

1-1-2021

## Sleep Health and Longevity - Considerations for Personalizing Existing Recommendations

Girardin Jean-Louis

*University of Miami Leonard M. Miller School of Medicine*

Michael A. Grandner

*University of Arizona College of Medicine – Tucson*

Seithikurippu R. Pandi-Perumal

*Somnogen Canada Inc*

Follow this and additional works at: [https://digitalcommons.fiu.edu/all\\_faculty](https://digitalcommons.fiu.edu/all_faculty)

---

### Recommended Citation

Jean-Louis, Girardin; Grandner, Michael A.; and Pandi-Perumal, Seithikurippu R., "Sleep Health and Longevity - Considerations for Personalizing Existing Recommendations" (2021). *All Faculty*. 470. [https://digitalcommons.fiu.edu/all\\_faculty/470](https://digitalcommons.fiu.edu/all_faculty/470)

This work is brought to you for free and open access by FIU Digital Commons. It has been accepted for inclusion in All Faculty by an authorized administrator of FIU Digital Commons. For more information, please contact [dcc@fiu.edu](mailto:dcc@fiu.edu).



# Sleep Health and Longevity—Considerations for Personalizing Existing Recommendations

Girardin Jean-Louis, PhD; Michael A. Grandner, PhD, MTR, CSM; Seithikurippu R. Pandi-Perumal, MSc

Habitual sleep duration is consistently associated with many domains of overall health and functioning. Although the amount of sleep essential for optimal functioning and health may be difficult to ascertain at the individual level, more than 50 years of converging findings have demonstrated that sleeping too little or too much is associated with increased morbidity and mortality.<sup>1</sup>

Commensurate with the preponderance of evidence over the last 4 decades showing strong associations between sleep duration and health outcomes, several organizations have proposed age-based recommendations for healthy sleep, including the Sleep Research Society and American Academy of Sleep Medicine<sup>2,3</sup> and the National Sleep Foundation.<sup>4</sup> These recommendations have enabled meaningful comparisons across cross-sectional and longitudinal studies, which heretofore had been challenging, given that variable definitional criteria were used in published sleep reports. Moreover, the consensus that the amount of sleep needed over the lifespan is age dependent has informed policies to promote healthy sleep differently for different age groupings and to monitor progress made toward achieving the national mandate of healthy sleep at the individual and population levels.

The significance of the results of the study by Svensson et al<sup>5</sup> is 2-fold. First, investigators presented evidence of a strong curvilinear association of sleep duration with all-cause mortality using data from 4 East Asian countries (Japan, China, Singapore, and Korea) studied between 1984 and 2002. Findings from their cohort study, along with other previous epidemiologic studies enrolling Asian populations, make a compelling case that habitual sleep duration is an important harbinger of health and longevity among East Asian individuals. This suggests that adequate sleep is indeed a global health issue, rather than solely a concern of health policy makers in Western populations. Second, they reiterate the urgent need to generate guidelines governing recommended healthy sleep amounts for individuals across the globe, which should reflect differences in geographic areas as well as demographic and cultural factors. Just as sleep needs likely vary by age, recommendations may require calibration among various groups around the globe. It may be the case that the association between sleep and health in Western countries is different from that in other parts of the world, given differences in behaviors (eg, diet, physical activity, smoking), environmental exposures (eg, photoperiod, toxins), and sleep-related health risks (eg, diabetes, heart disease, infectious disease).

The observation that age modified the associations of sleep duration with mortality in the study by Svensson et al<sup>5</sup> is especially noteworthy. It is consistent with recent analyses of data from the Chinese Longitudinal Healthy Longevity Survey, finding U-shaped associations of sleep duration with all-cause mortality, favoring the highest survival among individuals habitually sleeping 7 to 8 hours.<sup>6</sup> These data align with the epidemiologic findings of age-associated effects on sleep duration among US residents, which have prompted the aforementioned recommendations.<sup>3,4</sup> The results of this important study are not diminished by a lack of guidelines specifically for the populations studied, but notably, countries in Asia have not advanced many sleep education campaigns, especially toward groups with the highest risk.

Delineating consensus around a sleep health scheme for Asian populations would enable a more culturally competent approach to the depiction of the potential consequences of sleep loss across

## + Related article

Author affiliations and article information are listed at the end of this article.

**Open Access.** This is an open access article distributed under the terms of the CC-BY License.

different age groups. For example, campaigns could address sleep insufficiency in families, school-aged children and adolescents, working-age adults, and older adults. This differentiation might be necessary within the Asian population, given the observed differences in environmental factors that characterize these populations. Furthermore, differing psychosocial and cultural factors might also influence sleep amount differentially among the 4 studied East Asian populations, and the relationships between sleep and health factors may differ among these groups.<sup>7</sup>

The finding that age modifies the associations of sleep duration with mortality risks particularly among men is equally important. This finding is not entirely novel. Similar data have been reported based on adjusted epidemiologic sleep models,<sup>1,3</sup> but results of the study from Svensson et al<sup>5</sup> suggest that while men might be at increased mortality risks if they sleep 5 or fewer hours or 10 or more hours, women sleeping 8 or 9 hours seem to have a greater mortality risk as well. In all, these findings show that recommendations of a healthy sleep amount must also consider sex, as it remained an independent factor for increased morbidity and mortality associated with sleep duration in fully adjusted multivariate models. Of note, available data indicate that individuals' race and ethnicity as well as their place of birth should also be considered in such recommendations to enhance their applicability in various communities. Unfortunately, no definitive conclusions could be made regarding their effects on the analyses that Svensson et al<sup>5</sup> reported, as the independent contributions of these factors in their models were not ascertained.

While great progress has been made regarding the implementation of policies informed by recommendations, more targeted strategies have been hampered by a lack of specifications for healthy sleep that consider potential differences in factors including an individual's sex, race and ethnicity, and/or place of birth. The findings of this study serve as an essential call to action to sleep investigators and policy makers across the globe to think critically about the need for more targeted evidence-based recommendations. The field would benefit greatly from the development of new guidelines for healthy sleep amounts that consider all factors that adversely affect habitual sleep on a global scale. Furthermore, sleep duration is only 1 dimension of sleep and circadian health. Future work should expand the scope to include sleep timing, regularity, and quality as well as daytime consequences.

---

## ARTICLE INFORMATION

**Published:** September 3, 2021. doi:10.1001/jamanetworkopen.2021.24387

**Open Access:** This is an open access article distributed under the terms of the [CC-BY License](#). © 2021 Jean-Louis G et al. *JAMA Network Open*.

**Corresponding Authors:** Girardin Jean-Louis, PhD, Translational Sleep and Circadian Sciences Center, Department of Psychiatry, University of Miami, 1120 NW 14th St, Miami, FL 33136 ([girardin.jean-louis@miami.edu](mailto:girardin.jean-louis@miami.edu)), and Seithikurippu R. Pandi-Perumal, MSc, Somnogen Canada Inc, College Street, Toronto, ON M6H 1C5, Canada ([pandiperumal2021@gmail.com](mailto:pandiperumal2021@gmail.com)).

**Author Affiliations:** Translational Sleep and Circadian Sciences Center, Department of Psychiatry, University of Miami, Miami, Florida (Jean-Louis); Sleep and Health Research Program, Department of Psychiatry, University of Arizona College of Medicine, Tucson (Grandner); Somnogen Canada Inc, Toronto, Ontario, Canada (Pandi-Perumal); Saveetha Medical College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, Tamil Nadu, India (Pandi-Perumal).

**Conflict of Interest Disclosures:** Dr Jean-Louis reported receiving grants from the National Institutes of Health outside the submitted work.

## REFERENCES

1. Grandner MA, Hale L, Moore M, Patel NP. Mortality associated with short sleep duration: the evidence, the possible mechanisms, and the future. *Sleep Med Rev*. 2010;14(3):191-203. doi:10.1016/j.smrv.2009.07.006
2. Paruthi S, Brooks LJ, D'Ambrosio C, et al. Consensus statement of the American Academy of Sleep Medicine on the recommended amount of sleep for healthy children: methodology and discussion. *J Clin Sleep Med*. 2016;12(11):1549-1561. doi:10.5664/jcsm.6288

3. Watson NF, Badr MS, Belenky G, et al: Consensus Conference Panel. Joint consensus statement of the American Academy of Sleep Medicine and Sleep Research Society on the recommended amount of sleep for a healthy adult: methodology and discussion. *Sleep*. 2015;38(8):1161-1183. doi:[10.5665/sleep.4886](https://doi.org/10.5665/sleep.4886)
4. Hirshkowitz M, Whiton K, Albert SM, et al. National Sleep Foundation's updated sleep duration recommendations: final report. *Sleep Health*. 2015;1(4):233-243. doi:[10.1016/j.sleh.2015.10.004](https://doi.org/10.1016/j.sleh.2015.10.004)
5. Svensson T, Saito E, Svensson AK, et al. Association of sleep duration with all- and major-cause mortality among adults in Japan, China, Singapore, and Korea. *JAMA Netw Open*. 2021;4(9):e2122837. doi:[10.1001/jamanetworkopen.2021.22837](https://doi.org/10.1001/jamanetworkopen.2021.22837)
6. Ren Y, Miao M, Yuan W, Sun J. Sleep duration and all-cause mortality in the elderly in China: a population-based cohort study. *BMC Geriatr*. 2020;20(1):541. doi:[10.1186/s12877-020-01962-5](https://doi.org/10.1186/s12877-020-01962-5)
7. Wang Q. Tobacco use and sleep loss over worry among adolescents aged 12-15 years: a population-based study of 38 countries. *J Glob Health*. 2020;10(2):020427. doi:[10.7189/jogh.10.020427](https://doi.org/10.7189/jogh.10.020427)