

LETTERS TO THE EDITOR

## Monitored sleep extension: a feasible strategy to improve diet and women's health

Bárbara Virginia Vitti-Ruela<sup>1</sup>; Vinicius Dokkedal-Silva, MSc<sup>2</sup>; Priscila Kalil Morelhão, PhD<sup>2</sup>; Helena Hachul, MD, PhD<sup>2</sup>; Sergio Tufik, MD, PhD<sup>2</sup>; Monica Levy Andersen, PhD<sup>2</sup>

<sup>1</sup>Faculdade de Medicina de Marília, Marília, Brazil; <sup>2</sup>Departamento de Psicobiologia, Universidade Federal de São Paulo, São Paulo, Brazil

The high professional and personal demands experienced by women, paired with the fast pace of the current 24/7 society, can lead to a lack of adequate sleep, unhealthy diets, and obesity, which is an important risk factor for cardiovascular disease. Considering the intrinsic relationship between these topics, sleep extension can be an effective and affordable therapy that not only helps women to achieve better sleep patterns but can also have a broad effect on their health in general.

There is growing evidence of a network between sleep and weight. A meta-analysis by Capers et al<sup>1</sup> reported that reduced sleep was associated with a significant raise in food input and appetite, resulting in increased body weight. Despite the large number of studies that have sought to investigate this relationship, the nature of this link is still not yet fully understood, making it currently impossible to establish a definitive causal relationship.

However, studies have shown that sleep deprivation, a very common health problem in modern culture, has led women to have worse eating habits.<sup>2,3</sup> This may be explained by the fact that acute sleep deprivation seems to alter regulatory pathways that control appetite, raising levels of ghrelin. Zuraikat et al<sup>2</sup> found that poor sleep quality in women was associated with higher consumption of added sugars and caffeine, whereas another study showed that short sleep was related with greater energy and fat consumption.<sup>4</sup> Obesity has also been linked to increased ghrelin levels and a larger intake of added sugars.<sup>5</sup>

A third component that should not be overlooked in this hypothetical network is the occurrence of menopause. Sleep disorders are one of the most prevalent symptoms during this period, being reported by 40%–60% of women.<sup>6</sup> During menopause, there are significant hormonal changes that cause alterations in body composition, such as an increment in abdominal fat mass with the associated cardiometabolic risks.<sup>7</sup> Poor sleep quality and metabolic modifications, common characteristics of this hormonal phase, may be connected to poor diet and weight gain in women.

Sleep extension, as therapy, can involve monitored and planned nonpharmacologic and behavioral interventions, in which a schedule focused on expanding sleep time could be followed to obtain better effectiveness. To assess the results of this therapeutic option, a number of resources can be used to

evaluate the progress of the prescribed individual sleep plan (eg, actigraphy, sleep diaries, and standardized sleep questionnaires with the assistance from a physician). In a randomized, prospective controlled trial conducted in obese participants who usually slept less than 6.5 hours per night, the group following a supervised extended sleep plan presented better mood and more energy, less daytime sleepiness, decreased caffeine intake, and less craving for sweet or savory snacks than the control group. This study tested the hypothesis that body weight in sleep-deprived obese individuals could be influenced by sleep extension.<sup>8</sup> There were some significant limitations to this study, such as the small sample and the absence of blinding for participants and professionals.

Another study conducted with adult short sleepers revealed that sleep extension can lead to a significant reduction in the ingestion of free sugars and carbohydrates. This protocol exhibited satisfactory adherence, demonstrating it to be a viable strategy.<sup>9</sup> Leproult et al<sup>10</sup> reported that the implementation of sleep extension for 6 weeks was associated with a beneficial impact on glucose metabolism and improvements in fasting insulin sensitivity in adults who were not obese and were sleep restricted.<sup>10</sup> Sleep extension can promote better sleep and eating habits and aid weight loss<sup>9</sup> and the maintenance of a healthy body weight,<sup>11</sup> thereby increasing women's quality of life.

To the best of our knowledge, there are few well-designed studies evaluating the effectiveness of this therapeutic choice, especially in women with sleep disorders or sleep deprivation. Therefore, we would like to emphasize the need for rigorous methodologic research conducted in the short, medium, and long term to evaluate the broader effects of sleep extension on women's weight loss and health over time. The prospect of the development of a feasible and efficient nonpharmacologic approach to improve weight control in women would certainly be a significant contribution to the clinical scenario.

### CITATION

Vitti-Ruela BV, Dokkedal-Silva V, Morelhão PK, Hachul H, Tufik S, Andersen ML Monitored sleep extension: a feasible

strategy to improve diet and women's health. *J Clin Sleep Med*. 2021;17(2):351–352.

## REFERENCES

1. Capers PL, Fobian AD, Kaiser KA, Borah R, Allison DB. A systematic review and meta-analysis of randomized controlled trials of the impact of sleep duration on adiposity and components of energy balance. *Obes Rev*. 2015;16(9):771–782.
2. Zuraikat FM, Makarem N, Liao M, St-Onge MP, Aggarwal B. Measures of poor sleep quality are associated with higher energy intake and poor diet quality in a diverse sample of women from the go red for women strategically focused research network. *J Am Heart Assoc*. 2020;9(4):e014587.
3. Tobaldini E, Costantino G, Solbiati M, et al. Sleep, sleep deprivation, autonomic nervous system and cardiovascular diseases. *Neurosci Biobehav Rev*. 2017; 74(Pt B):321–329.
4. St-Onge M-P, Roberts AL, Chen J, et al. Short sleep duration increases energy intakes but does not change energy expenditure in normal-weight individuals. *Am J Clin Nutr*. 2011;94(2):410–416.
5. Grandner MA, Seixas A, Shetty S, Shenoy S. Sleep duration and diabetes risk: population trends and potential mechanisms. *Curr Diab Rep*. 2016;16(11):106.
6. Baker FC, Lampio L, Saaresranta T, Polo-Kantola P. Sleep and sleep disorders in the menopausal transition. *Sleep Med Clin*. 2018;13(3):443–456.
7. Jull J, Stacey D, Beach S, et al. Lifestyle interventions targeting body weight changes during the menopause transition: a systematic review. *J Obes*. 2014; 2014:824310.
8. Cizza G, Marincola P, Mattingly M, et al. Treatment of obesity with extension of sleep duration: a randomized, prospective, controlled trial. *Clin Trials*. 2010;7(3):274–285.

9. Al Khatib HK, Hall WL, Creedon A, et al. Sleep extension is a feasible lifestyle intervention in free-living adults who are habitually short sleepers: a potential strategy for decreasing intake of free sugars? A randomized controlled pilot study. *Am. J. Clin. Nutr*. 2018;107(1):43–53.
10. Leproult R, Deliens G, Gilson M, Peigneux P. Beneficial impact of sleep extension on fasting insulin sensitivity in adults with habitual sleep restriction. *Sleep*. 2015;38(5):707–715.
11. World Health Organization. Global recommendations on physical activity for health. <https://www.who.int/dietphysicalactivity/publications/9789241599979/en/>. Accessed September 14, 2020.

## SUBMISSION & CORRESPONDENCE INFORMATION

**Submitted for publication October 1, 2020**

**Submitted in final revised form October 19, 2020**

**Accepted for publication October 19, 2020**

Address correspondence to: Monica Levy Andersen, PhD, Universidade Federal de São Paulo, Rua Napoleão de Barros, 925, Vila Clementino, São Paulo 04024-002, Brazil; Tel: 55 11 21490155/55; Fax: 55 11 55725092; Email: ml.andersen12@gmail.com

## DISCLOSURE STATEMENT

All authors have seen and approved the manuscript. This study was funded by grants from the Associação Fundo de Incentivo à Pesquisa. H.H., S.T., and M.L.A. received Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) fellowships. The authors report no conflicts of interest.