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Editorial “Sleep quality is associated with weight loss maintenance status: the MedWeight study”

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Editorial "Sleep quality is associated with weight loss maintenance status: the MedWeight study"

Inadequate sleep is associated with a range of adverse outcomes, such as increased risk of cardiovascular metabolic and endocrine problems in addition to obesity and impaired cognition [1]. However, the existing literature has mostly used 'sleep duration' as the main measure of sleep adequacy. Emerging evidence from epidemiological studies indicates that other dimensions of sleep, ie, sleep quality and pattern, also play important roles in the biochemical pathways related to glucose metabolism [2]. Therefore, a broader approach than sleep duration considering different dimensions of sleep would be more useful to study sleep-obesity association.

In this issue of *Sleep Medicine*, Dr. Yannakoulia and colleagues report the impact of sleep duration and quality on weight loss maintenance (weight maintenance of at least 10% of initial weight loss) and regain (weight ≥95% of their maximum body weight) in a sample of 528 volunteers from the MedWeight study [3]. Sleep quality was assessed through Athens Insomnia Scale (AIS), while sleep quantity referred to the self-reported duration of sleep. The findings of this study suggest that better sleep quality is associated with higher odds of being a maintainer ie, those who succeeded in maintaining weight loss (OR = 0.89 per AIS unit, 95% CI: 0.81 – 0.98). However, the association between sleep duration and weight maintenance was not found to be strong enough to adjust for sleep quality. In the sex-specific analysis the association between the AIS score and maintenance status was evident in men, but not in women.

The authors should be commended for exploring the sleep-obesity link in the context of weight maintenance/regain and providing evidence for promoting sleep hygiene as an intervention for weight maintenance. This study is one of few that measured inadequate sleep, as a result of short duration, as well as poor quality of sleep [2]. Similar to the findings of this study, evidence from a few other studies focusing on the sleep-obesity link suggest that sleep quality has a significant association with body weight,

which perhaps is independent of sleep duration [4]. Previous research in other public health areas has also shown that compared with duration, poor sleep quality has a stronger association with negative outcomes for health [5]. Therefore, these findings support the argument that sleep duration alone should not be used to assess inadequate sleep, and future studies should look for the effect of both sleep quality and sleep duration to get a true estimate of the impact of inadequate sleep.

The strength of the study lies in recruiting a wide age group of retainers ie, those who regained the lost weight or those who did not succeed in losing weight to compare sleep dimensions in weight loss maintainers and using a validated tool (AIS) to measure the intensity of sleep-related problems. They also used the Greek short version of the International Physical Activity Questionnaire (IPAQ) to assess trained dietitians who asked for all foods and beverages consumed the previous day and self-reported weight to assess weight maintenance/regain. Although this is acceptable practice in population research, the possibility of social desirability and recall bias cannot be ruled out.

The barriers to maintaining healthy body weight are complex and include physiologic, psychological, personality, lifestyle and social factors [6]. It is well known that people from disadvantaged socioeconomic backgrounds and those with limited social support to cope with stress, and low conscientiousness and high neuroticism suffer disproportionately from inadequate sleep and weight problems [7-10].The findings of this study would have been stronger if the role of significant socio-demographic factors (eg, income, race, social support and personality traits) was also considered in the multivariable regression analysis; this would have shown if sleep quality and weight maintenance association was robust after adjustment of these potential confounders. From the published literature, it seems that information on some of these variables was collected for the MedWeight study; therefore, not including these potentially significant confounders somewhat weakens the study findings [11, 12]

One other potential limitation of this study--which is also commonly seen in other studies exploring sleep duration-obesity link--is the lack of consideration for weekend sleep compensation. There is strong evidence from some cross-sectional reveals that studies that subjects who are consistently sleep deprived have higher odds of obesity than a subject who reports sleep compensation (longer sleep) on weekends [13]. Along with initial evidence for the role of weekend sleep compensation, results from some studies also favor the protective effect of consistent sleep schedules against obesity [14]. Considering that irregular sleep pattern and weekends sleep compensation are very prevalent, especially in adolescents and young adults, disregarding the role of sleep pattern and sleep compensation does not seem to give a true estimate of the effect of sleep duration on weight maintenance [15]

Although the findings of this study do not demonstrate a strong association between good sleep quality and weight maintenance (and there are some additional limitations) nonetheless, the results of this study are notable enough to encourage further longitudinal research in this area. It is also suggested that future research should consider the role of gender moderation in inadequate sleep-obesity association.

Conflict of Interest: None

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