

Intermittent fasting on health, aging and disease: what about sleep?

Miguel Meira e Cruz^{1,2}

¹Cardiovascular Center of University of Lisbon, Lisbon School of Medicine, Sleep Unit -Lisbon - Portugal.

²Faculdade São Leopoldo Mandic, Laboratory of Neuroimmune Interface of Pain Research - Campinas - São Paulo - Brazil.

Impact of intermittent fasting (IF) on health, aging and disease was recently revisited by de Cabo et al.¹ focusing on the evidence from preclinical and clinical trials showing a broad-spectrum benefit on several health domains. Although a highly relevant and interesting critical discussion was conducted, sleep as a major factor interfering on several cardiovascular and metabolic pathways² directly and indirectly related with those profits seems to have been forgotten.

It is worth of note that IF regimens are circadian based physiological challenges, which therefore interfere with sleep-wake cycle³, but sleep was not previously explored in the context of IF. Yet, sleep is crucial for metabolic regulation either on health or disease and for example, Obstructive Sleep Apnea as a main representative of the most prevalent sleep disturbances, have been related to impaired glucose and lipid metabolism opening plausibility on its interference on fasting related dietary regimens⁴.

For most the supporters of IF regimens, the fasting period occurs during sleep, meaning that feeding is restricted to daytime. Ramadan, an old Muslim ritual occurring in a different season every 9 years, include a 1-month diurnal IF, with a mealtime confined to the period from dawn to sunset and was taken as a model for studying the effects of IF. Interestingly, current evidence shows that circadian changes (shift delay) associated to time-restricted feeding during Ramadan are not only related to the shift in the mealtime but also to the changes in the sleep patterns usually observed in that season⁵. Meanwhile, not only meal timing is a key-factor in the regulation of circadian timing system and sleep⁶, but also sleep impairment could influence metabolic related mechanisms⁷ which are mainly related to such benefits observed in IF schemes of dietary intake. This should be taken into consideration and sleep-IF interaction should be further explored in future studies, since either IF and sleep related mechanisms could both independently and synergistically contribute to such advantages.

REFERENCES

1. Cabo R, Mattson MP. Effects of intermittent fasting on health, aging, and disease. *N Engl J Med*. 2019 Dec;381(26):2541-51.
2. Cappuccio FP, Miller MA. Sleep and cardio-metabolic disease. *Curr Cardiol Rep*. 2017 Sep;19(11):110.
3. Bae SA, Fang MZ, Rustgi V, Zarbl H, Androulakis IP. At the interface of lifestyle, behavior, and circadian rhythms: metabolic implications. *Front Nutr*. 2019 Aug;6(132):1-17.
4. Kim D, Hoyos M, Mokhlesi B, Pamidi S, Jun J. Metabolic health in normal and abnormal sleep. *Front Endocrinol*. 2020 Mar 11; [Epub ahead of print].
5. Bahammam AS, Almeneessier A. Recent evidence on the impact of Ramadan diurnal intermittent fasting, mealtime, and circadian rhythm on cardiometabolic risk: a review. *Front Nutr*. 2020 Mar 11; [Epub ahead of print].
6. Almeneesier A, Pandi-Perumal SR, Bahammam AS. Intermittent fasting, insufficient sleep, and circadian rhythm: interactions and effects on the Cardiometabolic System. *Curr Sports Med Rep*. 2018 Dec;4(3):179-95.
7. Meira e Cruz M, Gozal D. Slow wave sleep loss and cardiometabolic dysfunction: androgenic hormone secretion as a critical intermediate mediator. *Sleep Med*. 2019 Sep;66:82-4.

Corresponding author:

Miguel Meira e Cruz

E-mail: mcrucz@medicina.ulisboa.pt

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