

Sleep in Transplant: More than Just Getting your Z's!

Celebrating a Second Chance at Life Survivorship Symposium

April 29 – May 5, 2023



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UMass Memorial Hospital



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Learning Objectives

At the conclusion of the workshop, attendees should have a clear understanding of the following:

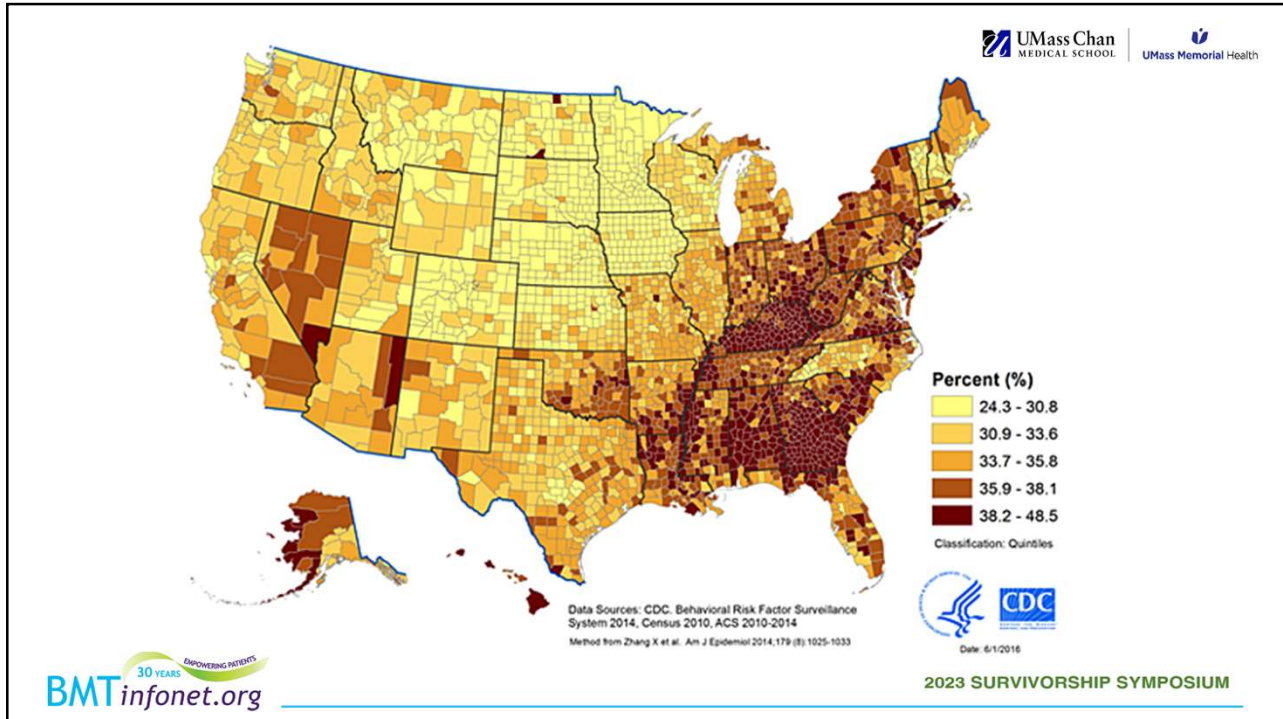
1. The incidence of sleep difficulties among HCT recipients
2. What constitutes enough and good sleep
3. Consequences of insufficient sleep on physical and psychological health
4. Barriers to sleep that are common among HCT recipients
5. Evidence-based approaches to falling and staying asleep

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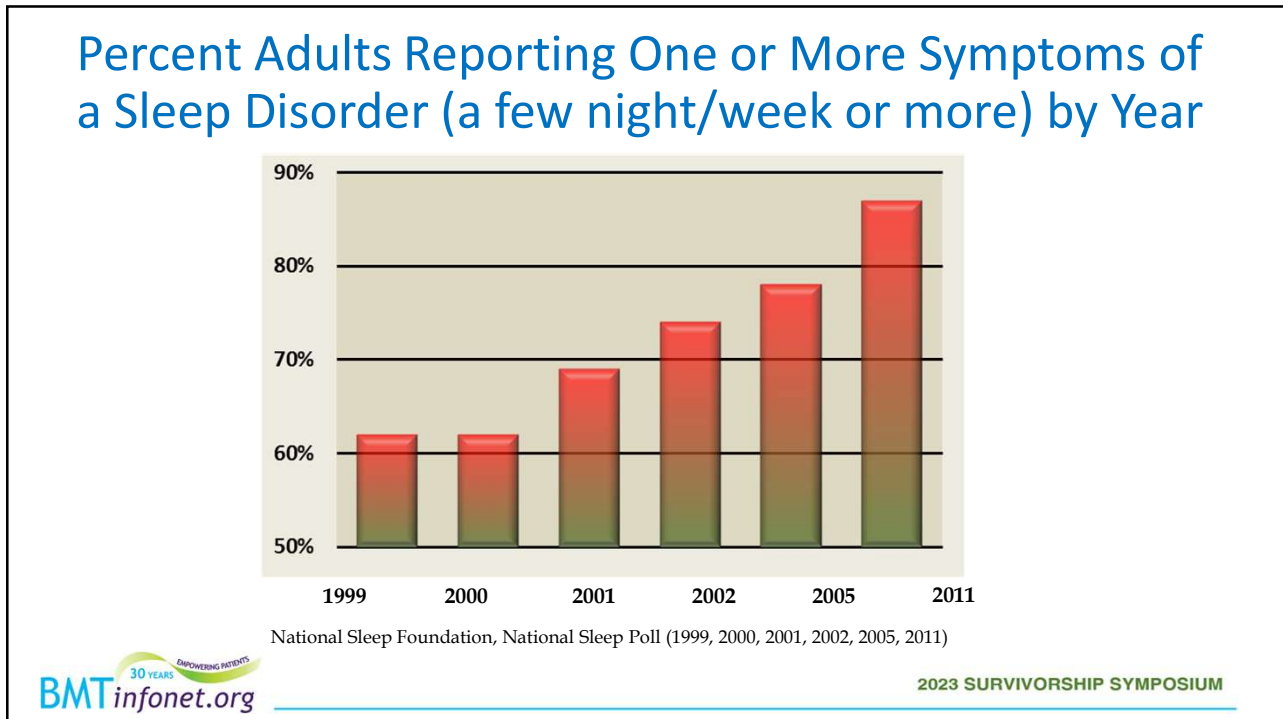
Outline

- Why sleep matters
 - Insomnia vs. disturbed sleep
 - In cancer
 - Unique challenges in stem cell transplant
- Behavioral treatment
 - Basic overview
 - Practical tips/challenges

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Poor sleep has serious consequences!

risk for diabetes

A lack of sleep affects your body's release of insulin, a blood sugar-lowering hormone. People who don't get enough sleep have higher blood sugar levels and an increased risk for type 2 diabetes.

weight gain

With sleep deprivation, the chemicals that signal to your brain that you are full are off balance. As a result, you're more likely to overindulge even when you've had enough to eat.

low sex drive

People who don't get enough sleep often have a lower libido. In men, this decreased sex drive may be due to a drop in testosterone levels.

risk of heart disease

Sleep deprivation may lead to increased blood pressure and higher levels of chemicals linked to inflammation, both of which play roles in heart disease.

poor balance

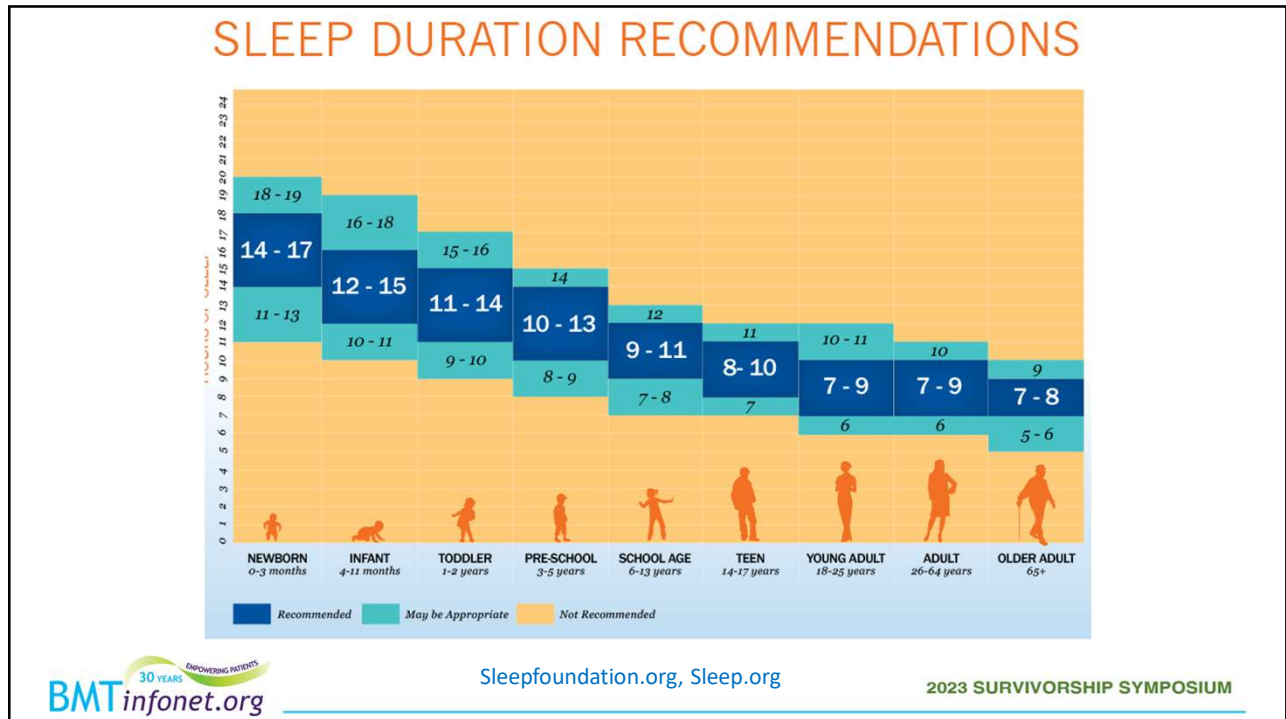
Lack of sleep can affect your balance and coordination, making you more prone to falls and other physical accidents.

<https://www.healthline.com/health/sleep-deprivation/effects-on-body>

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Insomnia ≠ Sleep Deprivation

	Insomnia	Sleep Deprivation
Sleep Opportunity	Adequate	Reduced
Sleep Ability	Reduced	Adequate

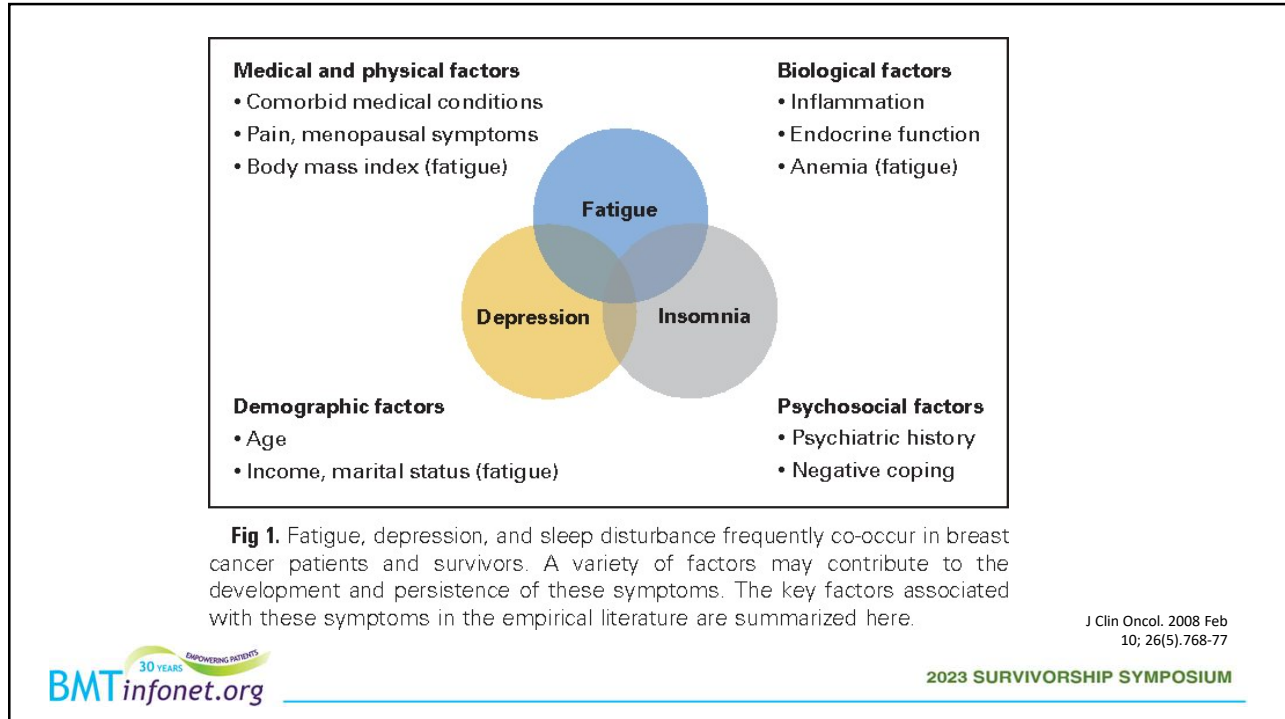


Slide courtesy of Dr. J. Dzierzewski; UCLA School of Medicine

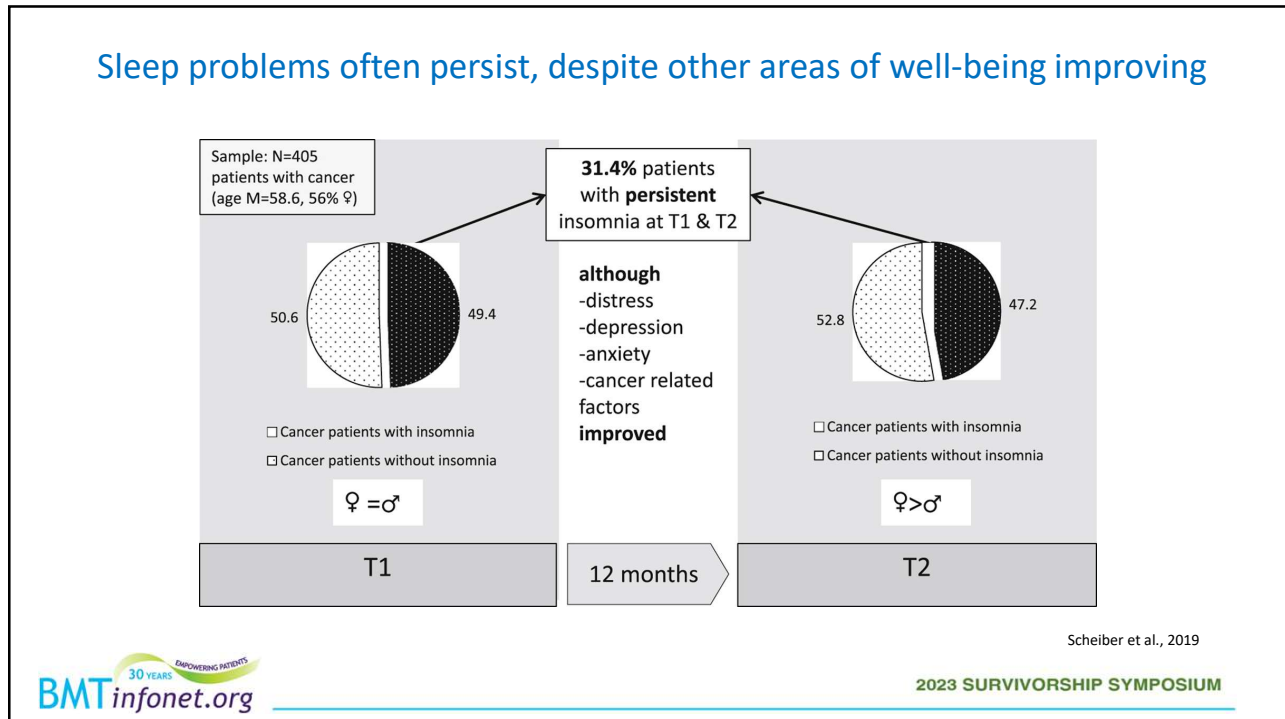
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DSM-5 Insomnia Disorder

- Complaint of **dissatisfaction with sleep quantity or quality**
 - Difficulty initiating sleep
 - Difficulty maintaining sleep
 - Early-morning awakenings
- Clinically significant distress/impairment (social, occupational, educational, academic, behavioral)
- Occurs **at least 3 nights/week**
- Present for **at least 3 months**
- Occurs **despite adequate opportunity for sleep**
- Not better explained by and does not occur exclusively during the course of another sleep-wake disorder
- **Not attributable** to the physiological effects of a substance
- Coexisting mental disorders and medical conditions do not adequately explain the predominant complaint of insomnia



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What about stem cell transplant??

- Sleep disruption distressing and prevalent problem
 - 49% of patients experiencing disrupted sleep before HCT¹
 - 74% of HCT recipients experience some degree of insomnia during hospitalization^{2,3}
- Sleep typically improves beyond initial month after HCT relatively stable beyond day +100⁴
 - Subset of patients: 26% of patients continue to experience sleep disorders 1-10 years post-HCT
 - Insomnia (23%)
 - Hypersomnia (3%)⁵

Barata et al., 2013; 2. Badia et al., 2019; 3. Boonstra et al., 2011; 4. Nelson et al., 2014; 5. Faulbahber et al., 2010; 6.

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Sleep Disruption in Hematopoietic Cell Transplantation Recipients: Prevalence, Severity, and Clinical Management



Heather S.L. Jim^{1,*}, Bryan Evans², Jiyeon M. Jeong³, Brian D. Gonzalez¹, Laura Johnston⁴,
Ashley M. Nelson², Shelli Kesler³, Kristin M. Phillips¹, Anna Barata^{1,5}, Joseph Pidala⁶,
Oxana Palesh³

Biol Blood Marrow Transplant 20 (2014) 1465–1484

Energy level and sleep quality following bone marrow transplantation

MA Andrykowski¹, JS Carpenter¹, CB Greiner², EM Altmaier³, TG Burish⁴, JH Antin⁵,
R Gingrich⁶, MJ Cordova¹ and PJ Henslee-Downey⁷

Bone Marrow Transplantation, (1997) 20, 669–679


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JGIM

REVIEWS

Non-Pharmacologic Interventions to Improve the Sleep of Hospitalized Patients

Ruth Tamrat, BS¹, Minh-Phuong Huynh-Le
¹Division of General Internal Medicine, Johns Hopkins School of Medicine, Johns Hopkins University, Baltimore, MD, USA



“Try to get some rest. I’ll be in every few minutes to make sure you don’t.”

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Cognitive behavioral therapy (CBT) for insomnia

- Structured program – typically 4 to 8 weeks; 6 sessions
- Always heavily focused on initial assessment
 - Sleep diary!
- Other components
 - Sleep hygiene
 - Stimulus control
 - Sleep restriction
 - Relaxation
 - Cognitions around sleep

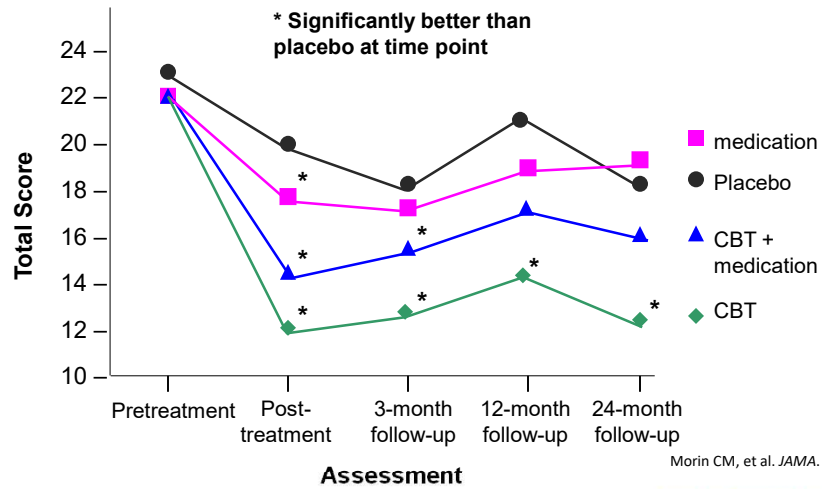
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The Sleep Diary

- Similar to checking blood pressure...
 - Identify high blood pressure...
 - Start medication, make lifestyle changes...
 - Re-check blood pressure...
 - Adjust if needed...
 - Until blood pressure is normal

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Cognitive Behavioral Therapy vs. Pharmacotherapy for Insomnia in Older Adults



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What about medication?


Pros

- Easy to implement
- Widely available

Cons

- Higher risk of psychiatric disorder (Chung et al., 2015)
- Increased risk of road collisions (Morin et al., 2020)
- Higher mortality (Kripke et al., 2016)
- Risk of cancer (?! Peng et al., 2020)

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CLINICAL GUIDELINE


Management of Chronic Insomnia Disorder in Adults: A Clinical Practice Guideline From the American College of Physicians

Amir Qaseem, MD, PhD, MHA; Devan Kansagara, MD, MCR; Mary Ann Forciea, MD; Molly Cooke, MD; and Thomas D. Denberg, MD, PhD, for the Clinical Guidelines Committee of the American College of Physicians*
Annals of Internal Medicine • Vol. 165 No. 2 • 19 July 2016

	Guideline	EST (modest)	Not EBT
Paradoxical intention	Guideline	EST (strong)	Not EBT
Relaxation therapies	Standard	EST (strong)	Not EBT
Stimulus Control	Standard	EST (strong)	EBT (partial)
Sleep restriction	Guideline	EST (strong)	EBT
CBT-I (with or without relaxation therapy)	Standard	EST (strong)	EBT

AASM=American Academy of Sleep Medicine; APA=American Psychological Association; OA=Older Adult; EST=empirically supported therapy (level of research support); EBT=Evidence-based treatment


Schette-Rodin, et al, *Journal of Clinical Sleep Medicine*, 4 (5), 2008.
McCurry, Terri, & Vitello. *Psychology & Aging*. 22 (1), 2007
http://www.div12.org/PsychologicalTreatments/disorders/insomnia_main.php




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Where are providers that offer CBT for insomnia?





https://www.med.upenn.edu/cbti/provder_directory.html










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Drivers of sleep problems

- Alcohol
 - Caffeine
 - Smoking
- Sleep hygiene-type recommendations
- Worries and stress
 - Untreated sleep disorders (eg, sleep apnea)
 - A poor sleep environment
- Using your bed for things *other* than sleep (or sex) Stimulus control

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Sleep Hygiene	Stimulus Control	Sleep Restriction	Relaxation	Cognitive	Wrap-Up
 appropriate bedroom environment	 using bedroom only to sleep	 restricting sleep times	 taking short and long relaxations during the day	 restructuring undesired thinking patterns	going over each component to prevent the relapse of insomnia
 avoiding screen-based devices before bedtime	 leaving bedroom when cannot fall asleep	 increasing in-bed sleep times			
 avoiding coffee or alcohol consumption					

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The impact of blue light and using apps on sleep



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Set a regular sleep schedule!

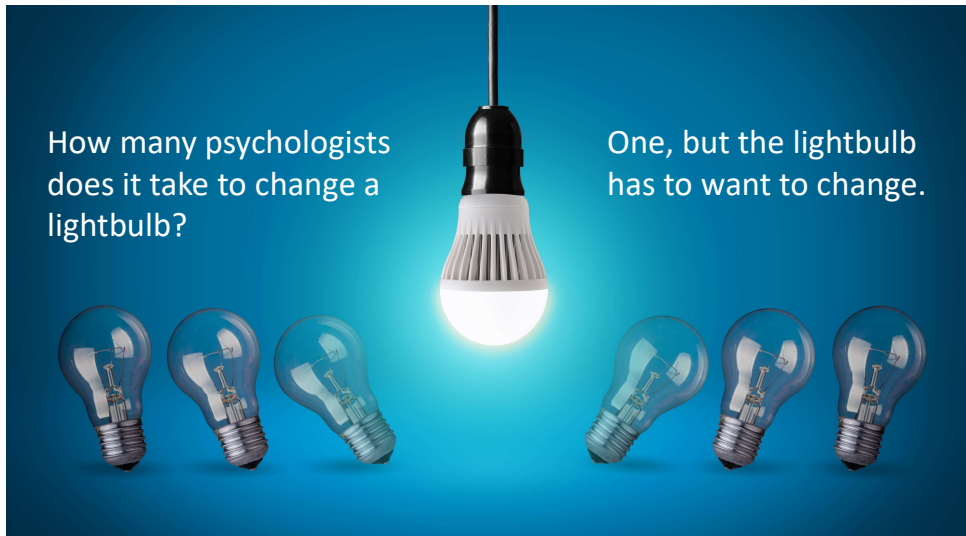
- Particularly a regular wake time!
 - “Catching up” – while feeling good – doesn’t work
- Establish a rhythm in line with what your body needs
 - Avoid naps

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This is HARD work!

How many psychologists
does it take to change a
lightbulb?

One, but the lightbulb
has to want to change.



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CBT for Insomnia Apps and Web Programs

Table 2. Advantages and disadvantages of the reviewed platforms.

Platform	Advantages	Disadvantages
Sleepio	The information is divided as modules, there are visually pleasing animative videos, summaries and recaps, competition certificate.	Interactivity is low, content lacking scientific depth
Shuti	Available as modules, interactive and playful games, scientifically rich explanations	Too much text
Sleeprate	Collects information from multiple sensors (i.e., sleep diary, voice recorder)	Too many reminders, discrepancy between behavioral and cognitive components
CBT-I Coach	Rich amount of advices on bedtime and waketime, information is tailored based on a checklist, a rich content is available on relaxation and content training	There is no guidance on sleep restriction, there are technical issues, old fashioned user interface
Night Owl	Rich and informative content on sleep education training	The information is too scientific and technically described, lacking user-centered communication
Minddistrict	Interactive panels are available on modules, there are relaxation exercises. Diaries for sleep and thoughts are available	Limited in feedback and graphical summaries

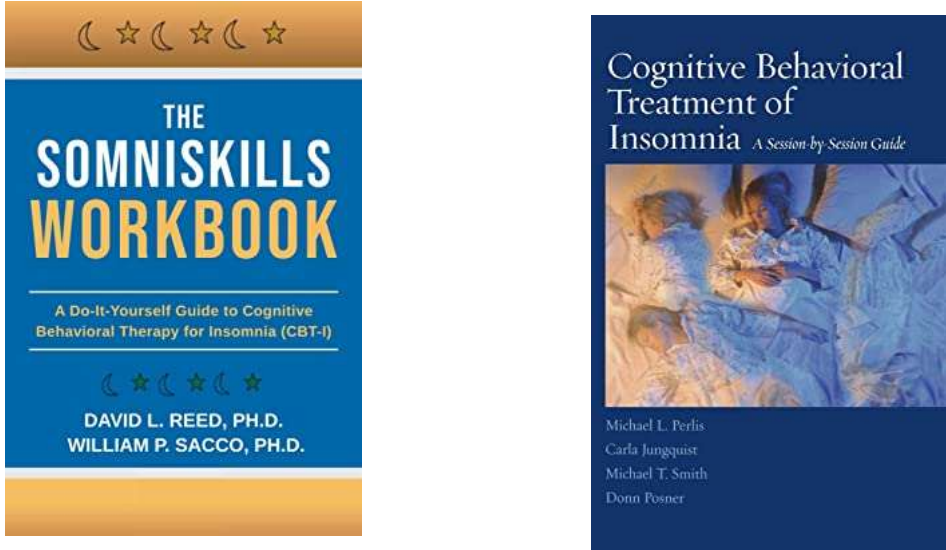
Uyumaz et al., 2021

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Other insomnia treatments

- Light therapy
 - Effective for sleep problems, insomnia and sleep problems related to dementia (Maanen et al., 2016)
- Melatonin
 - Less effective in adults with chronic insomnia
 - Possibly more effective when insomnia occurs in relation to other health conditions or in children/adolescents (Choi et al., 2022)
- Exercise
 - Significantly improves sleep quality; possibly more so for shorter interventions (Xie et al., 2021)

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The image displays two book covers side-by-side. The left cover is for 'THE SOMNISKILLS WORKBOOK', a 'Do-It-Yourself Guide to Cognitive Behavioral Therapy for Insomnia (CBT-I)' by David L. Reed, Ph.D. and William P. Sacco, Ph.D. The right cover is for 'Cognitive Behavioral Treatment of Insomnia: A Session-by-Session Guide' by Michael L. Perlis, Carla Jungquist, Michael T. Smith, and Donn Posner. Both covers feature a blue and gold color scheme with icons of stars and crescent moons.

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Thank you!

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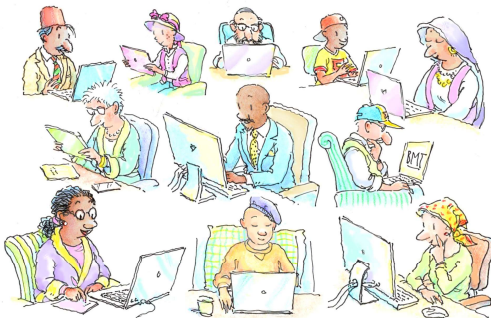
QUESTIONS?



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