Validation study on sleep parameters by actigraphy for normal subjects

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Dear Editor:

O'Hare et al. reported the performance of three sleep monitoring devices for measuring sleep parameters in 20 normal subjects against sleep polysomnography (PSG) [1]. The authors used two non-contact radio-frequency biotion sensors, named SleepMinder® and SleepDesign®, and an accelerometer, named Actiwatch®. Compared with sleep PSG, all three devices overestimated total sleep time and underestimated wake after sleep onset and sleep onset latency. I appreciate that the authors checked the validity of three sleep monitoring devices, including Actiwatch®, against sleep PSG. Although the agreement of sleep/wake judgment by sleep monitoring devices is satisfactory for normal subjects, the authors recognized the limitation when these devices were applied for patients with insomnia. I have a query on their study with special emphasis on Actiwatch®.

O'Hare et al. quoted a paper on selecting appropriate cutoff point for sleep-wake judgment [2], but there is no definite way to determine the best sensitivity of sleep-wake judgment for every subject. Kushida et al. found the best overall accuracy and ability to detect wakefulness using Actiwatch® and PSG, when the “high-sensitivity” setting (20 counts per minute) was used [3]. Peterson et al. adopted the default sensitivity setting (40 counts per minute), and they described the overestimation of total sleep time and underestimation of wake

after sleep onset by Actiwatch® [4], which was the same study outcome by O'Hare et al.

There is a difference between brain activity and physical movement during sleep, and the discrepancy of sleep parameters between sleep PSG and sleep monitoring devices would be obvious for insomniacs [5]. Validation study of sleep parameters by SleepMinder®, SleepDesign®, and Actiwatch® as a tool for sleep/wake judgment should also be conducted in patients with sleep apnea syndrome and other sleep disorders.

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Conflicts of interest There is no conflict of interest in this study.

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