Commentary

Sleep Evaluation by Actigraphy

Tomoyuki Kawada

Department of Hygiene and Public Health, Nippon Medical School, Tokyo, Japan.

Correspondence should be addressed to Tomoyuki Kawada, MD, PhD, Department of Hygiene and Public Health, Nippon Medical School, 1-1-5 Sendagi, Bunkyo-Ku, Tokyo, Japan. E-mail: kawada@nms.ac.jp

Lauderdale and colleagues (2014) reported sleep actigraphy data from 727 individuals aged 62–90. The authors used wrist actigraphy, named Actiwatch Spectrum, in combination with questionnaire survey, and concluded that there was a discrepancy of sleep duration by actigraphy and by questionnaire survey. The same authors reported significant correlations between insomnia symptoms and the actigraphy metrics with some limitations on the association (Chen et al., 2014). I have some concerns on their research.

First, I want to confirm the cut-off value on the sensitivity for making sleep/wake judgment of Actiwatch Spectrum, which was set at 40 counts per minute as a default. The prediction of individual sleep parameters by a default sensitivity should be paid with caution. Kushida and colleagues (2001) found the best cut-off point of Actiwatch against sleep polysomnography was “high-sensitivity” setting (20 counts per minute). Peterson and colleagues (2012) adopted a default sensitivity setting, and there was an overestimation of total sleep time and underestimation of wake-after sleep onset for Actiwatch. Physical acceleration or movement by actigraphy cannot relate to brain activity during sleep, and the discrepancy of sleep parameters between sleep polysomnography and Actiwatch is obvious for insomniacs (Natale, Léger, Martoni, Bayon, & Erbacci, 2014).

As the second concern, Girschik, Fritschi, Heyworth, and Waters (2012) reported poor association between self-reported sleep and data from Actiwatch by a default sensitivity setting. But poor agreement does not become the limitation of questionnaire survey including insomnia symptom. Subjective and objective sleep indicators reflect different dimensions on sleep, and subjective sleep is indispensable for detecting insomnia.

As the third concern, Ju and colleagues (2013) reported a decrease of sleep efficiency by Actiwatch in patients with preclinical stage of Alzheimer disease (AD). Although AD patients complained less of insomnia, their sleep by Actiwatch showed longer sleep latency and lower sleep efficiency (Most, Aboudan, Scheltens, & Van Someren, 2012). Furthermore, Fernandez-Mendoza and colleagues (2011) reported that anxiety and lack of stress coping were related to underestimation of sleep duration among insomniacs. This means that objective sleep and quality of sleep should be evaluated in combination with mental status.

Finally, Shear and colleagues (2014) reported that about 40% of inpatients aged 50 years or older without diagnosis of sleep disorder in the past had the risk of obstructive sleep apnea (OSA). The prevalence of sleep disturbance in general old inhabitants would be lower than that in inpatients, but physical status including OSA relates to objective sleep and quality of sleep.

I agree with the simplicity of actigraphy to monitor sleep, and fundamental information of actigraphy for sleep monitoring should be precisely described.

Conflict of Interest

None declared.

References


