

Impacts of the COVID-19 Pandemic on Sleep Medicine Services: Longitudinal Data from a Sleep Center in Taiwan

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Background: The COVID-19 pandemic has massive impact on the operation of health care systems. Although in-laboratory sleep studies have been the gold standard care for sleep-related disorders, the sleep medicine services are markedly interrupted due to concern of potential aerosol transmissibility of the virus, lockdown policies and regulations to restrict hospital visits (Kim et al., 2021). Cross-sectional online surveys across multiple sleep-centers in different countries reported a reduction of at least 90% sleep tests during the first-wave of pandemic (Johnson et al., 2021, Zhang et al., 2021). However, longitudinal data of changes in sleep medicine services following the dynamics of the pandemic are limited.

Aims & Objectives: To investigate if the number of new COVID-19 reported cases was correlated to the operational capacity of sleep center regionally and longitudinally.

Methods: The number of monthly prescriptions and monthly operations of sleep tests between 2020-January and 2022-January were retrieved from the longitudinal registry of the sleep center of Cheng-Hsin General Hospital, Taipei, Taiwan. After calculating the mean number of sleep test prescriptions and operations, the corresponding changes in ratio for individual months were calculated. The number of newly reported COVID-19 cases per month during the same period in Northern Taiwan, where our sleep center is located, were obtained from the open data source released by the Taiwan Centers for Disease Control (<https://www.cdc.gov.tw>). Linear regression was performed to investigate if newly reported COVID-19 case number was correlated to the ratio change in sleep center services.

Results: The mean number of sleep test prescriptions was 122/month (standard deviation [SD]: 37). The mean number of sleep test operations was 99/month (SD: 30). The range of ratio change in sleep test prescriptions and operations per month were between -0.93 to +0.60 and -1.00 to +0.50 respectively, when compared to baseline operational capacity. The number of newly reported COVID-19 cases in Northern Taiwan ranged from 0 to 6,617 cases/month, and the log-transformed case number ranged from 0 to 3.82/month. It was found that the number of newly reported COVID-19 cases was significantly associated with the ratio change in sleep test prescriptions ($\beta = -0.16$, 95% confidence interval [95% CI] = -0.31 - -0.02, p-value = 0.026) and the ratio change in sleep test operations ($\beta = -0.25$, 95% confidence interval [95% CI] = -0.38 - -0.12, p-value = 0.001).

Discussion & Conclusion: COVID-19 outbreak was significantly associated with the reduction of sleep test prescriptions and operations in sleep center located in the same region longitudinally, even that the pandemic was relatively well-controlled in Taiwan during the study period. New strategies, such as the use of telemedicine and home sleep test, may be implemented to tackle the underdiagnosis and delay of treatment for sleep disorders (Becker, 2021, Schiza et al., 2021).