RR]: 0.482, 95% CI, 0.313-0.742, $p = .001$) compared to males in all three measurements after receiving CPAP

treatment. However, no significant gender differences were observed in daytime sleepiness, anxiety, or depression.

Conclusions: Understanding gender-related symptoms difference can enhance CPAP treatment. Since the assessment and treatment of women with OSA are grounded in criteria originally designed for men. In the case of moderate to severe OSA following CPAP treatment, females may still experience sleep complaints compared to males. However, it has been found that cognitive function improves in females. In future studies, it is important to consider the impact of poor sleep quality on the adherence of CPAP treatment in women with OSA.

中文題目：性別於呼吸中止症病人接受正壓呼吸器治療後身心症狀與認知功能改善之差異

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