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LETTER TO THE EDITOR

Comment to: The relationship between sleep and cognitive function in patients with prediabetes and type 2 diabetes

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Dear Editor,

I have read the research article "The relationship between sleep and cognitive function in patients with prediabetes and type 2 diabetes" by Saetung et al. [1]. The authors examined the association between sleep and cognitive function in patients with abnormal glucose tolerance. Sleep duration, sleep efficiency, and obstructive sleep apnea (OSA) severity were used as indicators of sleep quality, and cognitive function was assessed using Montreal Cognitive Assessment (MoCA) and three sub-scores of MoCA, visuoexecutive function, attention and delayed recall. OSA was diagnosed in 123 participants (76.9%) from a total of 162 patients (81 type 2 diabetes and 81 prediabetes). Mean sleep duration was 6.0 h and sleep efficiency was 82.7%. By multiple regression analysis, having diabetes and sleep efficiency were independently associated with MoCA scores and visuoexecutive function scores. In contrast, sleep duration and OSA severity were not significantly associated with MoCA scores. I have two concerns about the study.

First, the authors evaluated sleep duration and sleep efficiency by actigraphy recordings, and lower sleep efficiency was independently associated with lower cognitive function in patients with abnormal glucose tolerance. The same research group reported explored the relationship between sleep and glucagon-like peptide 1 regulation in 71 patients with abnormal glucose tolerance, having haemoglobin A1c levels between 5.7% and < 6.5% and no history of diabetes [2]. They also evaluated habitual sleep duration and sleep efficiency by 7-day actigraphy recordings, and glucagon-like peptide 1 levels were measured during a 75-g glucose tolerance. After adjusting for sex, haemoglobin A1c and body mass index, odds ratio (95% CI) of area under the curve glucagon-like peptide 1 in the highest quartile for apnea–hypopnea index (AHI) was 0.581 (0.359–0.942). In contrast, there was no significant relationship between sleep duration or efficiency and fasting or area under the curve glucagon-like peptide 1. As OSA severity was associated with lower glucagon-like peptide 1 response to glucose challenge, they speculated the mechanism that OSA affected glucose metabolism. Although causal direction would be difficult to be determined, inter-relationship among sleep, cognitive function and glucose metabolism should be evaluated comprehensively.

Second, Haba-Rubio et al. assessed the association between sleep and cognitive impairment in 580 participants aged > 65 years [3]. After adjustments for confounding variables, the AHI and the oxygen desaturation index ≥ 4 and ≥ 6% were significantly associated with cognitive impairment. In contrast, no significant associations with sleep duration or efficiency were observed. In this report, diabetes was significantly associated with cognitive impairment, and glucose metabolism would be closely related to the relationship between OSA and cognitive function.

Compliance with ethical standards

Conflict of interest The author declares that he has no conflict of interest.

Human or animal participants statement This article does not contain any studies with human or animal subjects performed by any of the authors.

Informed consent For this type of study formal consent is not required.

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