Comparisons of Actigraphic and Polysomnographic sleep parameters in Taiwanese older adults with sleep disturbance

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Polysomnography(PSG) is the "gold standard" of sleep measure. However, it is an expensive and invasive method to measure sleep. Actigraphy has become an alternative way to estimate objective sleep. It employs a small-size device to continuously monitor wake-sleep states without confining to laboratory environment. Nevertheless, how close the actigraphic sleep measures are to the PSG should be considered. This study compared actigraphic and polysomnographic sleep parameters to examine the validity of actigraphy in the elderly with sleep disturbance in Taiwan. Twenty-nine nights of actigraphic and PSG measures from 15 subjects with sleep disturbances (aged over 55 years, 9 women, 6 men) in sleep laboratory were analyzed. Subjects were invited to participate in a footbath sleep study. Sensitivity, accuracy, and specificity measures were obtained from minute by minute comparisons of actigraphy and PSG. data. Results showed that the concordance between actigraphic and PSG measure was high. Min-by-min agreement between actigraphic and PSG measures was 87.6%. Sensitivity ad specificity was 95.01% and 44.45%, respectively. In terms of other sleep parameters of total sleep time and sleep efficiency, they also highly correlated between actigraphic and PSG measured sleep parameters. However, a actigraphy capable of detecting wake state was poor. Sleep latency and WASO (wake after sleep onset) were high difference with statistic significance ($P < 0.00$) between actigraphic and PSG-measure. These findings provide references in applying actigraphy and PSG to sleep measures.

Biosheet

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