Sleep Duration and Cardiovascular Disease Prevalence – The Debate Continues

We read with interest the study by Krittanawong et al "Sleep Duration and Cardiovascular Health in A Representative Community Population (from NHANES, 2005 to 2016)".[1] The authors studied 32,152 participants who responded to the sleep survey and found short sleep duration (<7 hours) to be associated with increased prevalence of stroke and heart failure. Long sleep duration (>9 hours) was also associated with higher prevalence of stroke, heart failure and coronary artery disease.

In our previous study using NHANES database, we also found increased prevalence of self-reported history of stroke (Odds ratio [OR] 2.01, 95% confidence interval [CI] 1.43 to 2.81) and heart failure (OR 1.67, 95%CI 1.55 to 2.41) with short sleep duration.[2] We also found higher prevalence of coronary artery disease (OR 1.19, 95%CI 1.07 to 3.42) in patients with long duration of sleep which was only noted in the current analysis when comparing short and long durations of sleep directly. In addition, we noted a higher prevalence of myocardial infarction (OR 2.04, 95%CI 1.48 to 2.82) with short sleep duration. However, the current study did not include self-reported history of myocardial infarction as an endpoint. We used the cutoff of <6 hours, 6 to 8 and >8 hours as short, normal and long duration of sleep in our analysis. After our publication, consensus statements were published with durations of sleep divided as done by authors in the current study.[3]

A limitation with the current analysis is lack of adjustment for self-reported history of sleep apnea. In the current analysis, a significant proportion of subjects reported a history of sleep apnea. The authors rightly mention that sleep apnea can be linked to longer sleep duration. Sleep apnea has been found to be independently associated with higher risk of cardiovascular disease in several studies. In a meta-analysis of 51 studies, higher levels of tumor necrosis factor-alpha (standardized pooled mean difference [SPMD] 1.03), interleukin-6 (SPMD 2.16), interleukin-8 (SPMD 4.22), intercellular adhesion molecule (SPMD 2.93), selectins (SPMD 1.45) and vascular cell adhesion molecule (SPMD 2.08) have been demonstrated which may mediate the association of sleep apnea with cardiovascular disease.[4] Therefore, it would be important to know whether the results hold when adjusted for history of sleep apnea. This - along with difference in sleep duration categories - may explain some differences noted between our previous analysis and current results reported by the authors.

Nevertheless, we congratulate the authors for providing insights into an ever-intriguing question using a larger dataset. Large prospective studies are needed to determine the mechanisms and associations between sleep duration and cardiovascular disease.

Disclosures

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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