



Insomnia

Neel Doshi, DO



Objectives

01

Learn basics of insomnia (REM vs nREM sleep)

02

Understand unique challenges for active patients

03

Be able to discuss psychological aspects of sleep

Acute vs Chronic Insomnia

Acute Insomnia

- < 1 month, precipitant usually known (psychologic vs physiologic stress)
- Discuss the role of the stressor in causing insomnia– allows for some semblance of control
- Short-term sedative use may be appropriate

Chronic Insomnia

- CBT-I; effective for most but not always easy to access; apps can help

Jeopardy

- **What duration must insomnia last to be considered chronic?**
 - A. 1 month
 - B. 3 months
 - C. No specific time period but (+) impairment in functioning
 - D. Most nights over 6 month period
- *My mind is set on overdrive
The clock is laughing in my face
A crooked spine
My senses dulled
Past the point of delirium.*



Chronic Insomnia

“The essential feature of chronic insomnia disorder is a frequent and persistent difficulty initiating or maintaining sleep that results in general sleep dissatisfaction.”

- At least **three months**
- 3 + days a week
- Must have an opportunity to sleep
- Impact on daytime function

Insomnia / Consequences

Mood disorders (Szklo-Coxe et al. Am J Epidemiol 2010;171:709-720 and Sivertsen et al. J Sleep Res 2014; 23:124-32)

PTSD and Suicidal Ideation Post Deployment (Wang et al. Sleep 2019; 42:1-9)

Falls (Cauley et al. JBMR 2019;34:464-474)

Hypertension (Jarrin et al. Sleep Med Rev 2018;41:3-38)

Myocardial Infarction (Sivertsen et al. J Sleep Res 2014; 23:124-32)

Motor Vehicle Crashes (Leger D et al. Sleep 2006;29:171-8)

Absenteeism (Especially blue collar) (Leger D et al. Sleep 2006; 29:171-8)

NREM + REM



NREM – Stages 1, 2, 3 “Deep Sleep.” ATP restoration. Memory encoding. Information consolidation. Cardiovascular system cycles down, Immune response improves.

REM – “active” sleep. Dreaming. Information integration. Emotional easing.

Adenosine & Melatonin

Daylight hours – Adenosine builds, creating sleep pressure.

- Reminder: Caffeine is an Adenosine receptor antagonist.

Nighttime – Melatonin tells our bodies it's time to sleep.

- Absolute concentrations decrease as we age. Dosed and used wrong often by patients.

Mythbusting – I can drink coffee and sleep no problem.

- Sleep initiation may not be affected, sleep maintenance & sleep architecture often are.

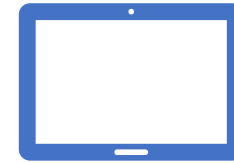
Mythbusting



8 hours of sleep



Don't nap



We sleep less because
of screens

Insomnia / Melatonin

- Light and melatonin affect the circadian clock
- Melatonin: Start low, 30 mins before bedtime. Increase by an additional 30 mins before bedtime if not effective. Low doses (0.5-1 mg)
 - Helpful when there's a longer circadian rhythm, i.e. 25 hours
- Light: In the AM for night owls, HS for early birds
 - 10,000 Lux; at least 30 minutes.

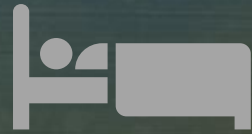
Sleep in Athletes



Athletes get less total sleep than non-athletes

Sleep deprivation effects: decreased running performance, reduced submaximal strength, distance covered, sprint times, tennis serve accuracy, soccer kicking skills, time to exhaustion.

Cognitive effects: decreased psychomotor functions, mood, vigor (subjective feeling of energy and enthusiasm), increased reaction time and confusion.



Even if an athlete cannot get an adequate night's sleep, a nap the following day may be beneficial.



“Banking sleep” (intentional sleep extension prior to a night of sleep deprivation) in a pilot study did improve motor performance.

CBT-i

First line recommended treatment by the American College of Physicians

Meta-analysis of RCTs compared CBT-I to control CBT-I had moderate to large effects on:

- Time to fall asleep
- Total time awake at night
- Wake time after falling asleep
- Time in bed
- Early morning awakenings
- Proportion of time in bed asleep (sleep efficiency)

Longer lasting effects than medications

CBT-I in Action

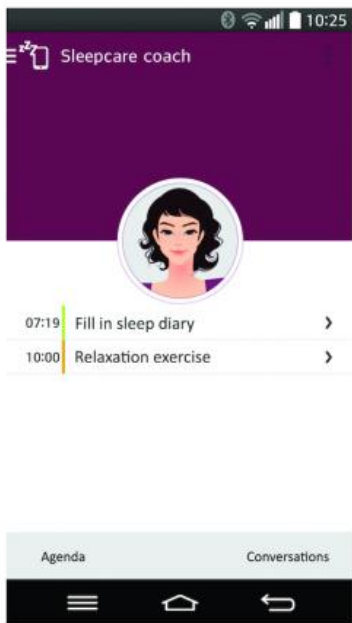
Assessment

- Sleep diaries
- Clinical interview

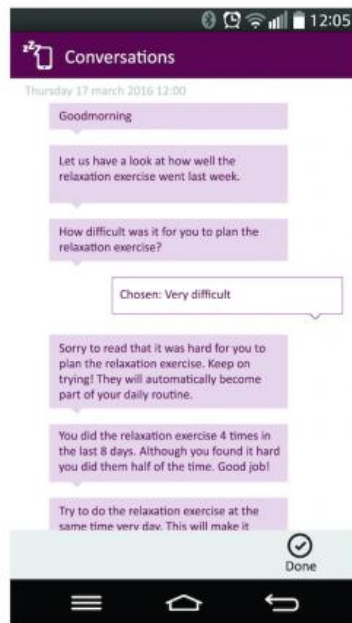
Sleep education

Sleep scheduling/sleep restriction

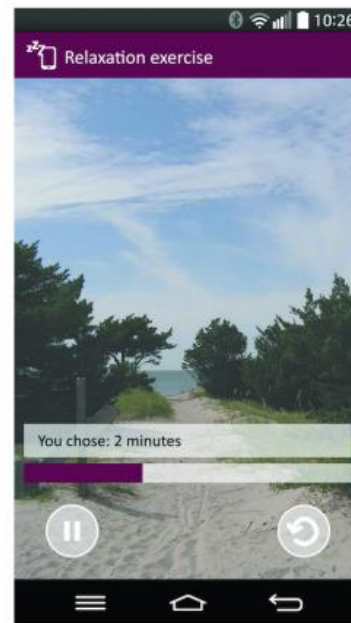
Additional cognitive/behavioral treatments as appropriate



Home screen with the scheduled exercises for the day



Conversation between app and participant



Relaxation exercise screen (including voice track)



Filling in the sleep diary



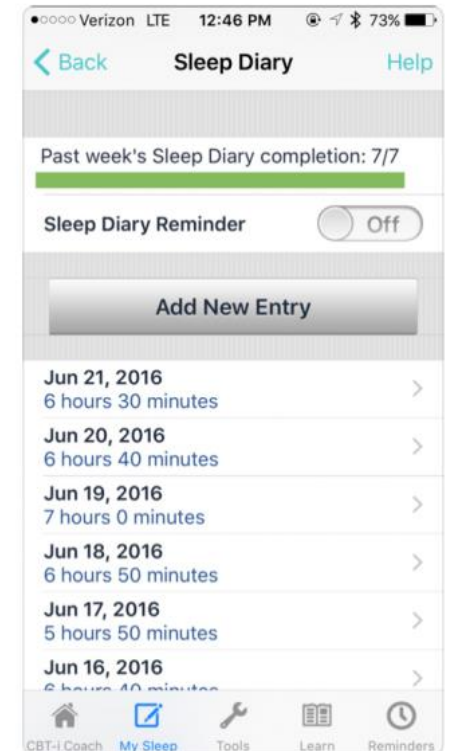
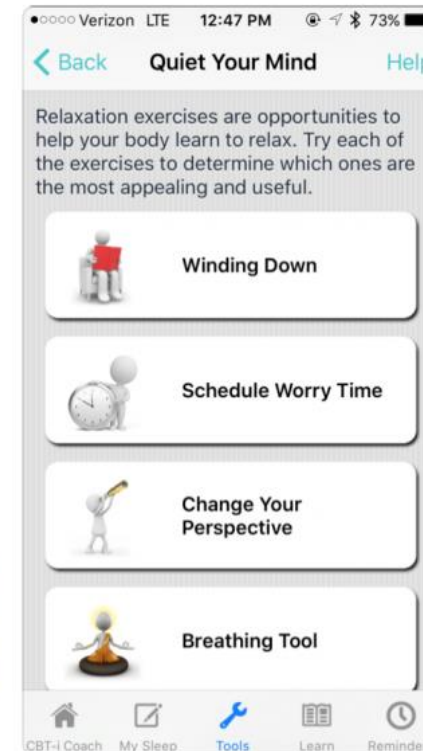
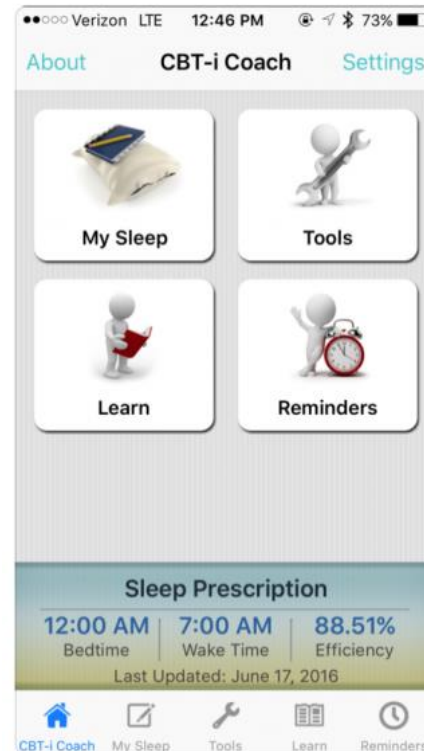
Overview of the sleep diary



Overview of the sleep efficiency

CBT-I Apps

- SHUTi (paid)
- Sleepio (paid)
- VA CBT-I Coach App (free to all)



Sleep for the Athletic Patient

GH release

Naps can be beneficial when done
right

College kids – “all nighters”

- Essays > Exams
- Performance decrease
- Injury risk increase
- Poor eating patterns

NFL + Sleep

East Coast NFL teams vs West Coast NFL teams

- For afternoon games, no difference in outcome (athletes performed similarly in a 1 p.m. vs. 4 p.m. game regardless of location).
- For evening games, East Coast teams consistently performed poorly on the West Coast (and did not beat the point spread)

Exercise is a nonphotic stimuli that can cause a “phase shift”

- 1hr of evening exercise elicited a 30 min later phase shift in peak melatonin

Tips for
Parents

Nightlights

Sleep
routines

Psychiatric Aspects of Sleep

Positive relationship with Bedtime

- Athletes – LeBron James/CALM app, Tom Brady/TB12

Stress about sleeping → Cortisol

Medications → Short term benefits;
Medium term for Depression/Anxiety/PTSD;
Long term no sustained benefits in majority.

SB 328 – CA Law

Must be implemented by 2022-2023
academic year

- Many school districts making the switch now

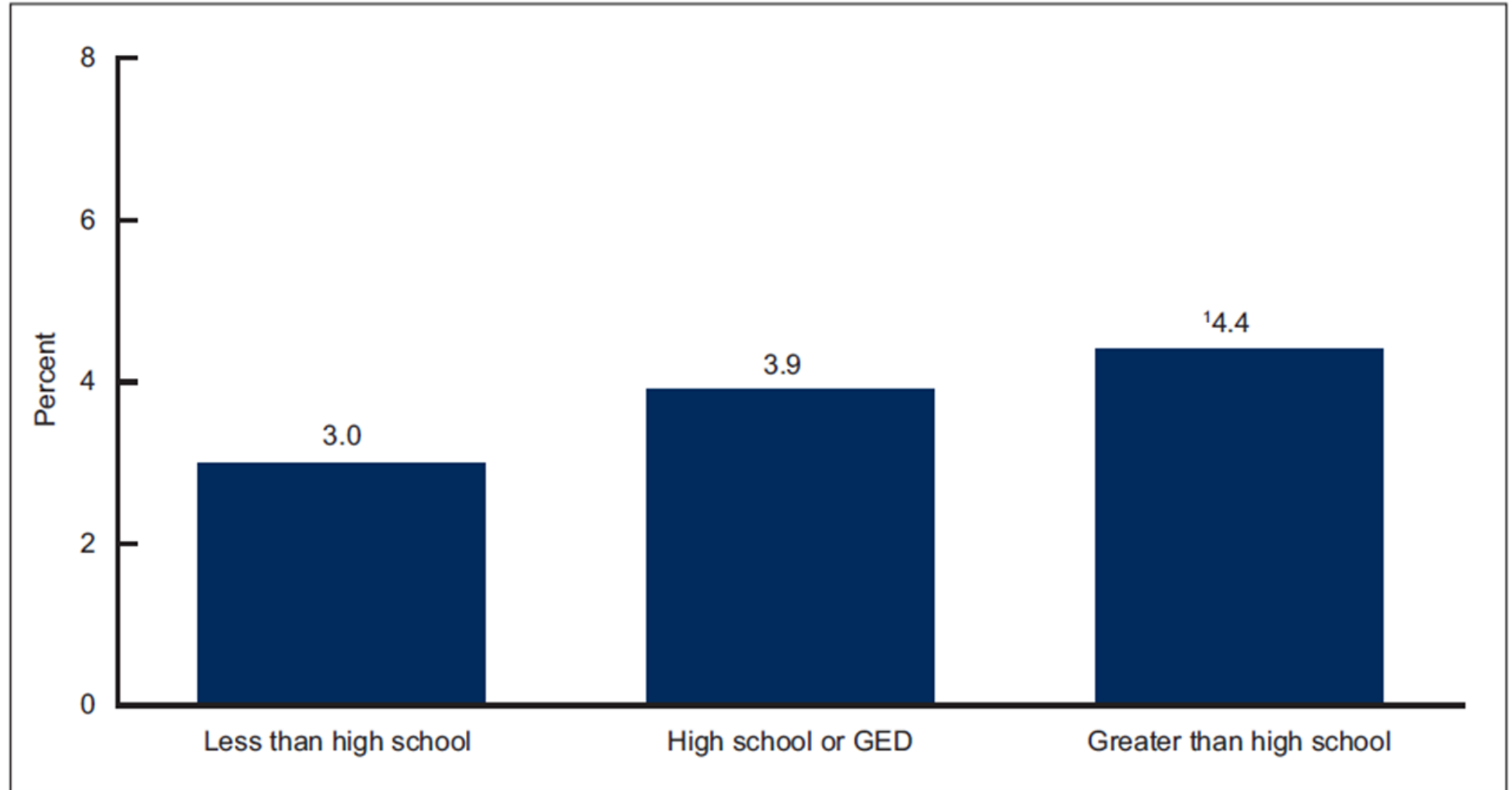
Middle Schools start no earlier than
8am

High Schools start no earlier than
830am

Loopholes – Zero Period / School
exemptions

Insomnia in Higher Education

Figure 3. Age-adjusted percentage of adults aged 20 and over who used prescription sleep aids in the past 30 days, by education: United States, 2005–2010



How Much Sleep Do You Need?

Recommended hours of sleep, based on age:

*Including naps



SOURCE: CDC/NIH

GRAPHIC BY ROBERT ROY BRITT