2019

A Better Night's Sleep: Improving Sleep Without Medication Through Behavioral Modification

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Family Medicine Community Health Project
UVM Family Medicine in Hinesburg, VT
January-March 2019

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Poor sleep: a public health issue

- ~40 million Americans experience insomnia each yr
  - American Academy of Sleep Medicine: unsatisfactory sleep that impacts daytime functioning
  - difficulty falling asleep, returning to sleep, staying asleep
  - ↑ prevalence in women & older adults (up to 50% of elderly patients have poor sleep quality)
  - chronic insomnia: ≥3 nights/week for ≥3 months
- An estimated 50 to 70 million Americans have sleep disorders or sleep deprivation
- Only 10% of US adults prioritize sleep over other daily living aspects
- National Sleep Foundation's Sleep Health Index™ (2014):
  - telephone interviews: 1,253 adults living in the continental US
  - Americans sleep w/in the recommended # of hours/night (avg 7hr36min)
  - 35%: sleep quality "poor" or "only fair"
  - 20%: did not wake up feeling refreshed any day in past week

Growing reliance on meds & tech for sleep: a public health issue

CDC National Health and Nutrition Examination Survey, 2005–2010, ~17,000 respondents: Almost 9 million US adults (~4% of US adults ≥ age 20) used Rx sleep aids (sedative & hypnotic medications) in the past month

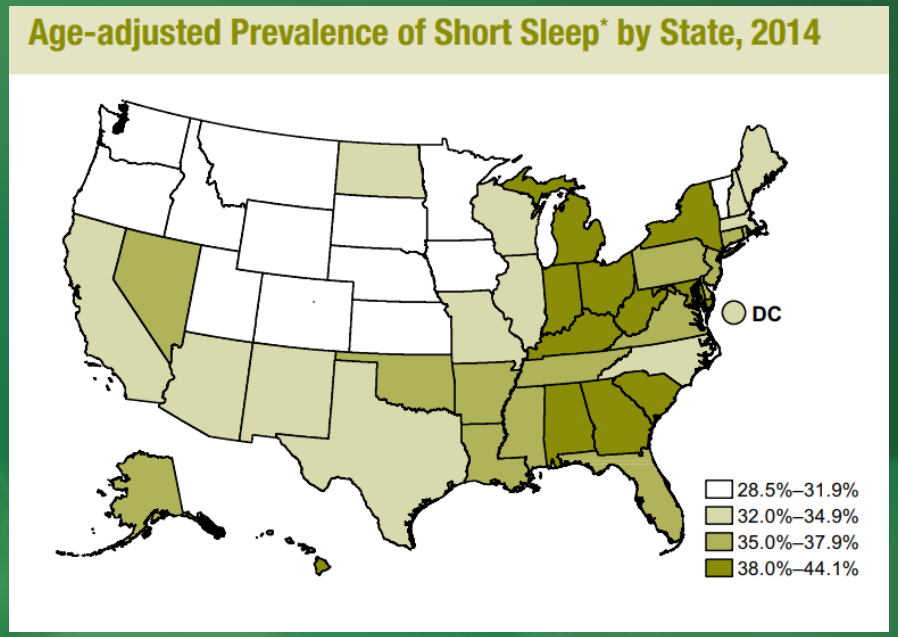
Highest rates of use among those who are older, Caucasian, well-educated, and female.

Thomson Reuters Research Brief: reported a tripling in sleep aid prescriptions from 1998-2006 for young adults age 18–24

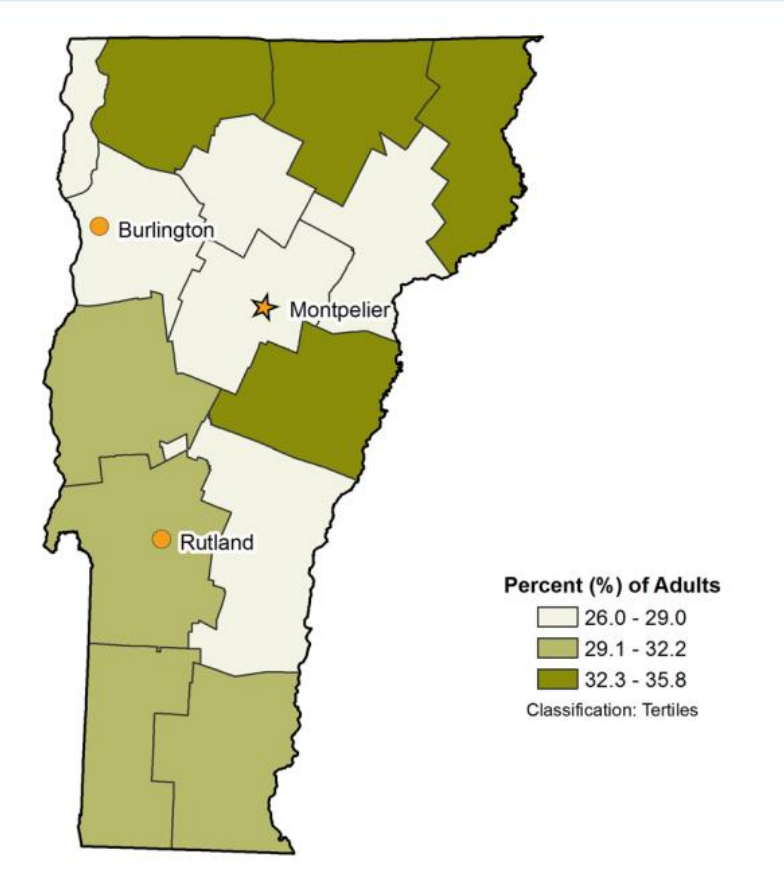
In one study, **90%** of Americans reported using a tech device in the bedroom in the hour before trying to sleep. That # increases to 96% for young adults age <30.

Insomnia National Public Health Cost

- American Academy of Sleep Medicine (2012) estimates annual costs of insomnia to be ~$63.2 billion
- Estimates have ranged from $30-$107.5 billion per year
- Annual losses in work performance from insomnia estimated to be ~252.7 million work days
  - Decreased productivity >> absenteeism
- Per capita:
  - insomnia costs the avg US worker 11.3 days or $2,280 in lost productivity annually
  - average cost of insomnia treatment ranges from $200 a year for a sleep aid to $1,200 per year for behavioral modification therapy



Insomnia Local Public Health Cost



In Vermont:

From the CDC: Model-based Estimated Age-adjusted Prevalence of Short Sleep by County, 2014 — Vermont

In 2014, 31.3% of VT adults reported usually sleeping <7 hrs per night

No estimated financial cost for the state available

Community Perspective: from our national agencies

Receiving national recognition as a public health issue

March 11-17th: National Sleep Foundation
Sleep Awareness Week

National Sleep Foundation's annual Sleep in America® poll

"The findings from the Sleep Health Index demonstrate a need for sleep health improvement. Sleep is an important factor in overall health…"

"We suggest that Americans & their doctors talk about sleep as a vital sign of health and well-being"

- David Cloud, CEO of the non-profit National Sleep Foundation

Community Perspective: from our local clinicians & sleep experts

“Many of us are sleep deprived—it affects our relationships, work, our ability to think and carry out activities of daily living. Sleep should be restorative and improve our well-being. Research has shown that inadequate sleep/poor quality sleep can have deleterious consequences for our health. Sleep hygiene is the first place to start.”

- **Dr. Ann Augustine, Sleep Specialist Physician, UVM Medical Center Sleep Program**

“Sleep issues are incredibly common in the population and a topic I discuss almost every day with patients. There is an incredible amount of anxiety around sleep issues (anxiety causes sleep issues and not being able to sleep is very anxiety provoking for patients). Most sleep issues are longstanding and patients have learned poor sleep hygiene over many years. Many of us…have poor sleep hygiene.”

- **Dr. Rachel Humphrey, UVM Family Medicine Physician in Hinesburg, VT**

Intervention & Methodology

Goal: To improve patients' sleep without medication through behavioral modification (sleep hygiene)

Intervention: increasing patient awareness of and education on sleep hygiene & sleep behavior habits as a 1st-line, non-pharmacologic intervention for insomnia & patient-reported poor sleep duration and/or quality

Methodology:

- **Patient handout w/ tips for improving sleep environment & personal habits**
  - **Many sources for patient education. This handout draws upon & combines patient education materials from: American Academy of Family Physicians, American Academy of Sleep Medicine, Centers for Disease Control and Prevention, and UpToDate**
  - **Provides additional resources including websites, meditation apps, & bedtime story podcasts for patients interested in learning more**
- **Epic dot phrase .sleephygiene for providers to easily & quickly provide the patient education handout materials for patients to receive along w/ their discharge paperwork**

The Handout

Healthy Sleep Habits You Can Do To Improve Your Sleep

During the day:

- Have some daylight exposure at least 30 minutes each morning.
- Get regular exercise, especially in the afternoon.
- Maintain a healthy diet & hydrate well during the day.
- Avoid long naps especially in the late afternoon. Short naps (limit to 20-45 minutes) can be helpful especially if your work schedule changes day to day.

In the evening:

- Avoid large meals (heavy, spice, sugary foods), caffeine (tea, coffee, many sodas, some chocolate), nicotine, & alcohol at least 4-6 hours before bedtime. If you are hungry, eat a light, healthy snack. Foods high in the amino acid tryptophan such as bananas may help you sleep.
- Reduce fluid intake before bedtime.
- Avoid strenuous exercise within 4 hours of bedtime.
- Limit exposure to bright light in the evening.
- Turn off electronic devices at least 30 minutes before bedtime.
- Practice relaxation techniques before bed; yoga, deep breathing, & mindfulness can help relieve anxiety & muscle tension. It can be very helpful to have a guide to get started with a few minutes of mindfulness, meditation, or story listening before bed; please see below for resources.

At bedtime:

- Establish a relaxing bedtime routine, such as a warm bath or a few minutes of reading.
- Assess your sleeping environment. Create a bedroom space that is quiet, dark, relaxing, & at a comfortably cool temperature. Use comfortable clothing, bedding, & mattress. Use earplugs if noise is a problem. Keep bedroom free of reminders of work or other stressors.
- Try to be consistent with your bedtime. Aim to go to bed around the same time each night & get up around the same time each morning, including on weekends/during vacation.
- Set a bedtime early enough for you to get at least 7 hours of sleep
- Lie down in bed to sleep only when sleepy.
- Use your bed only for sleep & partner intimacy. Aim to avoid activities in bed that can keep you awake such as watching TV, talking on the phone.
- Remove electronic devices such as TVs, computers, tablets, & smart phones from the bedroom. Avoid electronics such as phones & reading devices that give off light before bed.
- Listening (music, radio, podcasts, audio books) is less engaging than watching TV & can help some people fall asleep.
- Consider the bed a "worry free zone" from life stressors. Some people find it useful to assign a "worry period" during the evening or late afternoon to deal with these issues.

Waking up during the night/trouble falling asleep:

- Most people wake up 1-2 times per night for various reasons.
- If you can't sleep after 15-20 minutes, get out of bed & go to another room. Do not remain in bed trying hard to sleep. Do an easy, relaxing activity such as reading or have a light snack. Avoid arousing activities like office work or housework. Do not watch TV. Return to bed when you are tired. Repeat as necessary.

A note on medications for sleep:

While some medications can help people fall asleep quickly, medications often also: wear off quickly, do not help people stay asleep, do not promote better quality sleep, and have potential side effects. In addition to having a risk for dependence and addiction, sedative-hypnotic medications such as benzodiazepines have been associated with an increased risk of: depression, dementia, dizziness, lightheadedness, falls, drowsiness when wanting to be alert, and motor vehicle crashes. Aim to incorporate healthy sleep habit changes before considering medications for sleep.

Additional Resources:
Websites:

- American Academy of Sleep Medicine:
  - Sleep Education: http://www.sleepeducation.org/
  - National Healthy Sleep Awareness Project: http://www.sleepeducation.org/healthysleep
- National Sleep Foundation: https://sleepfoundation.org/
- American Sleep Association: https://www.sleepassociation.org/
- National Heart, Lung, and Blood Institute-National Institutes of Health: https://www.nhlbi.nih.gov/health-pro/resources/sleep

Phone Apps & Podcasts:

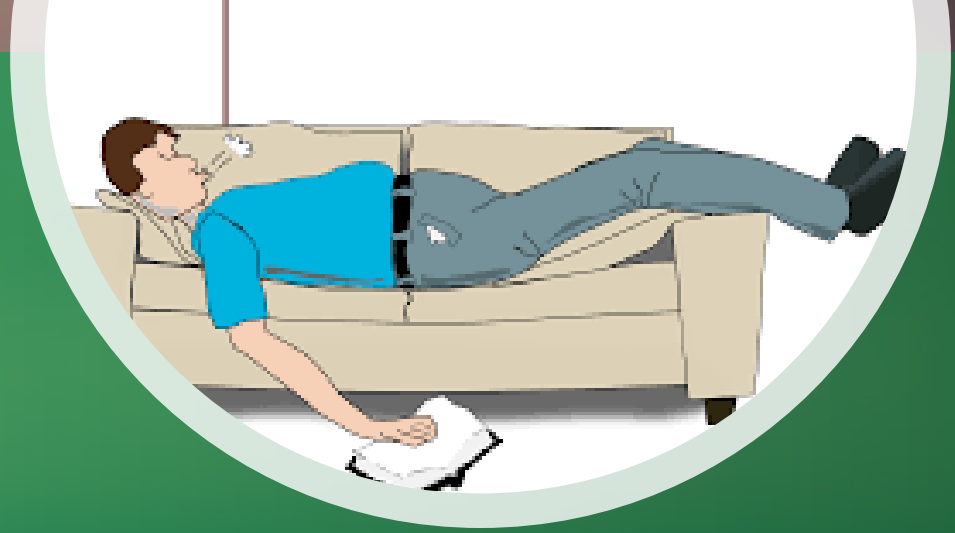
- Headspace Phone App: https://www.headspace.com/Meditation : guided meditation for a few minutes/day
- Sleep With Me Podcast: a twice weekly bedtime story podcast

References:
American Academy of Sleep Medicine:
http://sleepeducation.org/essentials-in-sleep/healthy-sleep-habits
American Academy of Family Physicians:
https://www.aafp.org/afp/2015/1215/p1058-s1.html
Centers for Disease Control and Prevention:
https://www.cdc.gov/sleep/index.html
UpToDate

Factors Contributing to Sleep Quality

- Sleep environment & habits
- Medications & substances
- Medical conditions & pain
- Stress & Mood
- Sleep schedule

Sleep quality & duration



- Affect functioning, quality of life & overall health
  - mood
  - energy level
  - social interactions
  - productivity, learning, memory

- Insomnia linked to:
  - Irritability, anxiety, depression
  - ↓ concentration & motivation
  - ↑ daytime drowsiness, forgetfulness, headaches
  - ↑ errors & accidents

AAFP Tx Recommendations for Insomnia

- **Consider sleep disruption frequency & degree of daytime functioning disruption**
  - **identify clear acute stressor(s) ex. grief**
  - **If insomnia severe or long-lasting: eval for associated medical, neurologic, or psychiatric illness**

- **Initial Tx = non-pharmacologic:**
  - **Address sleep hygiene & exercise**
  - **Evidence supports concomitant CBT**

- **Pharmacologic:**
  - **Hypnotics: Rx for short periods only, case-by-case basis**
  - **Discourage routine use of OTC drugs containing antihistamines**
  - **Benzodiazepines: adverse effects, addiction**
  - **Newer generation non-benzodiazepines**
    - **Ex. zolpidem, ramelteon**
    - **Better safety profile**

CLINICAL RECOMMENDATION	*EVIDENCE RATING*
Exercise, cognitive behavior therapy, and relaxation therapy are recommended as effective, nonpharmacologic treatments for chronic insomnia.	A
Melatonin is effective in patients with circadian rhythm sleep disorders and is safe when used in the short term.	B
Benzodiazepines are effective for treating chronic insomnia but have significant adverse effects and the risk of dependency.	B
Nonbenzodiazepines (e.g., eszopiclone [Lunesta], zaleplon [Sonata], zolpidem [Ambien]) are effective treatments for chronic insomnia and, based on indirect comparisons, appear to have fewer adverse effects than	B

Qualitative Results/Response Data

Provider perspective:

“Most people are looking for a ‘quick fix’ when it comes to better sleep and it’s hard to convince them that achieving better sleep is best done with behavioral modifications; the results are better and more long lasting. I often give patients brief information on sleep hygiene but stress that there is SO much more that they can do. I think a handout that incorporates some information about where people can look for more advice on sleep is perfect!”

- **Dr. Rachel Humphrey, MD**

“Trying to convince a patient that a ‘sleeping pill’ is not the answer to sleep problems is difficult and time consuming. Having a readily available resource to review with patients has been very helpful in framing this discussion.”

- **Dr. Michael Sirois, MD**

Evaluation & Limitations

- **Evaluating effectiveness of an intervention: provides important & useful feedback for the community health project**
- **Proposed way to evaluate effectiveness of this intervention:**
  - **Survey family medicine practice patients in the clinical regarding changes in sleep knowledge, perspectives, and behaviors since receiving the information**
  - **Ask patients to keep a log or journal before + after sleep behavior modifications: to keep track of quality of sleep, duration of sleep, and mood & energy levels upon waking, tiredness during the day, etc. to see if/ how sleep quality & duration change with behavioral implementations**
- **Implementation of the evaluation was not pursued due to short duration of this rotation**
- **Limitations include Epic dotphrase not being available across UVM network, lack of evaluative data on effectiveness of written materials on behavioral change for patients**

Recommendations for future interventions/projects

- **Compiling more resource modalities for patients such as including sleep hygiene monitoring phone & computer apps that also help limit tech use before sleep**
- **Tracking effectiveness of sleep behavior with patient surveys & patient sleep logs**
- **Creating a patient education table on sleep aid options, how they work, & their potential benefits vs. risks and contraindications/indications**
- **Farther outreach: extending project to multiple primary care practices throughout the state of Vermont**

References

National Sleep Foundation:

Sleep in America Poll 2018

https://www.sleepfoundation.org/sites/default/files/inline-files/Sleep%20in%20America%202018_prioritizing%20sleep.pdf

https://www.insomnia.sleepfoundation.org

Sleep Awareness Week:

https://www.sleepfoundation.org/press-release/national-sleep-foundation-awareness-week

CDC Sleep and Sleep Disorders:

https://www.cdc.gov/sleep/publications/factsheets.html

American Academic of Family Physicians:

Treatment Options for Insomnia

https://www.aafp.org/afp/2007/0815/p517.html

https://uvm-md.meduapp.com/document_set_document_relations/13606

Gradisar M, Wolfson AR, Harvey AG, Hale L, Rosenberg R, Czeisler CA. The sleep and technology use of Americans: findings from the National Sleep Foundation's 2011 Sleep in America poll. *J Clin Sleep Med*. 2013;9(12):1291-9. Published 2013 Dec 15. doi:10.5664/jcsm.3272

Prescription Sleep Aid Use Among Adults: United States, 2005–2010:

NCHS Data Brief ■ No. 127 ■ August 2013

https://www.cdc.gov/nchs/data/databriefs/db127.pdf

Sivertsen B, Lallukka T, Salo P. The economic burden of insomnia at the workplace. An opportunity and time for intervention?. *Sleep*. 2011;34(9):1151-2. Published 2011 Sep 1. doi:10.5665/SLEEP.1224

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3157654/

Sleep Review: The Journal for Sleep Specialists

http://www.sleepreviewmag.com/2014/12/financial-costs-insomnia/

Time Magazine: The High Cost of Bad Sleep: $63 Billion Per Year

http://healthland.time.com/2011/09/01/the-high-cost-of-bad-sleep-63-billion-per-year/

Consent Form

Thank you for agreeing to be interviewed. This project is a requirement for the Family Medicine clerkship. It will be stored on the Dana Library ScholarWorks website. Your name will be attached to your interview and you may be cited directly or indirectly in subsequent unpublished or published work. The interviewer affirms that he/she has explained the nature and purpose of this project. The interviewee affirms that he/she has consented to this interview.

Yes:

Dr. Michael Sirois – Family Medicine Physician, UVM Family Medicine, Hinesburg, VT

Dr. Rachel Humphrey – Family Medicine Physician, UVM Family Medicine, Hinesburg, VT

Dr. Ann Augustine – Sleep Specialist Physician, UVM Medical Center Sleep Program