



Contents lists available at ScienceDirect

Sleep Health

Journal of the National Sleep Foundation

journal homepage: <http://www.elsevier.com/locate/sleh>

National Sleep Foundation's updated sleep duration recommendations: final report[☆]

Max Hirshkowitz, PhD^{a,b}, Kaitlyn Whiton, MHS^{c,*}, Steven M. Albert, PhD^d, Cathy Alessi, MD^{e,f},
 Oliviero Bruni, MD^g, Lydia DonCarlos, PhD^h, Nancy Hazen, PhDⁱ, John Herman, PhD^j,
 Paula J. Adams Hillard, MD^k, Eliot S. Katz, MD^l, Leila Kheirandish-Gozal, MD, MSc^m, David N. Neubauer, MDⁿ,
 Anne E. O'Donnell, MD^o, Maurice Ohayon, MD, DSc, PhD^p, John Peever, PhD^q, Robert Rawding, PhD^r,
 Ramesh C. Sachdeva, MD, PhD, JD^s, Belinda Setters, MD^t, Michael V. Vitiello, PhD^u, J. Catesby Ware, PhD^v

^a Division of Public Mental Health and Population Sciences, School of Medicine, Stanford University, Stanford, CA, USA

^b Department of Medicine, Baylor College of Medicine, Houston, TX

^c National Sleep Foundation, Arlington, VA, USA

^d Department of Behavioral and Community Health Sciences, Pitt Public Health, University of Pittsburgh, Pittsburgh, PA, USA

^e Geriatric Research, Education and Clinical Center, VA, Greater Los Angeles Healthcare System

^f David Geffen School of Medicine, University of California Los Angeles, Los Angeles, CA, USA

^g Department of Developmental and Social Psychology, Sapienza University, Rome, Italy

^h Department of Cell and Molecular Physiology, Stritch School of Medicine, Loyola University Chicago, Maywood IL, USA

ⁱ The University of Texas at Austin, Austin, TX, USA

^j University of Texas Southwestern Medical Center at Dallas, Dallas, TX, USA

^k Department of Obstetrics and Gynecology, Stanford University School of Medicine, Stanford, CA, USA

^l Division of Respiratory Diseases, Boston Children's Hospital, Harvard Medical School, Boston, MA, USA

^m Clinical Sleep Research, Section of Pediatric Sleep Medicine, Department of Pediatrics, The University of Chicago, Chicago, IL, USA

ⁿ Department of Psychiatry and Behavioral Science, Johns Hopkins University School of Medicine, Baltimore, MD, USA

^o Division of Pulmonary, Critical Care and Sleep Medicine, Georgetown University Hospital, Washington, DC, USA

^p Stanford Sleep Epidemiology Research Center, Division of Public Mental Health and Population Sciences, Stanford University School of Medicine, Palo Alto, CA, USA

^q Departments of Cell and Systems Biology, University of Toronto, Toronto, ON, Canada

^r Department of Biology, Gannon University, Erie, PA, USA

^s American Academy of Pediatrics, Elk Grove Village, IL, USA

^t Inpatient Geriatrics, Robley Rex VAMC, Department of Internal Medicine and Family & Geriatric Medicine, University of Louisville, Louisville, KY, USA

^u Department of Psychiatry and Behavioral Sciences, University of Washington, Seattle, WA, USA

^v Division of Sleep Medicine, Eastern Virginia Medical School, Norfolk, VA, USA

ARTICLE INFO

Article history:

Received 1 October 2015

Received in revised form 6 October 2015

Accepted 6 October 2015

Keywords:

National Sleep Foundation

Sleep sufficiency

Sleep adequacy

Sleep by age

Life span sleep

RAND/UCLA Appropriateness Method

Sleep need

Sleep time recommendations

Sleep duration

ABSTRACT

Objective: To make scientifically sound and practical recommendations for daily sleep duration across the life span.

Methods: The National Sleep Foundation convened a multidisciplinary expert panel ("Panel") with broad representation from leading stakeholder organizations. The Panel evaluated the latest scientific evidence and participated in a formal consensus and voting process. Then, the RAND/UCLA Appropriateness Method was used to formulate sleep duration recommendations.

Results: The Panel made sleep duration recommendations for 9 age groups. Sleep duration ranges, expressed as hours of sleep per day, were designated as *recommended*, *may be appropriate*, or *not recommended*. Recommended sleep durations are as follows: 14–17 hours for newborns, 12–15 hours for infants, 11–14 hours for toddlers, 10–13 hours for preschoolers, 9–11 hours for school-aged children, and 8–10 hours for teenagers. Seven to 9 hours is recommended for young adults and adults, and 7–8 hours of sleep is recommended for older adults. The self-designated basis for duration selection and critical discussions are also provided.

Conclusions: Consensus for sleep duration recommendations was reached for specific age groupings. Consensus using a multidisciplinary expert Panel lends robust credibility to the results. Finally, limitations and caveats of these recommendations are discussed.

© 2015 National Sleep Foundation. Published by Elsevier Inc. All rights reserved.

[☆] Endorsed by the National Sleep Foundation, American Association of Anatomists, American Congress of Obstetricians and Gynecologists, American Geriatrics Society, American Physiological Society, American Thoracic Society, Gerontological Society of America, Human Anatomy and Physiology Society, and Society for Research in Human Development.

* Corresponding author at: Kaitlyn Whiton MHS, Director, Scientific Affairs and Research, National Sleep Foundation, 1010 N Glebe Rd, Suite 420, Arlington, VA 22201.

E-mail address: kwhiton@sleepfoundation.org (K. Whiton).

<http://dx.doi.org/10.1016/j.sleh.2015.10.004>

2352-7218/© 2015 National Sleep Foundation. Published by Elsevier Inc. All rights reserved.

Introduction

The question “How much sleep do we need?” is a natural and relevant question, especially for parents of children and teens and for those who care for aging parents. Sleep represents an essential element for health and well-being, including cognitive performance, physiological processes, emotion regulation, physical development, and quality of life. Appropriate sleep duration ranges vary throughout the life span. Currently, no easily accessible, validated method for individuals to measure their sleep exists. Therefore, the public and practitioners must rely on bedtime duration as a surrogate. Consequently, the National Sleep Foundation (NSF) has committed to regularly update its sleep duration recommendations to provide the public up-to-date, scientifically sound information. Unfortunately, the nature and quantity of published work precluded conducting a standard evidence-based medicine meta-analysis for each age grouping. Therefore, a multidisciplinary expert panel (“Panel”) was convened by NSF to review, discuss, and interpret extant literature.

The purpose of the present article is to provide additional information on the conversations transcribed from the Panel’s discussions and appropriateness voting. In addition, the basis by which Panel members made decisions and the issues deemed important to specific age groups are reviewed. Given the breadth of available information on the subject, citations are not provided throughout the paper. Instead, [Table 1](#) catalogs the articles that were given to the panel for consideration during their discussions.

Participants and methods

The methodological details used to produce the sleep duration recommendations appear in Hirshkowitz and colleagues.¹ But a brief summary is provided here.

An 18-member multidisciplinary expert Panel, comprised of sleep researchers, physicians, and experts in other areas of medicine, physiology, and science, was assembled by the NSF. Twelve representatives selected by stakeholder organizations and 6 sleep experts appointed by the NSF were included on the Panel. Organizations that sent representatives included the following: American Academy of Pediatrics, American Association of Anatomists, American College of Chest Physicians, American Congress of Obstetricians and Gynecologists, American Geriatrics Society, American Neurological Association, American Physiological Society, American Psychiatric Association, American Thoracic Society, Gerontological Society of America, Human Anatomy and Physiology Society, and the Society for Research in Human Development. A rigorous consensus process, which included evaluation of a systematic literature review and participation in 2 rounds of consensus voting, was undertaken by the Panel.¹

A systematic literature review identified 312 articles that met all criteria. All studies appeared in the literature within the past 10 years, and the population had to be described as a normal population (ie, nondisordered). [Table 1](#) lists all articles in the review.

The Panel used the RAND/UCLA Appropriateness Method, a 2-round modified Delphi process,² for the development of the sleep duration recommendations. Every sleep time duration from 0 to 24 hours was evaluated for appropriateness. Response options were **inappropriate**, scores ranging from 1 to 3; **uncertain**, scores ranging from 4 to 6; or **appropriate**, scores ranging from 7 to 9. Appropriateness for overall health and well-being, as well as cognitive, physical, and emotional health, was rated by the Panel. Panelists also noted whether their voting was based on: (a) convincing scientific evidence; (b) weaker scientific evidence; (c) expert opinion; or (d) their own experience. The Panel members cast independent votes during 2 rounds of formal consensus voting. Round 1 votes were cast individually. The second vote occurred immediately following

discussion and debate about each age group during an in-person meeting. When possible, the Panel reached consensus. However, no effort was made to eliminate disagreement.

Sleep duration recommendations were formulated using the median appropriateness scores and were classified as one of the following:

- Appropriate: scores ranging from 7 to 9, with agreement.
- May be appropriate for some people: a score ≥ 4 , with disagreement.
- Unlikely to be appropriate: a score ≤ 3 , with agreement.

Results

[Figure 1](#) illustrates the Panel’s recommendations for sleep. Recommended durations, expressed in hours per day, are shown.

The recommendations consider overall health and well-being, as well as cognitive, emotional, and physical health. Information relating to each age grouping along with the Panel’s considerations and caveats appear below.

Newborns: 0–3 months

Overall health and well-being, as well as cognitive, emotional, and physical health, were considered when voting on appropriate sleep durations for newborns. The Panel recommends a 14- to 17-hour sleep duration for newborns. Weaker scientific evidence and the experts’ own experience and/or opinion form the basis for the Panel’s recommendations. There was not enough scientific evidence to distinguish differences between cognitive, physical, and emotional health. Therefore, for newborns, experts only voted on appropriate sleep duration for overall health, with the understanding that this includes components of cognitive, physical, and emotional health. The medical and scientific literature varies considerably with respect to the sleep needs of newborns, with little evidence assessing short sleep duration consequences in this age range. These factors contributed to the wide dispersion of recommended sleep durations for newborns. In addition, most studies use subjective data (eg, parent interviews or questionnaires) rather than objective measures (eg, actigraphy or polysomnography) to quantify normative values for newborn sleep. No studies assess risks associated with long sleep in newborns. However, the Panel expressed concern that regularly sleeping longer than 19 hours may limit a newborn’s environmental interaction and may impede cognitive and/or emotional development.

Sleep duration recommendations for newborns may not apply during the first few days of life because long sleep can be normal. Rapid maturational changes in sleep patterns occur in newborns, and appropriate sleep durations may vary widely based on actual age. During the first few days of life, greater than 18 hours of daily sleep may be appropriate. For a 3-month-old, however, this sleep duration may be considered long.

Infants: 4–11 months

Overall health and well-being, as well as cognitive, emotional, and physical health, were considered when voting on appropriate sleep durations for infants. Twelve to 15 hours of sleep per day is recommended for infants by the Panel. Rapid maturational changes occur during infancy; therefore, appropriate sleep durations can vary widely based on actual age. For example, a 4-month-old may require more sleep than an 11-month-old. Results indicated that the experts believed that slightly longer sleep durations might be needed for different components of health. Sleep duration recommendations for infants are based primarily on weaker scientific evidence and the Panel members’ own experience and/or opinion.

Download English Version:

<https://daneshyari.com/en/article/916282>

Download Persian Version:

<https://daneshyari.com/article/916282>

[Daneshyari.com](https://daneshyari.com)