

## Prevalence and Factors Associated With Sleep Disturbance and Sleep Apnea Among People Living With HIV

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**Objective:** HIV infection had been reported to be associated with sleep disordered breathing (SDB) and insomnia in Westerns. No large-scale study had been conducted to investigate sleep disturbance in Asian people living with HIV (PLWH). We prospectively investigated the prevalence and predictors of sleep disturbance and obstructive sleep apnea (OSA) among PLWH in Taiwan, especially the role of depression.

**Methods:** The consecutive HIV outpatients (excluding those with acute medical condition or major psychiatric diagnosis) from 2 tertiary centers were recruited from date to date. Body composition, antiretroviral therapy usage, CD4 count, hypnotics and illicit drugs usage, Beck depression inventory-II (BDI-II), Berlin Questionnaire, Epworth Sleepiness Scale (ESS), and Pittsburgh sleep quality index (PSQI) were collected. Body mass index (BMI) $>24$  kg/m<sup>2</sup> was considered as overweight. Poor sleep quality was defined as PSQI $>5$  and excessive daytime sleepiness (EDS) was defined as ESS $>10$  where depression was defined as BDI-II $>16$ . Patients with high-risk Berlin questionnaire were considered as having OSA. Primary outcome was prevalence and predictors of poor sleep quality where secondary outcome was prevalence and predictors of OSA.

**Results:** A total of 484 consecutive HIV outpatients were recruited. 96% participants were men and under antiretroviral therapy. 78% participants had undetectable plasma viral load where the median CD4 count was 535.9 /mm<sup>3</sup>. 20% participants had OSA. Around 70% patients had poor sleep quality, 27% had EDS, and 26% had depression. Depression was independently predictive of poor sleep quality (OR: 2.88, 95% CI 1.65-5.04) and OSA (OR: 2.53, 95% CI 1.48-4.32). EDS was also an independent predictor for both poor sleep quality (OR:1.85, 95% CI: 1.11-3.08) and OSA (OR 2.32, 95% CI 1.40-3.85). Other independent factors for poor sleep quality included antiretroviral agent with 2 nucleoside reverse-transcriptase inhibitors plus non-nucleoside reverse-transcriptase inhibitor (OR 2.38, 95% CI 1.25-4.53) and combination of integrase inhibitor (OR: 1.99, 95% CI 1.06-3.72). Factors predictive of OSA included hypnotics use (OR:2.04, 95% CI 1.05-3.93), and BMI (kg/m<sup>2</sup>) (OR:1.01, 95% CI 1.05-1.19). Viral load and CD4 count were not associated with any of poor sleep quality, OSA, and depression.

**Conclusion:** The prevalence of sleep disturbance and OSA was high among Asian PLWH. Depression and EDS were predictive of both poor sleep quality and OSA. Moreover, antiretroviral agents were associated with poor sleep quality, while obesity and hypnotics were related with OSA.

中文題目：HIV 感染者之睡眠呼吸障礙盛行率與相關因子

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