

Sleep Equity for Global Health at KITE

2024 World Sleep Day Event at KITE-Toronto Rehabilitation
Institute, University Health Network, Toronto, ON, Canada

Prepared on March 18, 2024 by Tatyana Mollayeva and Thaisa Tyliniski Sant'Ana



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Introduction

Sleep health encompasses measurable characteristics of sleep that are most clearly associated with physical, mental, and neurobehavioral well-being. Multiple dimensions of sleep across levels of analysis have been associated with health and functional outcomes and are included in definitions of sleep health. The celebration of the annual World Sleep Day is essential to raise awareness, enhance knowledge, and promote better sleep habits that enhance sleep health for individuals and communities around the world. This year's theme of *Sleep Equity for Global Health* invites us to discuss and advance equitable access to sleep health knowledge, resources, and care.

Event Overview

The *Sleep Equity for Global Health* event at KITE was hosted on March 14, 2024 from 1:00 to 2:00 pm EST in-person at the second floor auditorium at KITE-Toronto Rehabilitation Institute, University Health Network (UHN). The event was open to all. The KITE Research Institute is the research arm of the Toronto Rehabilitation Institute (TRI). A world leader in complex rehabilitation science, KITE is dedicated to improving the lives of people living with the effects of disability, illness and aging through a focus on prevention, restoration and independent living. KITE is home to 127 scientists, 187 scientific trainees and 56,000-square feet of research space spread across five sites in Toronto (["About Us", KITE-UHN](#)).

Objectives

1. Understand sleep health and equity essentials. By the end of the session, participants should be able to answer the following questions: *What is sleep health? How can I monitor and improve my sleep health? What is equity? Why is sleep equity important for global health?*
2. Consider how can to promote sleep health through research, policy, and practice.
3. Conceptualize implications of sleep health equity for personal and community health and well-being.

Structure and Speakers

The event was moderated by Dr. Jennifer Campos. It began with a Land Acknowledgement recognizing that the University Health Network operate on the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit; a meeting place which is still the home to many Indigenous people from across Turtle Island. Dr. Milos Popovic, Director of KITE, then welcomed attendees and emphasized the importance of sleep health and sleep equity in his opening remarks. The event was structured in two parts: (1) brief talks on sleep health and equity topics delivered by three speakers: Dr. Tatyana Mollayeva, Thaisa Tylinski Sant'Ana, and Dr. Azadeh Yadollahi and (2) an open discussion between speakers and participants, with questions raised by participants. Polls and activities were integrated throughout the event to promote participant engagement. See Box 1 for speakers and the content of their talks. The full presentation is available in the Appendix.

Box 1. Speakers and the content of their talks.



Milos Popovic
Director, KITE
Opening Remarks



Jennifer Campos
Senior Scientist, KITE
Event Moderator



Tatyana Mollayeva
Scientist, KITE
Sleep Health Essentials



Thaisa T. Sant'Ana
Research Analyst, KITE
Equity Essentials



Azadeh Yadollahi
Senior Scientist, KITE
Relevance of Sleep
Health Equity

Advertising

The event was advertised on the KITE website, on UHN's Office of Research Trainees and the University of Toronto Mississauga's Erindale Biology Society weekly newsletters, on the Acquired Brain Injury Lab Twitter/X account, and on speakers' social media, including LinkedIn and Twitter/X. Event advertisement was also displayed on screens at the Toronto Rehabilitation Institute and across UHN sites as printed A4-sized posters. All advertisement contained a link or a QR code to the event registration form (Figure 1).

Figure 1. Poster for event advertisement.

World Sleep Day 2024 at **kite** **UHN**

March 15, 2024
World Sleep Day
Sleep Equity for Global Health

Sleep Equity for Global Health

Join Drs. Azadeh Yadollahi, Tatyana Mollayeva, Jennifer Campos, Milos Popovic and Research Analyst Thaisa Sant'Ana to learn about sleep health, sleep equity, and how to advance research, policy, and practice to promote personal and community health.

When? March 14, 2024 from 1:00-2:00 pm

Where? KITE-Toronto Rehab at UHN
550 University Ave, 2nd floor auditorium

Register here:

Event Engagement and Impact

In total, 17 participants registered for the event using the registration form, but 2 cancelled prior to the event due to being unable to attend in-person. Of the 15 active registrants, 13 attended.

Interactive Components

Mentimeter ([mentimeter.com](https://www.mentimeter.com)), an online live polling platform, and Google Sheets were used to integrate activities throughout the event. Specific results are not presented in this report to protect data confidentiality.

Mentimeter Polls

Poll 1. Participants were asked to answer the prompt “I know how to... (a) define sleep health, (b) distinguish equity and equality, (c) conceptualize equity in sleep health” on a scale of 1 (strongly disagree) to 5 (strongly agree). Nine participants engaged with the poll.

Poll 2. Participants were asked to “Describe what comes to mind when you hear sleep equity.” Participants were allowed to input more than one response. Ten participants engaged with the poll, resulting in 25 total responses, which were presented as a word cloud on the screen.

Poll 3. A poll was also set up during the discussion portion of the event so that participants could submit questions anonymously if they did not feel comfortable raising the question out loud in front of the group. Participants asked questions concerning policy in health equity and legal/administrative support to improve sleep equity in couples and families, with emphasis on motherhood.

Activity: Assessing your sleep health

Participants were introduced to the **SATED scale** for measuring sleep health using five domains: **satisfaction (S), alertness (A), timing, (T), efficiency (E), and duration (D)**, as shown in Table 1. Each domain is scored from 0 to 2 (0 = rarely/never, 1 = sometimes, 2 = always) with the total score being a sum of the domain-specific scores. Total scores range from 0 (poor sleep health) to 10 (good sleep health). We also discussed the recently added domain of sleep regularity (R) which was not included to preserve integrity of the SATED tool.

Participants were invited to score their sleep health and enter results into a collaborative Google Sheets projected onto the screen. As participants entered their scores, a bar graph displayed average scores for each domain and total SATED score so we could reflect on our sleep health as a group. As a group, we achieved an overall score of 5.4 out of 10, with the most negatively impacted domain being efficiency (E).

Table 1. [SATED](#) scale for measuring sleep health.

		Rarely/Never (0)	Sometimes (1)	Always (2)
Satisfaction	Are you satisfied with your sleep?			
Alertness	Do you stay awake all day without dozing?			
Timing	Are you asleep (or trying to sleep) between 2am-4am?			
Efficiency	Do you spend less than 30 minutes awake at night?			
Duration	Do you sleep between 6 and 8 hours per day?			

Feedback

Following the event, we reached out to participants who indicated interest in being contacted for possible knowledge translation opportunities and asked them if they would be willing to fill out an anonymous form with their feedback and reflections to be included in this report. One respondent, who agreed to be quoted anonymously, said *"This was an excellent informative session on a topic that does not receive the attention it deserves. Congratulations to the team for addressing this major knowledge and practice gap. I hope it becomes an annual event. I think the focus on equity is important and enlightening. I would like to know more about the research on sleep conducted at UHN including the research of the presenters."*

Lessons Learned

Our experiences planning and delivering the Sleep Equity for Global Health event at KTIE taught us important lessons that will inform our approach to hosting our World Sleep Day event in the future.

Lesson 1: *It is important to anticipate the impact of event scope and delivery format on event turnout.*

Originally, we advertised this event as open only to trainees affiliated with UHN, as we intended to tailor the session to the addressing sleep health and sleep equity in research. As the event approached, we struggled with low registration and decided to expand the scope of the event to topics outside of research, implement more interactive components, and open the event to all interested participants, including students, professionals, and community members. The delivery format as in-person only may have discouraged some to attend, due to concerns with commute or limited time. These challenges will lead us to carefully consider event scope and delivery format to facilitate event higher turnout in the future.

Lesson 2: *Allocate time for anonymous feedback and reflection at the end of the event.*

On the day following the event, we sent out a short anonymous feedback survey via email, but we did not receive many responses. In the future, we will allocate a few minutes at the end of the event to collect attendee feedback with the goal of increasing response rates. We should also consider implications of [civil discourse](#) on participants' willingness to discuss topics of Sleep Equity for Global Health, emphasizing the importance of providing opportunity for anonymity and privacy in feedback. This is particularly important considering Canadian leadership and global movements towards equity, diversity, and inclusion.

Conclusion and Future Directions

The Sleep Equity for Global Health event at KITE was an important opportunity to raise awareness about the importance of sleep equity for health and addressing inequities that disproportionately affect certain communities with regards to SATED dimensions of sleep health. The interactive elements of the session gave us insight into the perspectives of participants and ideas for future discussions of the sleep needs of diverse people and communities at the local level. We aim to seek funds to develop and carry out educational research on this topic. Our goal is to make the World Sleep Day an annual event at KITE-TRI, UHN and expand its reach to more students, professionals, and community members to implement strategies that advance sleep equity for all.

Appendix

Slideshow presented at the Sleep Equity for Global Health event at KITE.



World Sleep Day 2024 at **kite** **UHN**

March 15, 2024
World Sleep Day
Sleep Equity for Global Health

Sleep Equity for Global Health

Join the poll by scanning the QR code or go to [mentimeter.com](https://www.mentimeter.com) and use the code **2705 1857**



Land Acknowledgement



Infinity (2000)

“Christi Belcourt (*apihtāwikosīsāniskwēw / mānitow sākahikanihk*) is a visual artist, designer, community organizer, environmentalist, social justice advocate, and avid land-based arts and language learner.

Following the tradition of Métis floral beadwork, Belcourt paints in dots and uses the subject matter as metaphors for human existence to relay a variety of meanings which include concerns for the environment, biodiversity, spirituality and awareness of Métis culture.”

<https://christibelcourt.ca/>

Today's Speakers



Milos Popovic
Director, KITE



Jennifer Campos
Senior Scientist, KITE



Azadeh Yadollahi
Senior Scientist, KITE



Tatyana Mollayeva
Scientist, KITE



Thaisa T. Sant'Ana
Research Analyst, KITE



Opening Remarks

Milos Popovic

World Sleep Day

(the Friday before the northern hemisphere vernal equinox) is an annual event organized by the World Sleep Day Committee of the World Sleep Society, formerly World Association of Sleep Medicine (WASM), since 2008

Year	Date	Theme	Year	Date	Theme
2008	14 March	Sleep well, live fully awake	2017	17 March	Sleep Soundly, Nurture Life
2009	20 March	Drive alert, arrive safe	2018	16 March	Join the Sleep World, Preserve Your Rhythms to Enjoy Life
2010	19 March	Sleep Well, Stay Healthy	2019	15 March	Healthy Sleep, Healthy Aging
2011	18 March	Sleep Well, Grow Healthy	2020	13 March	Better Sleep, Better Life, Better Planet
2012	16 March	Breathe Easily, Sleep Well	2021	19 March	Regular Sleep, Healthy Future
2013	15 March	Good Sleep, Healthy Aging	2022	18 March	Quality Sleep, Sound Mind, Happy World
2014	14 March	Restful Sleep, Easy Breathing, Healthy Body	2023	17 March	Sleep Is Essential for Health
2015	13 March	When sleep is sound, health and happiness abound	2024	15 March	Sleep Equity for Global Health
2016	18 March	Good Sleep is a Reachable Dream			



Sleep Health Essentials

Tatyana Mollayeva



Poll time!

*Hop back onto mentimeter.com
for the next question*

Code: 2705 1857



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People spend on average 1/3 of their lives sleeping...

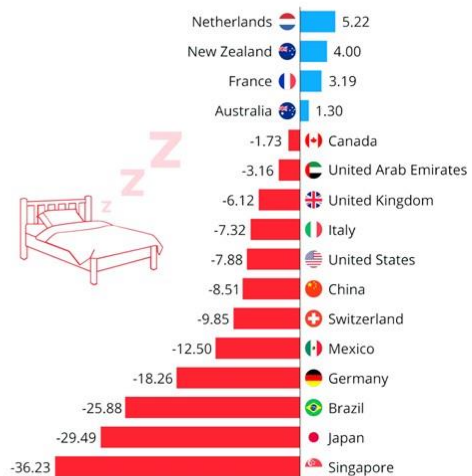
- 262,800 hours sleeping
(= 30 years sleeping at 90 years old)
- 100,000 hours working
- 65,700 hours eating

These number are not the same across the globe.

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Who's Getting The Most Sleep?

Minutes above and below eight hours
of sleep in selected countries



Latest available data: 2016
Source: Science Advances



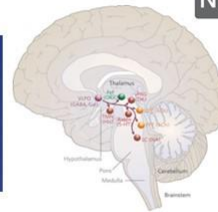
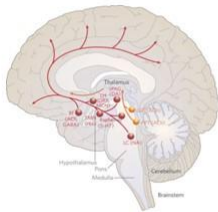
statista

What is sleep? Why do we sleep?

*"Sleep is the **intermediate state** between **wakefulness and death**" (1834)*

*"...more has been learned in the past 60 years than in the preceding 6,000. In this short period of time, researchers have discovered that sleep is a dynamic behaviour. Not simply the absence of waking, **sleep is a special activity of the brain, controlled by elaborate and precise mechanisms**" (1989)*

"... Sleep and wakefulness are endogenous, recurring, behavioral states that reflect coordinated changes in the dynamic functional organization of the brain and that optimize physiology, behavior, and health"



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Sleep is essential to health

- Sleep is a restorative period that ensures proper cell function, balancing synthesis and breakdown of essential molecules
 - This reflects on our growth, development, and reproduction
- Sleep is crucial for memory consolidation and cognition
- Poor sleep has deleterious consequences:
 - Daytime sleepiness, drowsiness, lapses in attention
 - Emotional shifts
 - Reduced physical and cognitive capacity
 - Reduced immunity, proneness to sickness

The Wall of Evidence for The Restorative Theory of Sleep	
Catabolism/anabolism* The balance tips towards more build-up during sleep	
Growth hormone Mostly released at night and mostly in deep sleep	ATP* concentrations Increase while oxygen consumption drops - as during sleep
Oxygen use decreases in deep sleep	Pregnancy is associated with increased deep sleep
Illness People with illnesses that lead to low energy output (e.g., paraplegics or those with hypothyroidism) have low levels of deep sleep	Exercise People who exercise have more deep sleep, indicating that sleep is restorative
Immunology Infected animals who are prevented from sleeping are more likely to die	Height Teenagers get taller during the growth sleeping period
Core sleep When sleep is lost, deep sleep is replaced first	Cell mitosis Most cell division is during sleep
Recovery There is more Deep Sleep after Deprivation	Memory Growing evidence that certain types of memory need deep sleep

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If sleep was not important, it would be eliminated through evolution, as it is dangerous for us to be out of touch with our environment for a third of our life

Sleep health is multidimensional

- Sleep health means more than simply enough sleep
- There are six dimensions that can be used to define sleep health (**SATED+R**)
 - **Satisfaction:** Are you satisfied with your sleep?
 - **Alertness:** Do you stay awake during waking hours?
 - **Timing:** When do you sleep?
 - **Efficiency:** How well do you fall asleep and stay asleep?
 - **Duration:** How much do you sleep over 24 hours?
 - **Regularity** (added recently): Do you have consistent sleep and wake times?

SATED Questionnaire

		Rarely/ Never (0)	Sometimes (1)	Always (2)
Satisfaction	Are you satisfied with your sleep?			
Alertness	Do you stay awake all day without dozing?			
Timing	Are you asleep (or trying to sleep) between 2am-4am?			
Efficiency	Do you spend less than 30 minutes awake at night? (This includes the time it takes fall asleep and the awakenings from sleep.)			
Duration	Do you sleep between 6 and 8 hours per day?			

TOTAL FOR ALL ITEMS RANGES FROM 0-10
0 = POOR SLEEP HEALTH ————— 10 = GOOD SLEEP HEALTH



It is important to consider how equity plays a role in each domain of sleep health to promote personal and community health. Let's see how well we sleep using SATED.

Assessing your own sleep health with SATED

		Rarely/Never (0)	Sometimes (1)	Always (2)
Satisfaction	Are you satisfied with your sleep?			
Alertness	Do you stay awake all day without dozing?			
Timing	Are you asleep (or trying to sleep) between 2am and 4am?			
Efficiency	Do you spend less than 30 minutes awake at night (including the time it takes to fall asleep and awakenings from sleep)?			
Duration	Do you sleep between 6 and 8 hours per day?			

Scan to add your score



Total score ranges from 0 (poor sleep health) to 10 (good sleep health)



Equity Essentials

Thaisa Tylinski Sant'Ana

An inequity is a difference in the distribution of resources between groups

- By definition...
 - disparity* means a “difference” or “lack of parity”
 - inequity* refers to the “state of being unfair”

Levels of Inequity

Level	Definition	Level	Definition
Macro	Systematic conditions and factors operating on a system-level limiting equal access and opportunities	Horizontal	Failure to provide same treatment to individuals with similar needs
Micro	Systematic conditions and factors operating in patient-provider encounter limiting equal access and opportunities	Vertical	Failure to provide dissimilar but equitable treatment to those with lesser or greater needs

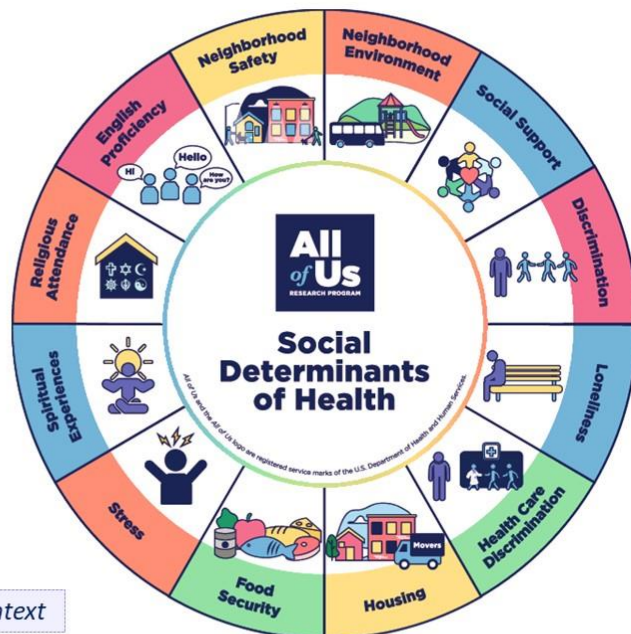
Adapted from: Meghani SH, Gallagher RM. Disparity vs inequity: toward reconceptualization of pain treatment disparities. Pain Med. 2008 Jul-Aug;9(5):613-23. doi: 10.1111/j.1526-4637.2007.00344.x. PMID: 18777609.



Social determinants of health

- Social determinants of health are “the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life” (World Health Organization)
- These factors influence health outcomes and wellbeing

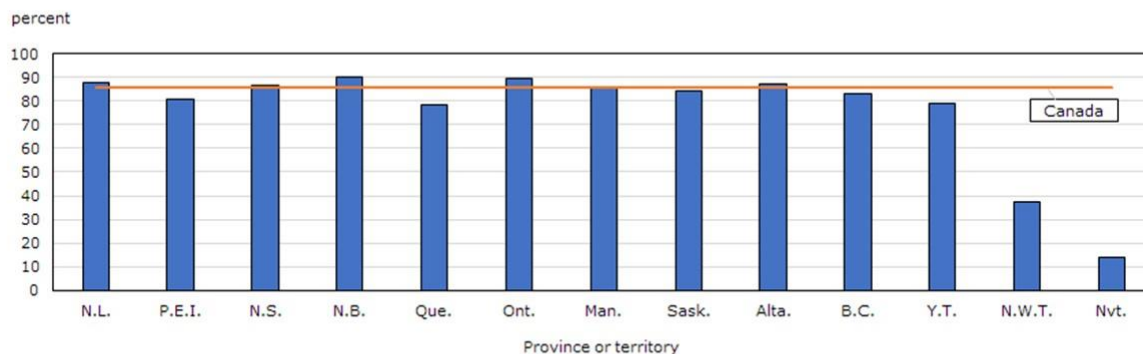
Let's look at some examples in the Canadian context



All of Us Research Program, National Institutes of Health, US Department of Health & Human Services, Social determinants of health. twitter.com/AllOfUsResearch/status/1532106012576063488



Healthcare Discrimination: Canadians aged 12+ reporting having a regular health care provider, by province (2021) or territory (2017 and 2018)



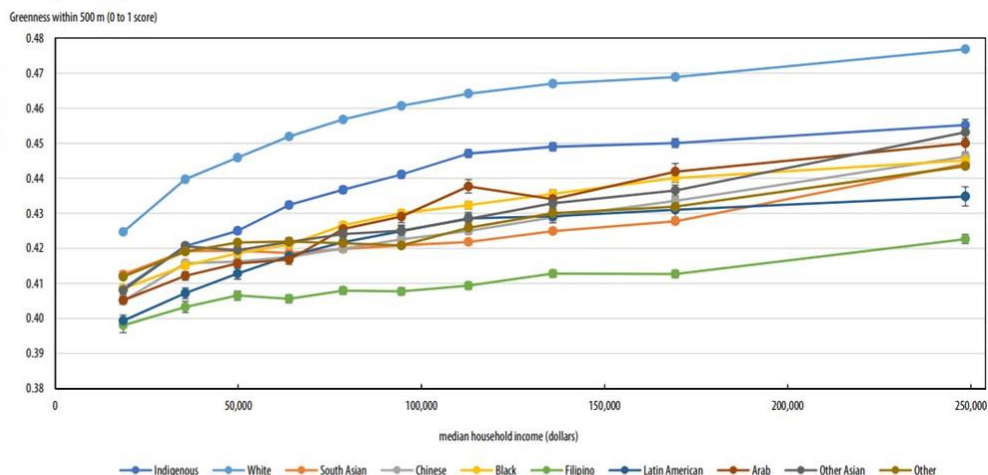
Notes: Provincial data are from the 2021 Canadian Community Health Survey (CCHS), and provinces are compared with the 2021 estimate for the rest of Canada, which excludes the province being compared and the territories (shown). Territorial data are from the 2017 and 2018 CCHS, and territories are compared with the 2017 and 2018 estimate for the rest of Canada, which excludes the territory being compared (not shown). Data for the Northwest Territories and Nunavut should be interpreted with caution. The horizontal line at 85.5% represents Canada.

Sources: Statistics Canada, Canadian Community Health Survey (CCHS), 2021, Table 13-10-0096-01 Health characteristics, annual estimates; and CCHS, 2017 and 2018, Table 13-10-0113-01 Health characteristics, two-year period estimates.

<https://www150.statcan.gc.ca/n1/pub/82-570-x/2023001/section3-eng.htm>



Neighborhood Environment: Residential greenness by population group and household income (2016)



Sources: 2016 Census of Canada; Crouse DL, Pinault L, Balram A, et al. Urban greenness and mortality in Canada's largest cities: a national cohort study. *The Lancet Planetary Health* 2017; 1: e289-97.

<https://www150.statcan.gc.ca/n1/pub/82-003-x/2021005/article/00001-eng.htm>



Promoting health equity requires equitable allocation of resources relevant to health

- According to the World Health Organization, equity is *“the absence of unfair, avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically or by other dimensions...”*
- Health equity is *“the fair distribution of health determinants, outcomes, and resources within and between segments of the population, regardless of social standing”* (source: CDC Health Equity Working Group)

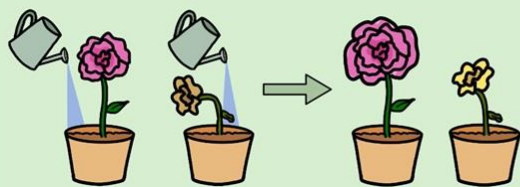
Some resources important to ensure health equity include:

- Safe housing
- Healthy food
- Clean air
- Education
- Access to health services



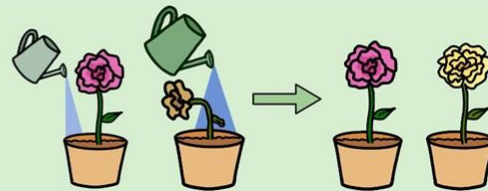
“...people with like needs should receive like treatment (horizontal equity) and people with lesser or greater needs should, respectively, receive lesser or greater treatments (vertical equity)” Meghani et al. 2008

Equality is giving each person the same resources regardless of their needs.



Let's explore how equity applies to sleep health

Equity is giving each person resources based on their needs to reach the same outcome.





Relevance of Sleep Health Equity

Azadeh Yadollahi

Sleep health inequities

- Causes for sleep health inequities can be:
 - **Social** (e.g., psychological stress, financial strain, hunger, threats to safety)
 - **Environmental** (e.g., extreme working conditions, noise, air quality)

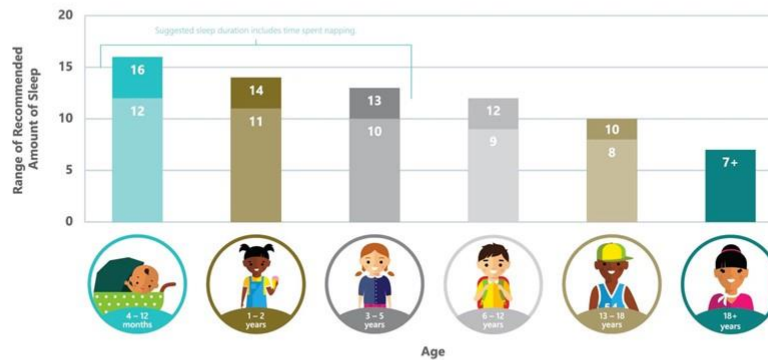
Let's look at some examples of how social determinants of health affect sleep duration. Research shows that each and every domain of sleep health is affected by inequities.



All of Us Research Program, National Institutes of Health, US Department of Health & Human Services, Social determinants of health.
twitter.com/AllOfUsResearch/status/1532106012576063488

Healthy Sleep Duration

The American Academy of Sleep Medicine recommends that you get the following hours of sleep on a regular basis for optimal health at each stage of life.



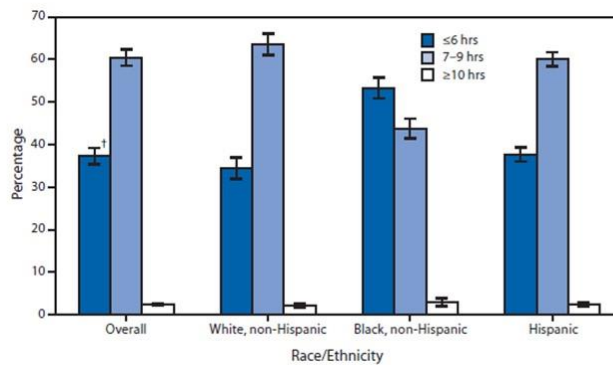
SleepEducation.org

A sleep health information resource by the American Academy of Sleep Medicine



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Inequities in sleep duration



Sleep Duration* Among Adults Aged ≥20 Years, by Race/Ethnicity — National Health and Nutrition Examination Survey, United States, 2007–2010 www.cdc.gov/mmwr/preview/mmwrhtml/mm6236a9.htm

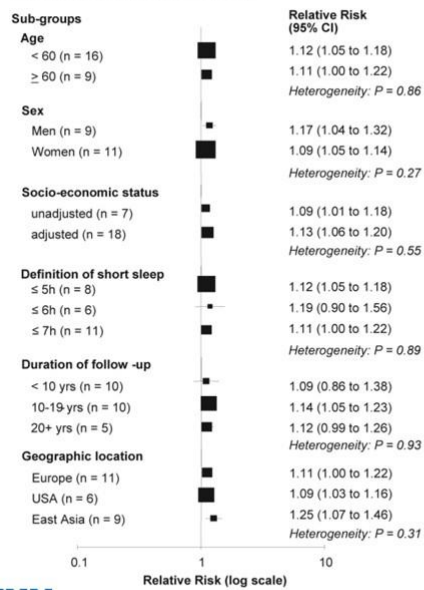


Y-axis bins are inclusive of the upper value, not lower. E.g. 10 hours will be placed in 0-10 hours range. SOURCE: U.S. Bureau of Labor Statistics, American Time Use Survey 2009-2018

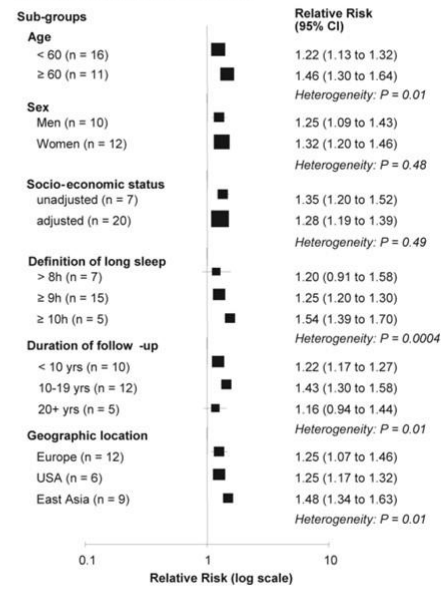
amerisleep

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Short duration of sleep



Long duration of sleep



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Cappuccio FP, D'Elia L, Strazzullo P, Miller MA. Sleep duration and all-cause mortality: a systematic review and meta-analysis of prospective studies. *Sleep*. 2010 May;33(5):585-92. doi: 10.1093/sleep/33.5.585.

We must address sleep health inequities to improve the health of people and communities

- For policymakers looking to improve sleep health and reduce sleep health inequities, it is important to recognize that:
 - Strategy towards sleep health taken by individual people may eliminate sleep health disparities, but not necessarily sleep inequities that stem from historical disadvantages
- Nonetheless, each of us can bring about change to own sleep health, and together this may contribute to a more equitable sleep health future for *all*

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How you can improve your sleep health

At night:

- Use the bed and bedroom for sleep only
- Establish a regular bedtime routine and a regular sleep-wake schedule
- Do not eat or drink too much close to bedtime
- Create a sleep-promoting environment that is dark, cool, and comfortable
- Avoid noises or screens in bed: consider a bedside at place to recuperate after your fully active day



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How you can improve your sleep health

During the day:

- Consume less or no caffeine, particularly late in the day
- Exercise
- Avoid naps, particularly in the late afternoon or evening
- Keep a sleep log to identify your sleep habits so you can easily assess your sleep health – SATED+R



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Equity Perspectives Lightning Round

*Got to [mentimeter.com](https://www.mentimeter.com) to submit
your questions for discussion*

Code: 2705 1857



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Closing Remarks

Jennifer Campos

Investing in sleep health

- It is scientifically proven that poor sleep health impacts our physical, mental, cognitive, and emotional functions
- There are factors within our control that can modify our sleep health, to ensure sleep serves us as it is intended
- When you are young, it is the ideal time to work on setting good habits for yourself to maintain your health and prevent more significant consequences arising from sleep health disparities and inequities

