

Setting Quantitative Thresholds for Detecting Insomnia in Older Persons

Commentary on Levenson et al. A quantitative approach to distinguishing older adults with insomnia from good sleeper controls. *J Clin Sleep Med* 2013;9:125-131.

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COMMENTARY

In this issue of *JCSM*, Levenson et al. describe the results of a comparison of baseline sleep diary and actigraphy data obtained in older insomniacs versus older good sleepers, with the aim of defining severity thresholds for sleep onset latency (SOL), wake time after sleep onset (WASO), sleep efficiency (SE), and total sleep time (TST) that would best separate the two groups.¹ The study included older insomniacs (N = 79, mean age 71.7 years) who met both the definition of primary insomnia per DSM-IV and general insomnia per ICSD-2, and older good sleepers (N = 40, mean age 71.8 years) “without clinically significant” sleep complaints. Both groups completed self-reports, clinical interviews, prospective sleep diaries for 2 weeks, and wrist-worn actigraphy for 2 weeks. The insomnia group also completed polysomnography to exclude severe sleep apnea and severe periodic limb movement disorder. Receiver-operator characteristic (ROC) curves and their associated Youden indices revealed excellent maximum correct classification rates of older insomniacs versus good sleepers, using cutoff values of sleep diary SOL = 18 minutes, WASO = 21 minutes, SE = 92%, and TST = 388 minutes. ROC area under the curve (AUC) was excellent for sleep diary variables with AUC 0.84-0.97. Sleep diary SE was the variable that performed the best. In contrast, actigraphy performed poorly in separating the two groups, with sleep variable AUC ranging 0.58-0.61.¹

This study advances the development of cut-points for the screening and detection of insomnia in older persons and provides normative data for the purpose of assisting with goal-setting in insomnia treatment of older persons. The study is to be commended for focusing on older insomniacs, as this group represents the demographic group with the highest rate of sleep complaints and a disproportionate use of sleep-aid medication.² Correspondingly, the implications of Levenson et al. should be limited to older persons.

As the authors point out, estimation of the prevalence of insomnia in large population studies has been bound by the lack of consensus definitions of cut-points for SOL, WASO, SE, and TST in identifying persons with insomnia. Correspondingly, consensus regarding cut-points would reduce variability in population estimates of insomnia. Possibly, large epidemiologic studies could ask respondents to prospectively keep an on-line sleep diary or a smart-phone sleep diary application,

with cut-points used to estimate rates of insomnia in older persons. The study by Levenson et al. proceeded with prospective collection of sleep diaries; it is not clear whether an insomniac’s one-time best guess of their own typical SOL, WASO, SE, and TST would approximate the results of prospective diaries.³

The suggested cut-points could also be used, as the authors suggest, to efficiently identify candidates for insomnia clinical trials. Again, web-based or smart-phone application sleep diaries could assist in prospectively identifying older insomniacs for clinical trials.

In clinical practice, the use of cut-points should be limited to goal setting and not to diagnosis. A patient’s initial visit to an insomnia clinic will include an interview to make a diagnosis of insomnia based upon standard nosology; sleep variable cut-points are not needed to make or refute a clinical diagnosis. The cut-points themselves do not include an objective measure of distress or daytime impairment, which is essential for making the diagnosis of insomnia.^{4,5} Still, cut-points would be useful in helping insomniacs set realistic goals for insomnia treatment.

While the sleep diary powerfully discriminated between older insomniacs and good sleepers, actigraphy did not fare as well. This is not the first time that actigraphy has failed to keep pace with the sleep diary, as we recently found in a hypnotic treatment study.⁶ Levenson et al. state that actigraphy is particularly weak in identifying wake time in insomniacs. Overall, the results of Levenson et al. add to the impression that after decades of use, sleep researchers have yet to realize the full promise of actigraphy. In the study by Levenson et al., the actigraphic data was collected in one-minute epochs, but the sensitivity settings during data analysis (low, medium, or high) were not specified. Perhaps alternative epoch lengths or alternative sensitivity settings would have shown differences between groups, or perhaps the entire paradigm for analyzing actigraphy needs to be rethought.^{7,8}

All in all, the present work represents an advance, although limited to older persons and limited to one site. The findings bear replication in other age groups and from other sites.

CITATION

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DISCLOSURE STATEMENT

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