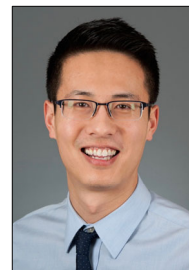




Managing Sleep Challenges after Transplant

Celebrating a Second Chance at Life Survivorship Symposium

April 17- 23, 2021



Eric Zhou PhD

Dana-Farber Cancer Institute

1

MANAGING SLEEP PROBLEMS AFTER TRANSPLANT




DANA-FARBER
CANCER INSTITUTE
Discover. Care. Believe.

Eric Zhou, PhD

Assistant Professor | *Harvard Medical School*
Staff Psychologist | *Dana-Farber Cancer Institute*

BMT InfoNet

 eric_zhou@dfci.harvard.edu

2

Sleep is Important



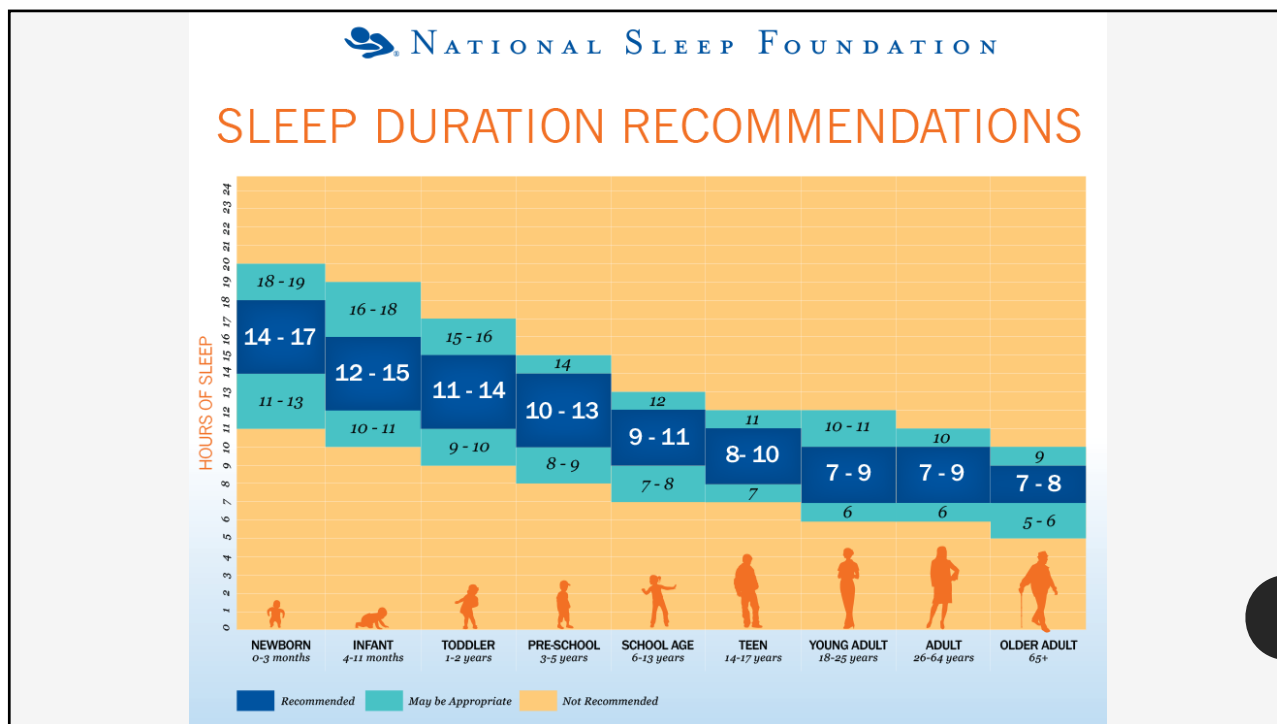
1
3

3



*HOW MANY
HOURS OF
SLEEP DO
ADULTS
NEED PER
NIGHT?*

4



5



6

Health Consequences



- ✗ Cardiovascular disease
- ✗ Diabetes
- ✗ Obesity



- ✗ Depression
- ✗ Anxiety
- ✗ Behavioral problems
- ✗ Suicide attempts
- ✗ Alcohol use
- ✗ Quality of life

7

Reader's Digest

MENU | HEALTH | FOOD | ADVICE | CULTURE | TRUE STORIES | JOKES | CONTESTS

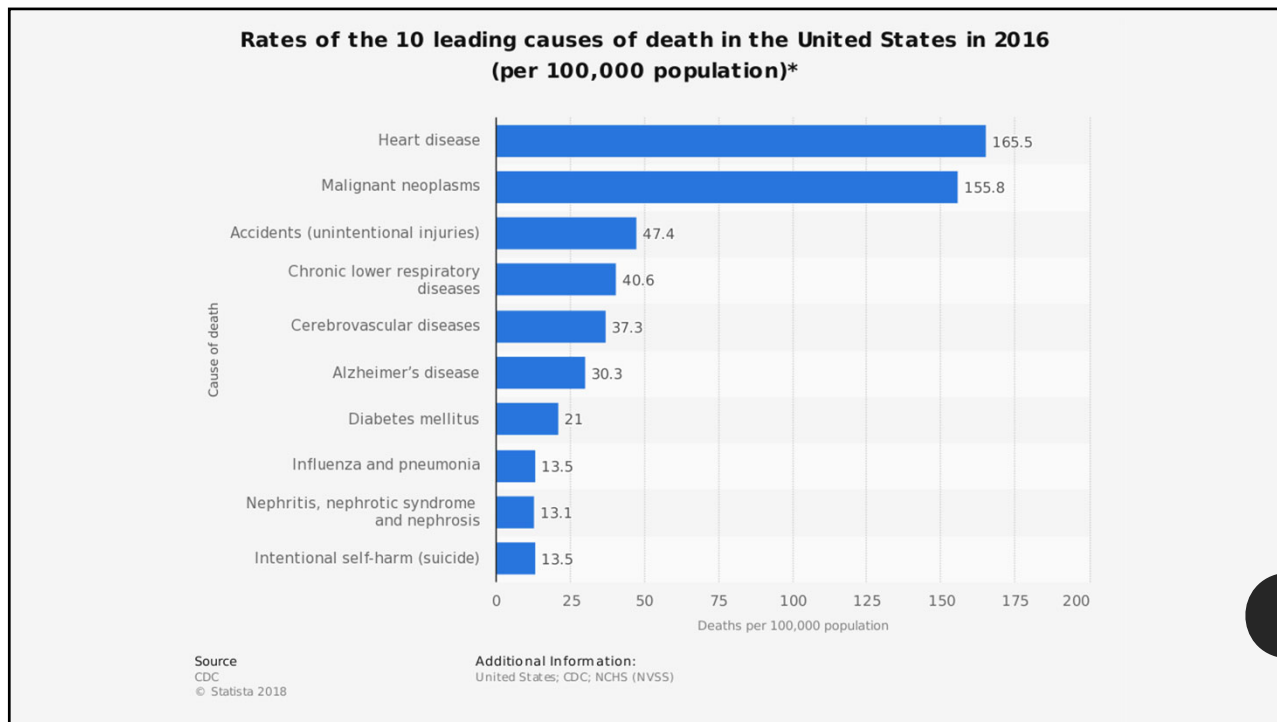
CONDITIONS

America's Sleep Crisis Is Making Us Sick, Fat, and Stupid. But There's Hope.

Beth Weinhouse

Sleep deprivation now rivals obesity and smoking as our greatest public health crisis. Here's what everyone (including America's businesses) needs to do to help stop our massive sleep debt and get more shuteye.

8



9

Sleep, sleepiness and motor vehicle accidents: a national survey

Abstract
Objectives: To assess the role of sleep-related factors, ethnicity and socio-economic deprivation in self-reported motor vehicle accidents while driving, after controlling for gender, age and driving exposure.

Philippa H. Gander, Nathaniel S. Marshall
SleepWake Research Centre, Massey University, Wellington, New Zealand

Ricci B. Harris, Papaarangi Reid
Eru Pomare Maori Health Research Centre, Department of Public Health, Otago University at Wellington School of Medicine and Health Sciences, New Zealand

Sleep Disturbance Preceding Completed Suicide in Adolescents

Tina R. Goldstein,
Western Psychiatric Institute and Clinic, University of Pittsburgh Medical Center

Jeffrey A. Bridge, and
Columbus Children's Research Institute and Department of Pediatrics, The Ohio State University

David A. Brent
Western Psychiatric Institute and Clinic, University of Pittsburgh Medical Center

Original Articles

Short Sleep Duration as a Risk Factor for Hypertension Analyses of the First National Health and Nutrition Examination Survey

James E. Gangwisch, Steven B. Heymsfield, Bernadette Boden-Albala, Ruud M. Buijs, Felix Kreier, Thomas G. Pickering, Andrew G. Rundle, Gary K. Zammitt, Dolores Malaspina

Behaviorally Assessed Sleep and Susceptibility to the Common Cold

Alic A. Prather, PhD¹; Denise Janicki-Deverts, PhD¹; Marica H. Hall, PhD²; Sheldon Cohen, PhD³
¹Department of Psychiatry, University of California, San Francisco, CA; ²Department of Psychology, Carnegie Mellon University, Pittsburgh, PA; ³Department of Psychiatry, University of Pittsburgh Medical Center, Pittsburgh, PA

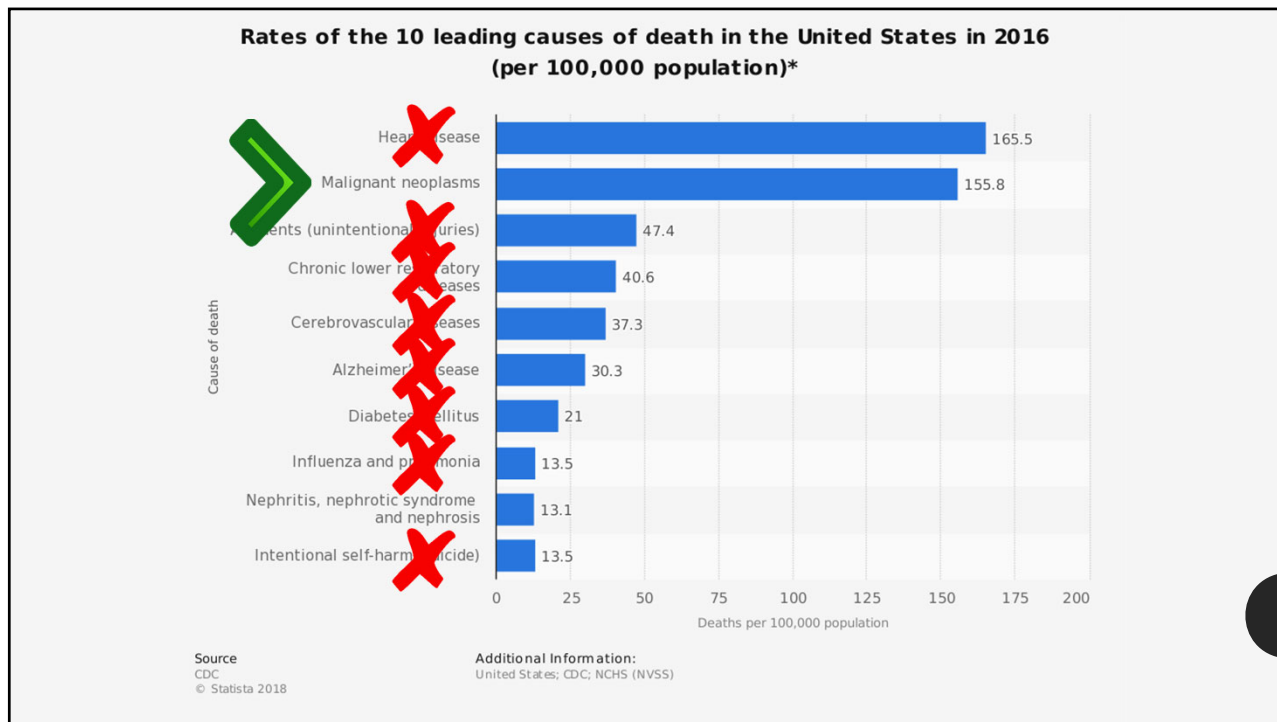
Sleep Duration as a Risk Factor for Incident Type 2 Diabetes in a Multiethnic Cohort

DEBORAH A. BEIHL, ANGELA D. LIESE, PhD, MPH, AND STEVEN M. HAFFNER, MD

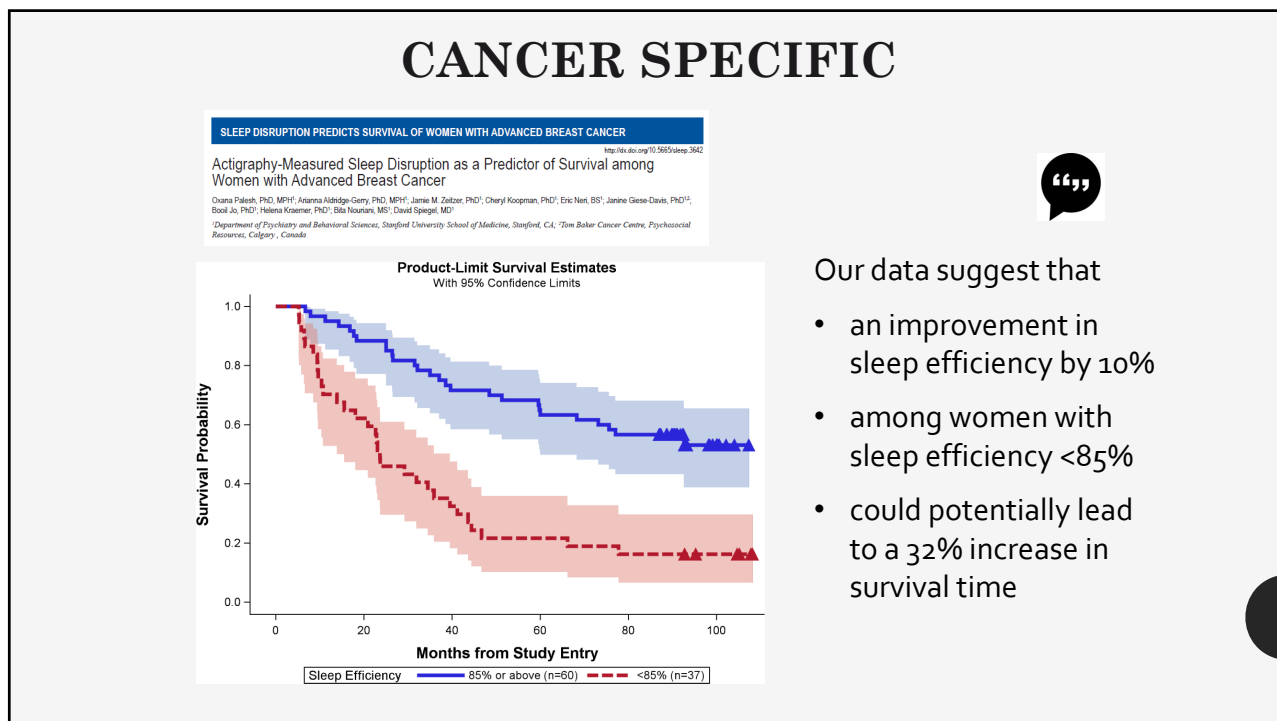
Impact of Sleep on the Risk of Cognitive Decline and Dementia

Adam P. Spira^{1,2}, Lenis P. Chen-Edinboro¹, Mark N. Wu³, and Kristine Yaffe⁴
¹Department of Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
²Department of Psychiatry and Behavioral Sciences, Johns Hopkins School of Medicine, Baltimore, MD
³Departments of Neurology and Neuroscience, Johns Hopkins School of Medicine, Baltimore, MD
⁴Departments of Psychiatry, Neurology, and Epidemiology and Biostatistics, University of California, San Francisco and San Francisco VA Medical Center, San Francisco, CA

10

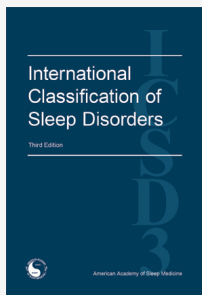


11



12

SLEEP DISORDERS



- Insomnia disorder
- Obstructive sleep apnea
- Central sleep apnea
- Sleep related hypoventilation disorder
- Sleep related hypoxemia disorder
- Narcolepsy (Type I/II)
- Idiopathic hypersomnia
- Kleine-Levin syndrome
- Delayed sleep-wake phase disorder
- Advanced sleep-wake phase disorder
- Non-24 sleep-wake disorder
- Shift work disorder
- Jet lag disorder
- Confusional arousals
- Sleepwalking
- Sleep terrors
- Sleep related eating disorder
- REM sleep behavior disorder
- Sleep enuresis
- Restless legs syndrome

13

INSOMNIA

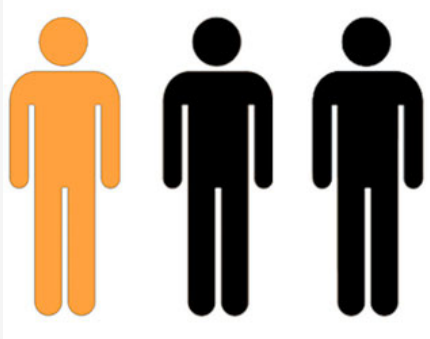
Table 1. DSM-V Criteria for Insomnia Disorder

- Complaint of dissatisfaction with quantity or quality of sleep occurs at least 3 nights a week for at least 3 months, associated with one or more of the following:
 - Difficulty falling asleep
 - Difficulty staying asleep, with frequent awakenings or difficulty falling back asleep
 - Early morning awakening
- The sleep disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- The sleep disturbance occurs even when there is enough time for sleep
- The sleep disturbance does not occur exclusively during the course of narcolepsy, breathing-related sleep disorder, circadian rhythm sleep disorder, or a parasomnia (an unusual behavior or event that occurs during sleep that may lead to intermittent awakenings).
- The sleep disturbance does not occur exclusively during the course of another mental disorder.
- The sleep disturbance is not due to the direct physiologic effects of a substance such as a drug of abuse or a medication, or from a general medical condition.

DSM-V, Diagnostic and Statistical Manual of Mental Disorders, 5th Ed.

14

INSOMNIA SYMPTOMS ARE COMMON

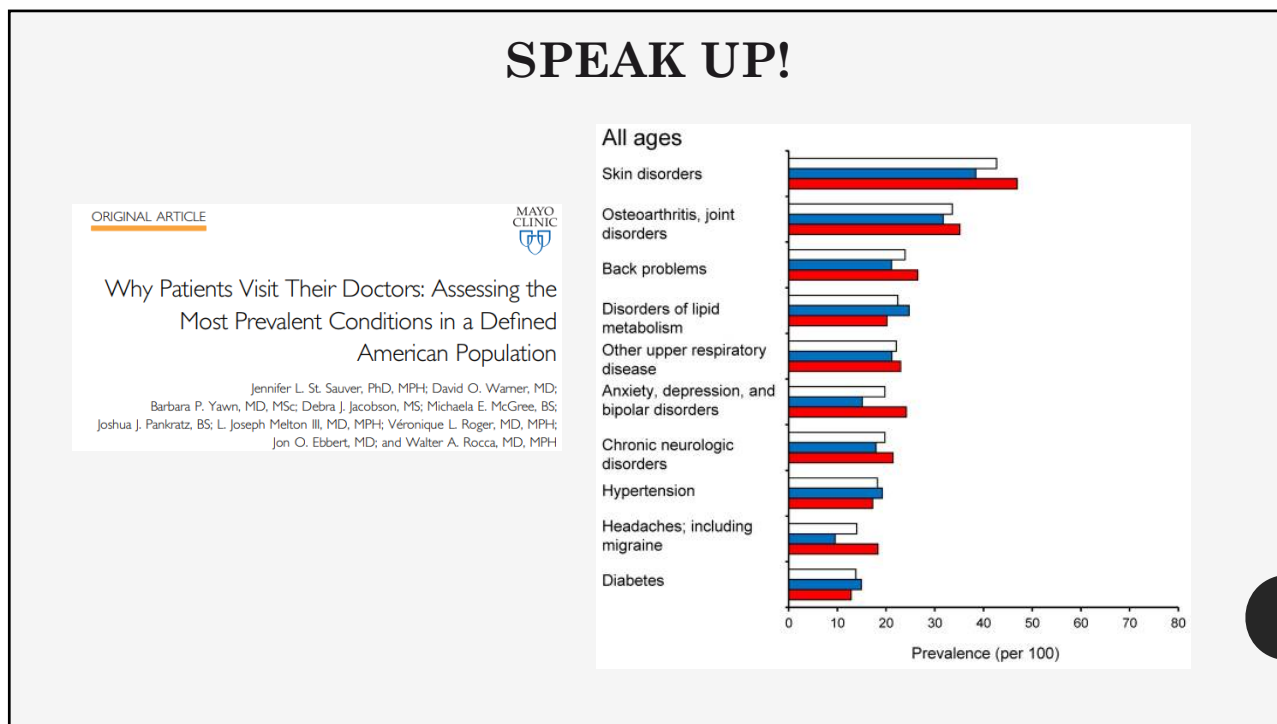


15

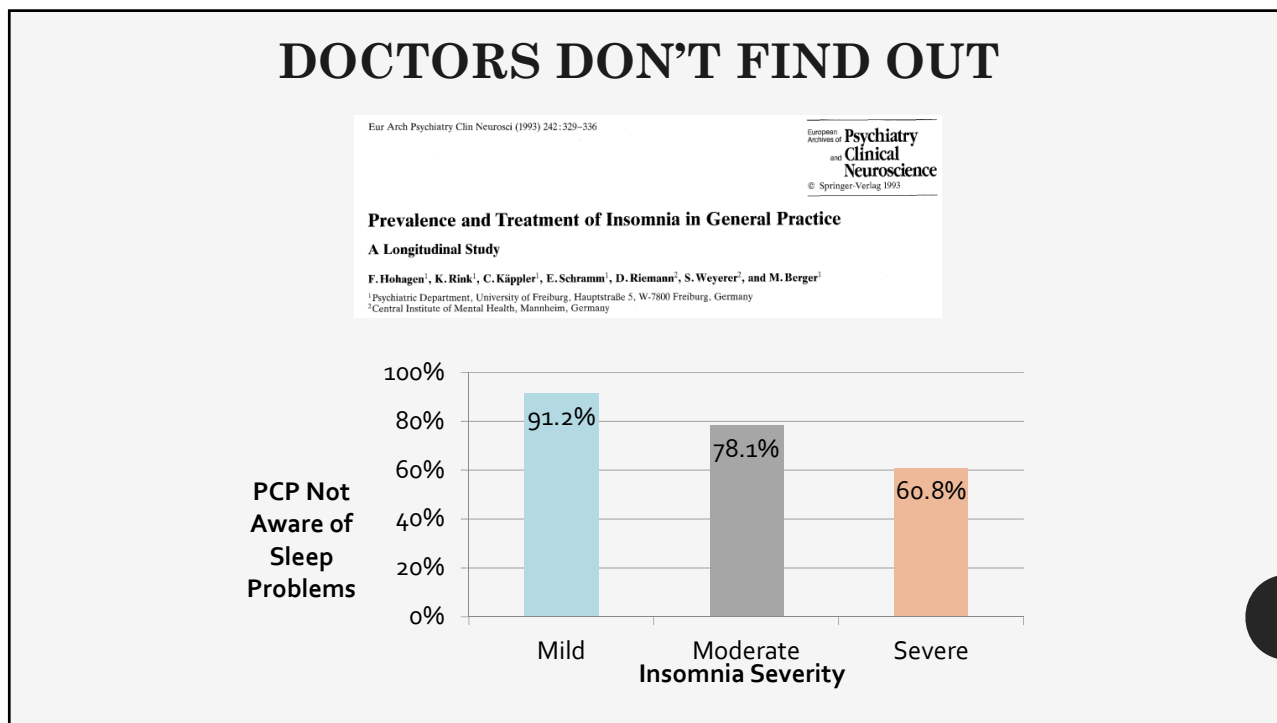
Insomnia is Trivialized



16



17



18

WHEN WAS THE LAST TIME YOUR PCP ASKED

How is your
sleep?

19

WHAT HAVE YOU TRIED TO DO?



20

what to do when i can't sleep

All Images Videos News Shopping More Settings Tools

About 506,000,000 results (0.57 seconds)

Beyond Counting Sheep—Your Action Plan

1. Keep track. Record how much and when you **sleep**, fatigue levels throughout the day, and any other symptoms. ...
2. Try therapy. ...
3. Establish a regular bedtime routine. ...
4. Use your bed the way it should be used. ...
5. Choose the right mattress. ...
6. Don't smoke. ...
7. Talk to your doc. ...
8. Exercise early in the day.

More items...

Can't Sleep? Here's 32 Solutions for Insomnia | Greatist
<https://greatist.com/health/cant-sleep-advice-and-tips>

About this result Feedback

21

EFFICACY OF SLEEP HYGIENE

Sleep Medicine R
doi:10.1053/smr

CONCLUSIONS

CLINIC Data from normal sleepers clearly demonstrate that sleep quality and quantity are adversely affected when certain sleep behaviors are followed. These data support the assumption that poor sleep hygiene can cause worsened sleep. The magnitude of the disruption of sleep varies considerably among the behaviors studied. For example, the effect of caffeine is small compared to the effect of sleeping during the wrong circadian phase. Some patients with insomnia report clinical improvement once they adhere to sleep hygiene rules, but the empirical evidence for the success of SH as a stand-alone treatment approach is very limited. One limitation to this research is that the term "sleep hygiene" is used by different investigators to describe diverse sets of rules, rather than a uniform treatment approach as use of a common term would imply.

Use o
Edward

Sleep Disord
1653 West C

KEYWOR
insomnia, sle
caffeine, nap
rhythm, exer

LEEP
EDICINE
reviews

Environmental stand-alone insomnia. This is a modified nosology, only utilized and other Procedures publications of of presleep empirical data showing that. Instead of a focus on nce Ltd. All

The wide popularity of SH recommendations by sleep specialists appears to be out of proportion to the available data demonstrating the efficacy of this approach. Robust effects in improving the sleep of patients with insomnia using SH would not necessarily

22

NATIONAL USE OF PRESCRIPTION MEDICATIONS FOR INSOMNIA

<http://dx.doi.org/10.5665/sleep.3410>

National Use of Prescription Medications for Insomnia: NHANES 1999-2010

Suzanne M. Bertisch, MD, MPH^{1,2*}; Shoshana J. Herzig, MD, MPH^{1*}; John W. Winkelman, MD, PhD^{3,4}; Catherine Buettner, MD, MPH^{1,4}

¹Divisions of General Medicine and Primary Care, and ²Pulmonary, Critical Care, and Sleep Medicine, Beth Israel Deaconess Medical Center, Boston, MA; ³Department of Psychiatry; Sleep Disorders Clinical Research Program, Massachusetts General Hospital, Boston, MA; ⁴Harvard Medical School, Boston, MA

23

PRESCRIPTION MEDICATION

Original Research

Mortality Hazard Associated With Anxiolytic and Hypnotic Drug Use in the National Population Health Survey

Geneviève Belleville, PhD¹

Objective: Although widely used in the general population, sleeping pills and minor tranquilizers, also known as anxiolytic agents, have been associated with undesirable outcomes. Reports about the association of these drugs with an elevated mortality rate are inconsistent and controversial. This study was designed to assess the mortality hazard associated with anxiolytic and hypnotic drug use in the National Population Health Survey in Canada. It was hypothesized that anxiolytic and hypnotic drug use would be associated with an elevated mortality hazard.

Method: A population-based sample of 14 117 people aged 18 to 102 years participated in a longitudinal panel survey, with data collected every second year from 1994 to 2007. The primary outcome measures reported in this study are self-report use of anxiolytic and hypnotic drugs, and death.

Results: For respondents who reported anxiolytic or hypnotic drug use in the past month the odds of mortality were 3.22 times more (95% CI 2.70 to 3.84) than for those who did not use anxiolytic or hypnotic drugs in the past month. After controlling for confounding sociodemographic, lifestyle, and health factors (including depression), the odds ratio was reduced to 1.38 (95% CI 1.09 to 1.70) but remained significant.

Conclusion: Sedative drug use is associated with a small but significant increase in mortality risk. Further research is required to confirm the mechanisms by which sedative drug use increases mortality risk. Where possible, physicians should systematically consider possibilities for nonpharmacological treatment of sleep disturbances and anxiety.

Can J Psychiatry. 2010;55(9):558-567.

Original Research Article | Published: 29 August 2012

Cognitive Effects of Long-Term Benzodiazepine Use

A Meta-Analysis

Melinda J. Barker, Kenneth M. Greenwood, Martin Jackson & Simon F. Crowe

CNS Drugs 18, 37-48(2004) | [Cite this article](#)

2787 Accesses | 330 Citations | 24 Altmetric | [Metrics](#)

24



Harvard Health Publishing
HARVARD MEDICAL SCHOOL
Trusted advice for a healthier life




HEART HEALTH



MIND & MOOD




PAIN



STAYING HEALTHY



CANCER



DISEASES & CONDITIONS

Home » [Harvard Health Blog](#) » Common anticholinergic drugs like Benadryl linked to increased dementia risk - Harvard Health Blog

Published in **JAMA**

Executive Editor, *Harvard Women's Health Watch*

One long-ago summer, I joined the legion of teens in Colorado. My job was to select the best peaches from a bin, wrap each one in tissue, and pack it into a shipping crate. The peach fuzz that coated every surface of the packing shed made my nose stream and my eyelids swell. When I came home after my first day on the job, my mother was so alarmed she called the family doctor. Soon the druggist was at the door with a vial of Benadryl (diphenhydramine) tablets. The next morning I was back to normal and back on the job. Weeks later, when I collected my pay (including the ½-cent-per-crate bonus for staying until the end of the harvest), I thanked Benadryl.

Today, I'm thankful my need for that drug lasted only a few weeks. In a [report published in JAMA Internal Medicine](#), researchers offers compelling evidence of a link between long-term use of anticholinergic medications like Benadryl and dementia.

Common anticholinergic drugs like Benadryl linked to increased dementia risk

POSTED JANUARY 28, 2015, 8:55 PM, UPDATED JUNE 25, 2019, 12:00 AM

Taking an anticholinergic for the equivalent of three years or more was associated with a 54% higher dementia risk than taking the same dose for three months or less.



25

MELATONIN

SCIENTIFIC INVESTIGATION:

Melatonin Natural Health and Significant Variability

Lauren A.E. Erland, MSc; Praveen K. Saxena
Gosling Research Institute for Plant Preservation

Study Objectives: Melatonin is an important available supplement for the treatment and commercial supplements, comprising different and serotonin. Presence of serotonin was found to be as much as 465%. This variability did not related indoleamine and controlled substance to 75 µg.

Conclusions: Melatonin content did not measured to contain serotonin. It is important to address this, manufacturers require increased such as serotonin.

Commentary: A commentary on this article

Keywords: contaminant, degradation, label

Citation: Erland LA, Saxena PK. Melatonin. *J Clin Sleep Med*. 2017;13(2):275-281.

RESULTS

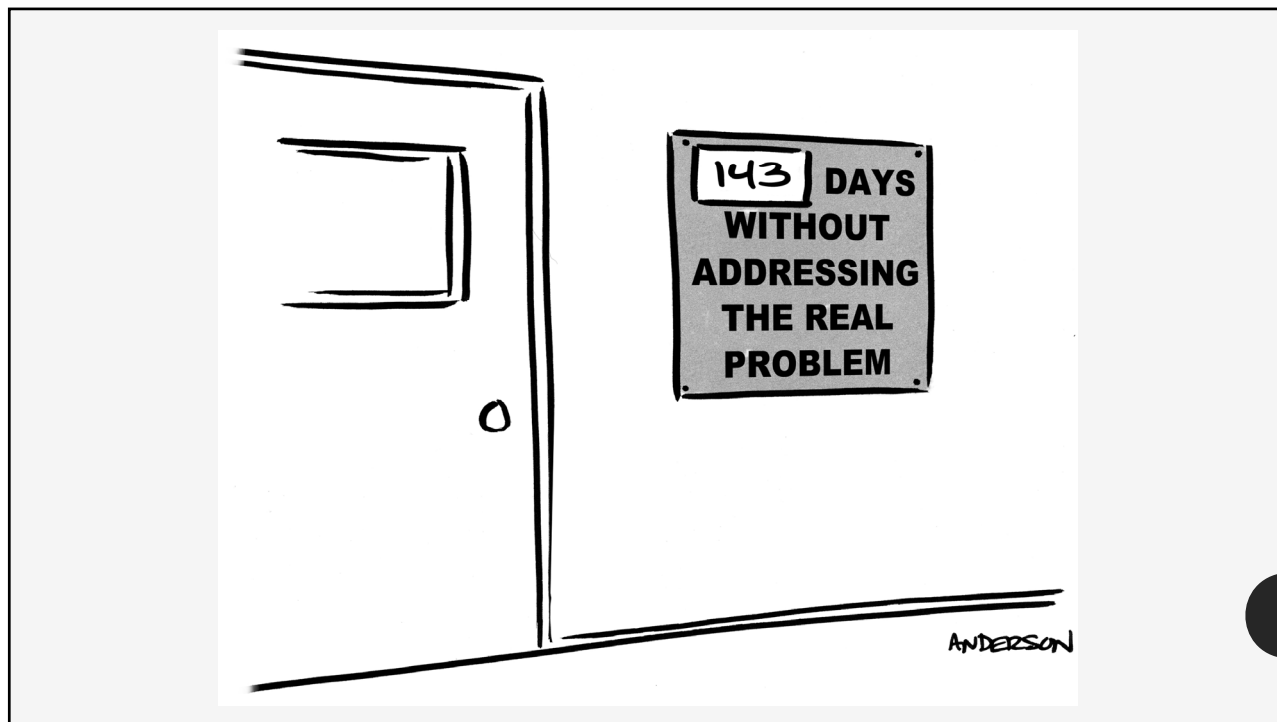
Melatonin content was found to be highly variable between samples and lots, with no pattern observed between brand, form of supplement, labelled value, or presence of other herbal extracts. The most variable sample, chewable tablet E1, showed a 478% increase from label claim containing almost 9 mg of melatonin, compared to the 1.5-mg label claim, though this was also highly variable between lots (465% difference). The supplement that showed the greatest decrease in melatonin content as compared to labelled values was the capsule G5 which contained lavender, chamomile, and lemon balm, with a decrease of 83%. The least variable products appeared to be those that contained the simplest mix of ingredients, generally tablets or sublingual tablets with melatonin added to a filler such as cellulose derivatives or silica (Table 1, Figure 1). The capsules generally showed the greatest variability, with the variability observed from E1 greatly distorting the mean results of the chewable category (Figure 1). The herbal extracts most commonly added to these capsules included valerian root, passion flower, chamomile, skullcap, and hops, though other extracts were also found in some supplements (Table 1). Surprisingly, lot-to-lot variability was as varied as deviation from the label claim, ranging from 0.37% up to 466% (Table 1, Figure 2), with little correlation with other descriptive factors, though again, the sublingual tablets and tablets were most reproducible. Liquid supplements, though suspected to be the least stable, due to melatonin's known instability at room temperature in solvent, were generally high to medium in their stability (Figure 1) with low lot-to-lot variability (Figure 2).

Serotonin was found in 8 of the 30 samples tested (Table 2). These results were confirmed by MS in all cases with the exception of Q1 for which serotonin was found only by electrochemical detection, though this could be attributed to long storage of

Presence of Serotonin

As such, it is a popular and readily study quantified melatonin in 30 onin. detection for quantification of melatonin mass spectrometry detection. able within a particular product varied serotonin (5-hydroxytryptamine), a eight of the supplements at levels of 7 measurements and an additional 26% were ed in the treatment of sleep disorders. 1, and also are free from contaminants, significant variability of melatonin content.

26



27

WHAT SHOULD YOU DO?

JCSM Journal of Clinical Sleep Medicine

Behavioral and psychological treatments for chronic insomnia disorder in adults: an American Academy of Sleep Medicine clinical practice guideline

Jack D. Edinger, PhD, J. Todd Arnedt, PhD, Suzanne M. Bertisch, MD, MPH, Colleen E. Carney, PhD, John J. Harrington, MD, Kenneth L. Lichstein, PhD, Michael J. Sateia, MD, FAASM, Wendy M. Troxel, PhD, Eric S. Zhou, PhD. [SEE ALL AUTHORS](#)

Published Online: November 9, 2020 • <https://doi.org/10.5664/jcsm.8986>

Abstract

INTRODUCTION: This guideline establishes clinical practice recommendations for the use of behavioral and psychological treatments for chronic insomnia disorder in adults.

METHODS: The American Academy of Sleep Medicine (AASM) commissioned a task force of experts in sleep medicine to develop recommendations and assign strengths based on a systematic review of the literature and an assessment of the evidence using Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology. The task force evaluated a summary of the relevant literature and the quality of evidence, the balance of clinically relevant benefits and harms, patient values and preferences, and resource use considerations that underpin the recommendations. The AASM Board of Directors approved the final recommendations.

RECOMMENDATIONS: The following recommendations are intended as a guide for clinicians in choosing a specific behavioral and psychological therapy for the treatment of chronic insomnia disorder in adult patients. Each recommendation statement is assigned a strength ("strong" or "conditional"). A "strong" recommendation (ie, "We recommend...") is one that clinicians should follow under most circumstances. A "conditional" recommendation is one that requires that the clinician use clinical knowledge and experience, and to strongly consider the patient's values and preferences to determine the best course of action.

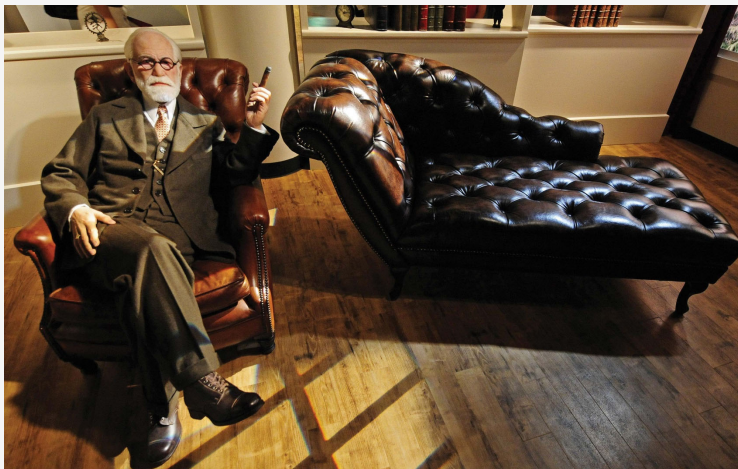
1. We recommend that clinicians use multi-component cognitive behavioral therapy for insomnia for the treatment of chronic insomnia disorder in adults. (STRONG)

ISSN (print): 1550-9389
ISSN (online): 1550-9397
Frequency: Monthly

Metrics

28

WHAT IS CBT-I?



29

recipe

INGREDIENTS

Sleep restriction

Stimulus control

Sleep hygiene

Cognitive therapy

Relaxation

~~6-8 sessions over 6 months~~ 4 over 2
prep time

DIRECTIONS

Match time in bed to total sleep duration

Use bed only for sleep

Improve behaviors that affect sleep

Address maladaptive sleep cognitions

Practice relaxation exercises

30

YOUR NEW MANTRA

It's not about tonight.

31

COLLECT DATA



32

SLEEP DIARIES

Day	Date	Mid night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	
Fri	2-20				Sleep					↑W						Nap		↑W						↓		
Sat	2-21				↑S							↑S													↓	

Day	Daytime Naps	Medication and/or Substance Use	Time to Bed	Time Taken to Fall Asleep	Number of Night Awakenings	Total Time Awake in Night	Time Woke Up	Time Intended to Wake Up
January 3	2 naps / 15 minutes each	Ambien 5mg and Benadryl	10:30pm	45 minutes	3	60 minutes	5:45am	6:30am

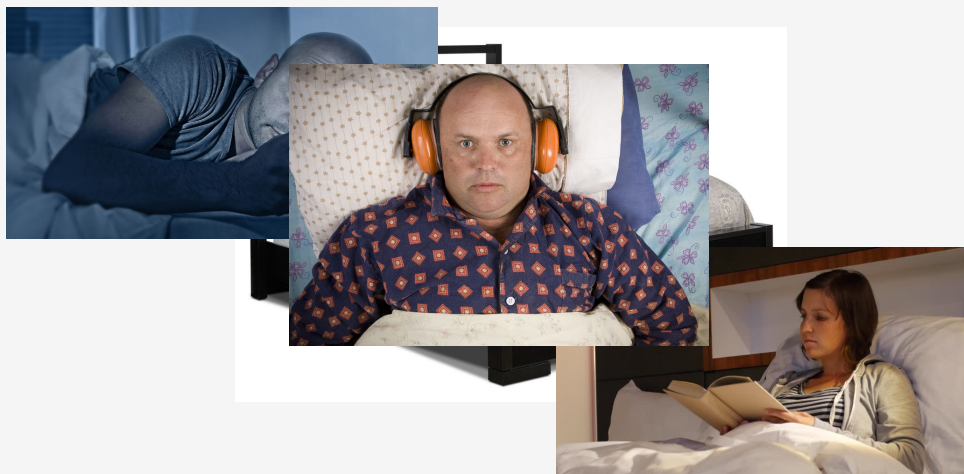
33

SLEEP RESTRICTION



34

STIMULUS CONTROL



35

SLEEP HYGIENE

1. Eliminate the bedroom clock
2. Exercise in the late afternoon/early evening
3. Minimize caffeine, alcohol, and nicotine
4. Eat a light bedtime snack
5. Reduce liquid consumption before bed
6. Reduce electronics use

36

COGNITIVE THERAPY

If I don't sleep well tonight, I don't know how I'm going to be able to work tomorrow.

This has to stop. My _____ is going to come back if I don't sleep.

I'm never going to fall asleep with so much to worry about right now.

37

SLEEP OCCURS IN CONTEXT OF LIFE

The slide features a central blue Star of Life medical symbol. Surrounding it are several black icons: a person cleaning with a broom and bucket, a person sitting at a desk with a computer, a family of three (two adults and a child), a sun and a thermometer, and a football.

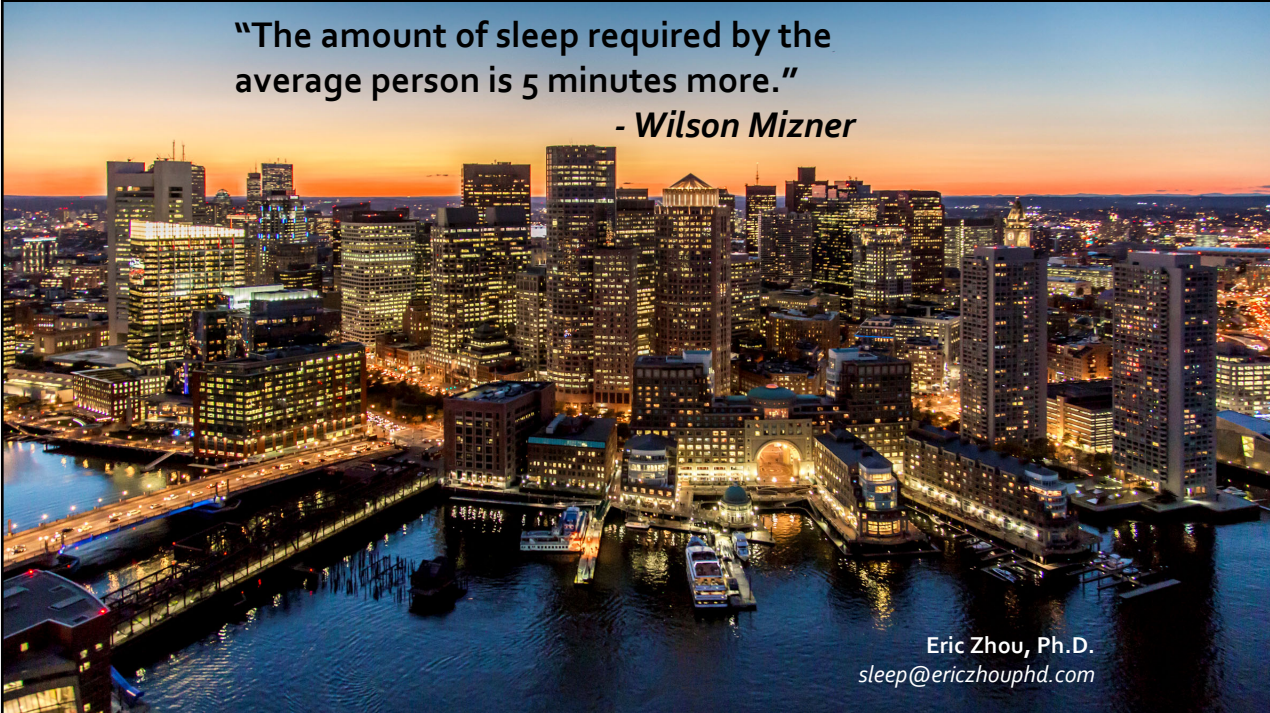
38



The image displays three book covers and the Somryst logo. On the left is 'the insomnia workbook' by Stephanie A. Silberman, Ph.D., DABSM, with a foreword by Charles M. Morici, Ph.D. The middle book is 'Overcoming Insomnia: A Cognitive-Behavioral Therapy Approach, Second Edition' by Jack D. Edinger and Colleen E. Carney. On the right is the Somryst logo.

ALTERNATIVES

41



**"The amount of sleep required by the average person is 5 minutes more."
- Wilson Mizner**

Eric Zhou, Ph.D.
sleep@ericzhouphd.com

42



Questions?



Celebrating a Second Chance at Life Survivorship Symposium 2021

bmtinfonet.org ♦ help@bmtinfonet.org ♦ 847-433-3313