Neuroepidemiology 2016;46:269–270
DOI: 10.1159/000445542

Sleep Duration and Dementia in Older Adults

Tomoyuki Kawada

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

I have read an article titled ‘Sleep Duration in Relation to Cognitive Function among Older Adults: A Systematic Review of Observational Studies’ [1]. The authors recognized that long (rather than short) sleep durations were related to worse cognition, although a meta-analysis was not conducted due to the difficulty faced in compiling heterogeneous studies. I have some concerns on their study.

First, the authors did not discuss the effect of gender on the association between sleep duration and cognition. Chen et al. [2] reported the effect of sleep duration on subsequent cognitive decline, mild cognitive impairment (MCI) or dementia by a prospective study on female inhabitants, and there was a significant V-shaped association between MCI/dementia risk and shorter or longer sleep durations. Keage et al. [3] also conducted a prospective study linking sleep duration and cognitive decline or dementia, and there was a significant increase in odds ratio of shorter sleep duration for cognitive decline, although stratified analysis by gender was not conducted. As Devore et al. [1] recommended, there is a need to conduct many more prospective studies with stratified analysis based on gender.

Relating to the first query, the authors cited a study by Benito-León et al. [4], reporting a significant effect of longer sleep duration on incident all-cause dementia and Alzheimer’s disease. Benito-León et al. [5] also reported that a significant cognitive decline of longer sleepers was recognized in a logistic regression model by using Mini-Mental State Examination. These studies presented the risk of longer sleep duration for the incidents of dementia and cognitive decline. In addition, Benito-León et al. [6] conducted a follow-up study on mortality with a median of 12.5 years by a Cox regression model. They concluded that self-reported long sleep duration was associated with 58% increased risk of dementia-specific mortality. Unfortunately, there was no stratified analysis by gender in these analyses.

Second, Yaffe et al. [7] reported that sleep duration was not significantly associated with the risk of cognitive impairment by using sleep polysomnography in older women. Although Devore et al. [1] desired the objective sleep assessment for the analysis, self-administered information on sleep duration presents an

enough number of sample and adequate statistical power for the association. I think that self-reported patterns of sleep do not always become a disadvantage against physiological measures of sleep [8].

Third, the authors gathered several studies to summarize information, but could not conduct a meta-analysis as a systematic review to avoid unstable estimate. But I think that a meta-analysis is a useful procedure to recognize a trend of the association instead of confirming a strict and valid relationship. Instead of waiting for more prospective studies, I recommend that the authors conduct a meta-analysis by 7 prospective studies.

Finally, I want to make 2 suggestions. The authors recognized the correlations with Mini-Mental State Examination scores; behavioral symptoms and Clock Drawing Test scores should also be considered for understanding the associations with sleep duration [9]. In addition, as adjusting independent variables, instrumental functionality and use of medications such as anti-psychotics should also be considered in a systematic review, because these factors modulate the level of cognitive function [10].

Disclosure Statement

The author has indicated of having received no financial support.

Conflicts of Interest

There is no conflict of interest in this study.

References

- Devore EE, Grodstein F, Schernhammer ES: Sleep duration in relation to cognitive function among older adults: a systematic review of observational studies. *Neuroepidemiology* 2016;46:57–78.
- Chen JC, Espeland MA, Brunner RL, Lovato LC, Wallace RB, Leng X, Phillips LS, Robinson JG, Kotchen JM, Johnson KC, Manson JE, Stefanick ML, Sarto GE, Mysiw WJ: Sleep duration, cognitive decline, and dementia risk in older women. *Alzheimers Dement* 2016;12:21–33.
- Keage HA, Banks S, Yang KL, Morgan K, Brayne C, Matthews FE: What sleep characteristics predict cognitive decline in the elderly? *Sleep Med* 2012;13:886–892.
- Benito-León J, Louis ED, Bermejo-Pareja F: Cognitive decline in short and long sleepers: a prospective population-based study (NEDICES). *J Psychiatr Res* 2013;47:1998–2003.
- Benito-León J, Bermejo-Pareja F, Vega S, Louis ED: Total daily sleep duration and the risk of dementia: a prospective population-based study. *Eur J Neurol* 2009;16:990–997.
- Benito-León J, Louis ED, Villarejo-Galende A, Romero JP, Bermejo-Pareja F: Long sleep duration in elders without dementia increases risk of dementia mortality (NEDICES). *Neurology* 2014;83:1530–1537.

- 7 Yaffe K, Laffan AM, Harrison SL, Redline S, Spira AP, Ensrud KE, Ancoli-Israel S, Stone KL: Sleep-disordered breathing, hypoxia, and risk of mild cognitive impairment and dementia in older women. *JAMA* 2011; 306:613–619.
- 8 Kawada T: Effects of traffic noise on sleep: a review. *Nihon Eiseigaku Zasshi* 1995;50:932–938.
- 9 de Oliveira FF, Bertolucci PH, Chen ES, Smith Mde A: Assessment of sleep satisfaction in patients with dementia due to Alzheimer's disease. *J Clin Neurosci* 2014;21:2112–2117.
- 10 de Oliveira FF, Pivi GA, Chen ES, Smith MC, Bertolucci PH: Risk factors for cognitive and functional change in one year in patients with Alzheimer's disease dementia from São Paulo, Brazil. *J Neurol Sci* 2015;359:127–132.