

# Sleep & How it Matters for Health

# MIDUS

Midlife in the United States

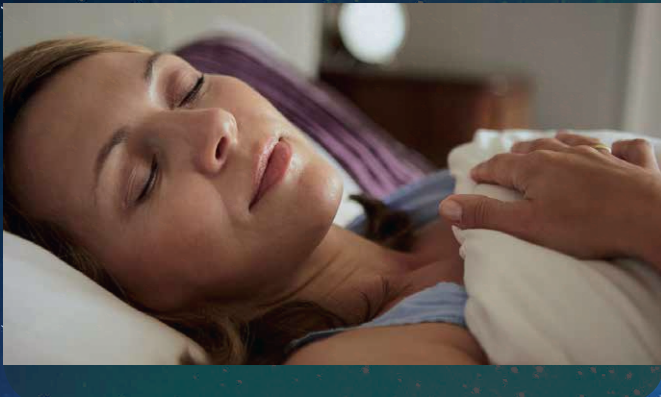
A National Study of Health & Well-Being



Dear 2 AM:

We have got to stop meeting this way.  
I would much rather sleep with you.

~iDreamofSleep.com



**MIDUS is linking sleep to many aspects of health, such as pain, obesity, and well-being.**

## How is Sleep Studied?

### Method 1: Self-Report

MIDUS participants answer multiple questions about sleep (during a typical night or the last 30 days):

- how many hours they slept
- if they had trouble falling asleep
- how often they woke up during the night
- how rested they felt in the morning
- if they used sleep medications
- if they had trouble staying awake during the day.

### Method 2: Actiwatch

Some MIDUS participants wear an Actiwatch activity monitor for 7 days:

- By measuring movement, this watch-like device indicates how long people were asleep between lights out and lights on.
- Those who spend more time in bed actually sleeping have higher *sleep efficiency*.
- Actiwatch participants also complete a daily sleep diary, reporting their level of rest in the morning & overall sleep quality each night.

Each method provides information on distinct aspects of sleep quality, giving insight into what makes a good night's rest.

Getting enough sleep is not a luxury— it is something people need for good health.

~ U.S. Center for Disease Control and Prevention





# Poor Sleep May Contribute to:

## Physical Disability:

- Those reporting chronic sleep problems had *-10 years later-* significantly greater risk of difficulty performing activities of daily living (kneeling, bending, climbing stairs). In the case of bathing, dressing, or walking one block, the risk doubled.



- One possible reason is that poor sleep leads to fatigue,

which reduces likelihood of exercise, which may contribute to physical decline. *[Friedman 2016]*

## Being Overweight:

- For women, getting fewer hours of sleep or spending less time in bed actually asleep (assessed by the Actiwatch) was linked with a higher body mass index (BMI) & larger waist.
- This may be because too little sleep impacts appetite-regulating hormones and is associated with increased appetite. *[Mezick 2014]*

## Increased Pain:

- Sleeping too little or too long (less than 6 or more than 9 hours) was associated with having more frequent pain the following day.
- Sleeping long hours may be a result of waking up often or sleeping lightly, which has been previously linked to pain.



*[Edwards 2008]*

## More Bodily Wear & Tear:

- Those who slept less than 5 hours or more than 8.5 hours a night and had difficulty falling or staying asleep, showed more wear & tear on multiple systems (cardiovascular, immune, nervous system), known as allostatic load (AL).
- AL is associated with chronic illness, as well as increased risk of mortality.
- This may be because inadequate sleep does not give the body sufficient time to rest & repair itself.

*[Carroll 2015]*

## Hormone Imbalance:

- More day-to-day variability in hours spent asleep & time getting up was linked to dysregulated daily cortisol levels, which have been associated with diverse health problems, including mortality. *[Bei 2017]*

## Lower Well-being:

- Higher variability in sleep duration (Actiwatch assessment) was linked to less satisfaction with life and more depression and anxiety.
- This variability in length of sleep may trigger insomnia (trouble falling or staying asleep). Oversleeping to make up for lost sleep may cause trouble falling asleep the next night.
- Those reporting insomnia over 10 years also reported lower well-being: they had less self-acceptance and felt less in charge of their lives.



*[Lemola 2013, Karlson 2013]*

These results suggest that sleep is a basic health behavior, similar to smoking, drinking, caffeine intake, and exercise. Probing the quantity and quality of sleep is fundamental to understanding good or poor health.



# What Makes Sleep Better or Worse?

## A Caring Partner:

- Having a more caring & responsive spouse/partner was linked with less anxiety & depression, which in turn were associated with fewer sleep problems and greater sleep efficiency (spending more time in bed actually asleep). [Selcuk 2016]

## Social Support & Strain:

- Having more support from family & friends (feeling cared about and understood) was linked with better sleep quality.
- Having more social strain (feeling let down, criticized) was linked with lower sleep efficiency (spending less time in bed asleep). [Chung 2017]

## Depression:

- Women reporting depression took longer to fall asleep & slept for fewer hours; whereas men reporting depression had more disruption in daily patterns of rest & activity (Actiwatch assessments).
- Those who engaged in more pleasant daily activities, such as appreciating nature, laughing, or meeting someone new, reported fewer symptoms of depression, which, in turn, was associated with better self-reported sleep quality.

[White 2017, Tighe 2016]



## Personal Characteristics:

- Those who were more neurotic (worried a lot) had more sleep problems & reported greater declines in sleep quality over 10 years.
- Having a happier personality (cheerful, satisfied) was associated with feeling more rested in the morning and reporting better overall sleep quality.
- However, happier people who reacted more strongly to either positive or negative daily events had lower sleep efficiency (less time in bed actually asleep). [Stephan 2017, Ong 2013]

## Childhood Abuse:

- Experiencing more extreme types of childhood abuse (physical, emotional, or sexual) increased risk for self-reported sleep problems.
- Those who experienced frequent physical & emotional abuse were twice as likely to have sleep issues as adults.
- Quality of sleep (bad dreams, pain) was impaired more than quantity.

[Greenfield 2011]

## Controlling Anger:

- Those who kept their cool and calmed down faster (temper control) had better sleep (fell asleep faster, woke up fewer times during the night), measured by both the Actiwatch & self-report. [Hisler 2017]

The Center for Disease Control and Prevention reports that 35% of American adults get less than the recommended seven hours of sleep a night.





# Sleep Affects Racial Differences in Health

African Americans, compared to Whites, have higher rates of diabetes, stroke, high blood pressure, and other “cardiometabolic diseases.” Reasons behind these differences are not well understood, but sleep may be an important factor.



## African Americans Sleep Less

Actiwatch results from MIDUS showed that African Americans:

- got 40 fewer minutes of sleep a night
- had 10% lower sleep efficiency (less time in bed actually sleeping).

These differences explained a significant portion of racial differences in disease risk (41% and 58% respectively).

[Curtis 2017]

## Why Do Blacks Sleep Less?

### Bad Neighborhoods:

- Blacks often live in worse neighborhoods than Whites, even if they have higher incomes.
- MIDUS findings show that Blacks had more wakefulness during the night, which was partly accounted for by living in poorer neighborhoods.
- Bad neighborhoods may increase stress, undermine health, and affect sleep because of:
  - \* heightened noise, crime, and exposure to toxins
  - \* less access to healthy food & health resources such as neighborhood centers and safe areas to exercise.



### Discrimination:

- Those reporting more discrimination (being treated with less courtesy and respect, receiving poorer service, being called names) had poorer sleep quality and more difficulty sleeping.
- Actiwatch results showed they also spent less time in bed actually asleep and experienced more wakefulness during the night.

[Fuller-Rowell 2016, Owens 2017]

### Implications:

Addressing sleep problems could be an important strategy to reduce racial disparities in health via new targets for positive health promotion.

## Thank You!

We are grateful for the continued involvement of all our MIDUS participants who are helping us discover ways to stay healthy.

**We wish you a good's night sleep!**



## Please Stay in Touch

Send updates in your address, phone(s), and/or email(s) to:

MIDUS– Institute on Aging  
University of Wisconsin-Madison  
2245 MSC, 1300 University Ave.  
Madison, WI 53706  
608.262.2056 • [aging@ssc.wisc.edu](mailto:aging@ssc.wisc.edu)

**MIDUS**  
Midlife in the United States

2018

Publications about sleep, including those summarized here, can be found on our website.

**MIDUS.wisc.edu**