Cognitive-Behavioral Therapy for Insomnia: Treatment Basics and Updates

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Topics Covered

- Background on insomnia assessment and diagnosis
- CBT-I with existing anxiety and depression
- Is CBT-I the same as sleep hygiene?
- Nuts and bolts of CBT-I
- Mindfulness
- How well does CBT-I work?
- Resources
- How can I become an expert in CBT-I or find someone who is a CBT-I expert?

“If sleep does not serve an absolutely vital function, then it is the biggest mistake the evolutionary process ever made.”

—Allan Rechtschaffen, PhD

Why focus separately on insomnia?

Insomnia is a Big Problem

- 30% to 48% of Americans have some subthreshold insomnia symptoms
- 6% to 15% of Americans suffer from chronic insomnia
- Evidence that insomnia predicts problems with
  - Cognitive function
  - Psychomotor slowing
  - Motor vehicle accidents
  - Depressed mood
  - Increased risk for falls in older adults
  - Memory
  - Increased absenteeism at work
  - Poorer overall quality of life

High Cost of Insomnia

- An estimated $30 billion to $107 billion is spent on insomnia in the United States each year
- Insomnia is seen to create an estimated cost of $63.2 billion on the US economy due to decreased workplace productivity
- More than 50% of primary care patients experience insomnia
- 67% of patients with insomnia report a poor understanding of treatment options
  - 28% of insomnia patients use alcohol as a sedative
  - 23% use untested OTC treatments

OTC = over-the-counter.
We’re “On” 24/7

- Insomnia is the #1 health problem in Western societies
- We are constantly connected now, never shutting down and turning our brains and bodies off
- No more demarcation between day and night
- Becomes an endless cycle between a stressor, poor sleep, and increased stress

Insomnia and Depression

- Those with insomnia and a comorbid mental disorder represent the largest group of insomnia sufferers
  - Outnumbers “primary” insomnia 2:1
- 2/3 of those receiving treatment for depression also complain of significant insomnia
  - 1/3 of whom already take sedative hypnotics
- Insomnia is a risk factor for developing depression
- Increased risk of suicide and alcohol abuse/dependence in depressed patients with insomnia
- Insomnia worsens depression symptoms, and respond poorly to conventional depression treatments (CBT, IPT, pharmacotherapy)
- Depressed patients with insomnia experience more severe depression than those without insomnia
- Insomnia is often a prodromal symptom of depression or a relapse of depression as well as a manic episode

Insomnia and Anxiety

- Insomnia is a risk factor for developing an anxiety disorder
- Up to half of those who recover from depression, anxiety, and PTSD report residual insomnia
- Even 1 night of insomnia can exacerbate anxiety the next day
- Less research done on anxiety and insomnia – clinical/diagnostic bias?

Diagnostic Criteria

- A predominant complaint of dissatisfaction with sleep quality or quantity, associated with ≥ 1 of the following symptoms:
  - Difficulty initiating sleep (in children, this may manifest as difficulty maintaining sleep without caregiver intervention)
  - Difficulty maintaining sleep characterized by frequent awakenings or problems returning to sleep after awakenings (in children, this may manifest as difficulty returning to sleep without caregiver intervention)
    - The sleep disturbance causes clinically significant distress or impairment in functioning
    - Occurs at least 3 nights per week
    - Present for at least 3 months
    - Occurs despite adequate opportunity for sleep

DSM-5 Insomnia Diagnostic Criteria (continued)

- Insomnia is not better explained by and does not occur exclusively during the course of another sleep-wake disorder (eg, narcolepsy, SRBD, circadian rhythm disorder)
- The insomnia is not attributable to the physiological effects of a substance (eg, drug of abuse, medication)
- Coexisting mental disorders and medical conditions do not adequately explain the predominant complaint of insomnia
- Specify if: with nonsleep disorder mental comorbidity, with other medical comorbidity, with other sleep disorder
- Specify if: episodic (between 1 and 3 months), persistent (> 3 months), recurrent (≥ 2 episodes within the space of 1 year)

SRBD = sleep-related breathing disorder.

Etiology of Insomnia: The “Common Sense” Problem

Spielman’s 3-Factor Model

Primary, Secondary, Comorbid?

- Primary insomnia
- Secondary insomnia? Does it exist?
- Comorbid insomnia
  - Treatment is the same, chicken-or-egg issue
  - Newer DSM-5, ICSD-3 criteria have gotten rid of the primary vs secondary nosology

Why Treat Insomnia as a Comorbidity?

- Research is strongly in favor of this model, however, only really recognized over the past 15 or so years
- Treating insomnia and depression at the same time yields more favorable outcomes for both disorders
  - This is true regardless of the insomnia/depression treatments of choice (pharmacotherapy or CBT for insomnia)
- Take insomnia seriously, and sometimes just treating the insomnia alone can alleviate some of the comorbid issue (eg, pain, depression, anxiety) as 1 major stressor is eliminated
  - Better sleep leads to better coping mechanisms

Is CBT-I the Same as Sleep Hygiene?

NO!!!
Treatment Modules for CBT-I

• Assessment
• Sleep hygiene
• Stimulus control
• Sleep restriction
• Cognitive therapy
• Relaxation
• Light therapy
• Mindfulness

Pretreatment Assessment

• Though not standardized, most patients are mailed the following to fill out before first appointment
  • 2 weeks worth of sleep diaries
  • General sleep questionnaire
  • Epworth Sleepiness Scale (ESS)
  • Insomnia Severity Index (ISI) or Pittsburgh Sleep Quality Index (PSQI)
  
  – In addition to those measures, any of the following measures can be given
    • Dysfunctional Beliefs and Attitudes about Sleep Scale (DBAS)
    • 36-item Short Form Health Survey (SF-36)
    • Functional Outcomes of Sleep Questionnaire (FOSQ)
    • Anxiety and depression measures of your choice

Epworth Sleepiness Scale (ESS)

Situation | Chance of dozing
--- | ---
Sitting and reading | 0 = never doze, 1 = slight chance, 2 = moderate chance, 3= high chance.
Sitting, inactive in a public place (e.g., a theatre or a meeting) |
As a passenger in a car for an hour without a break |
Lying down to rest in the afternoon when circumstances permit |
Sitting and talking to someone |
Sitting quietly after a lunch without alcohol |
In a car, while stopped for a few minutes in the traffic |

Total...

0–10 total = normal, 10–12 borderline sleepiness, 13+ excessively sleepy.


Insomnia Severity Index (ISI)

<table>
<thead>
<tr>
<th>Insomnia Problem</th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Very Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insomnia severity</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Insomnia duration</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Insomnia frequency</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>


Sleep Diary Example

| Mon. 2/13/14 | Pain 1–2pm No Coffee | Zolpiem 10mg at noon 10pm 60 min. 2 60 min. 6:30 8:00 |

Consensus Sleep Diary

<table>
<thead>
<tr>
<th>THE CONSENSUS SLEEP DIARY</th>
<th>Standardizing Prospective Sleep Self-Monitoring</th>
</tr>
</thead>
</table>
Assessment

- Review of measures
- Nature of complaint, course, frequency, precipitants, ameliorating/exacerbating factors
- Sleep-wake schedule
- Bed partner reports
- Respiratory (snoring/apnea), motor (RLS/PLMD), behavioral disturbances, nocturnal panic, nightmares, headache, GERD, pain, parasomnias, nocturia, sweats
- Medical history
- Psychiatric evaluation

Things to Consider Before Starting

- Sleep apnea?
- Circadian rhythm disorder?
- Epilepsy?
- History of recent parasomnias?
- Bipolar disorder?
- RLS?
- PLMD?

Sleep Restriction

- Addresses the mismatch between sleep need and sleep opportunity
- Aims to improve sleep efficiency

Homeostatic Drive

Sleep Restriction: Key Terms

TST = total sleep time
TIB = time in bed
SOL = sleep onset latency
WASO = wake after sleep onset
NUMA = number of awakenings
SE = sleep efficiency

\[
\frac{\text{TST}}{\text{TIB}} \times 100 = \text{SE}%
\]

Sleep Restriction: Sleep Efficiency

Patient #1
Bedtime is 12 AM, SOL immediate, 0 NUMAs, WT 8 AM

\[
\begin{align*}
\text{TST (8 hours or 480 minutes)} & \quad \times 100 = 100\% \ \text{SE} \\
\text{TIB (8 hours or 480 minutes)} & \quad \times 100 = 75\% \ \text{SE}
\end{align*}
\]
**Sleep Restriction**

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**Sleep Restriction and Titration**

1. Use average TST over previous 2 weeks on sleep diary to restrict hours in bed = PTIB
2. Never restrict to less than 5 hours (6.5 hours in bipolar disorder)
3. Keep prescribed bed and wake times the same every single day
4. Review ways to stay awake until prescribed bedtime
5. Review ways to get up on time every day
6. Titrate sleep times based on sleep diary data using < 85%, 85% to 90%, > 90%

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**Modifications**

- Nothing standardized
- Ways to modify though are not standardized
- Modifications to sleep restriction
  - Sleep compression
  - Lower SE% threshold to 85%
  - 30/3 rule for patients who have trouble with calculating SE%

**How Can I Stay Up That Late?**

- Struggling to stay up to prescribed bedtime shows that the sleep drive system is doing its job
- Often can flip the question on the patient: “You were worried for so long about not being able to fall asleep. Now, you’re worried about how you can stay awake?”
- Work with patients to brainstorm ideas/activities that can be done at night to help stay awake until prescribed bedtime, keeping in mind you do not want activities that will interfere too strongly with falling asleep once it gets close to the prescribed time

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**Stimulus Control**

- The bed is only for sleep and sex
- If you are unable to sleep, get up, and go into another room
- Do something quiet, calm, and relaxing in dim light
- Do not fall asleep anywhere except in bed
- Do not watch the clock
- Go back to bed only when sleepy
- Always use an alarm in the morning set for the same time
- Stimulus control modifications: pain, dizziness, consider any sedating medications, risk of falls in older adults
Stimulus Control and Pavlov's Dogs

- Classical conditioning
  - Meat powder, bell, salivation

- Same goes for pairing awake activities with the bed
  - Pairing awake activities with the bed
  - “But doc, I’m so sleepy on the couch. The minute I get in bed my brain wakes up and I can’t sleep.”

Sleep Hygiene

- No caffeine within 8 hours of bedtime
- Avoid alcohol within 3 hours of bedtime
- Exercise regularly, but not too close to bedtime
  - Exercise in the late afternoon is ideal (4–6 hours before bedtime)
- Schedule quiet time before bed for 1 hour
- Avoid screen time within an hour of bed and during the night
- Bedroom should be quiet, dark, and cool
- Take a hot bath 1.5 to 2 hours before bed, not just before bed
- Try a light snack before bed, but no large meals within 3 hours of bedtime

Sleep Hygiene

- Eliminates sleep-incompatible behaviors
- Engages patient and promotes confidence
- Allows for optimal conditions for sleep

Cognitive Therapy

Evaluating Automatic Thoughts

- What is the evidence that this is true? Do I have any evidence it is not true?
- What is the worst thing that could happen?
  - Would I live through it?
  - Best outcome?
  - Most realistic outcome?
  - What would I tell a friend?
  - What is the effect of believing this thought?
  - What could be the effect of changing my thinking?
  - Any alternative way to view this situation?

Worry Time

<table>
<thead>
<tr>
<th>Concerns/Worries</th>
<th>Next Step Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I’m going to lose my job</td>
<td>1. I will get my resume in good shape tomorrow</td>
</tr>
<tr>
<td>2. I have no money</td>
<td>2. Working on my resume will help me towards getting a job</td>
</tr>
<tr>
<td>3. Mom in the hospital after heart attack, I don’t know what she will need from me when she is discharged</td>
<td>3. I’m doing all I can to help her right now. I will meet with her social worker to figure out planning for care at home, but there’s nothing I can accomplish right now besides going to the hospital and talking with her treatment team</td>
</tr>
</tbody>
</table>

Behavioral Experiments

- Great to do with insomnia
- Can incorporate to challenge beliefs about
  - Clock watching
  - Caffeine use
  - “I need my 8 hours”
  - Appearance
    - Be creative!
### Behavioral Experiment: Clock Watching

<table>
<thead>
<tr>
<th>Aim</th>
<th>The experiment</th>
<th>Predictions</th>
<th>What actually happened?</th>
<th>Outcome?</th>
</tr>
</thead>
<tbody>
<tr>
<td>To see if clock watching is helpful or not</td>
<td>3 nights without the clock, 3 nights with the clock</td>
<td>It might make me more stressed to know what time it is. It might be helpful not to see the time—less pressure on sleep</td>
<td>I didn’t worry as much about what time it was, therefore less pressure to sleep</td>
<td>Quieted my active brain. Whether I could maintain the strategy during a bad night is debatable</td>
</tr>
</tbody>
</table>


### Relaxation Strategies

- Designed to help reduce hyperarousal
- Multiple specific approaches
  - Progressive muscle relaxation
  - Autogenic training
  - Biofeedback
  - Hypnosis
  - Guided imagery
  - Meditation
  - Appear to be best suited for sleep onset problems


### Light Therapy

- Need a better understanding of circadian components that factor into insomnia
  - Possible implication for melatonin and bright light?
  - Strategically use bright light to help patients stay awake in evening hours to prescribed bed time
  - Make sure patients have been given the approval by eye doctor that exposure to bright light is not an issue
  - Bright light in the morning?
  - Nothing standardized when it comes to bright light


### Mindfulness

- Some patients find that they just cannot “turn off their brain” and instead are thinking about anything and everything in bed
- Even with core CBT-I, these patients cannot shift their focus towards relaxing and quieting down the brain/body. Instead thoughts turn to daytime consequences, sleep threats, hours until have to get up
- Teaching some patients cognitive therapy only serves to create more frustration and wakefulness


### A Mindfulness-Based Approach to the Treatment of Insomnia

Jason Ong and David Sholtes
Rush University Medical Center

Mindfulness meditation has emerged as a novel approach to emotion regulation and stress reduction that has several health benefits. Preliminary work has been conducted on mindfulness-based therapy for insomnia (MBT-I), a meditation-based program for individuals suffering from chronic sleep disturbance. This treatment integrates behavioral treatments for insomnia with the principles and practices of mindfulness meditation. A case illustration of a chronic insomnia sufferer demonstrates the application of mindfulness principles for developing adaptive ways of working with the nocturnal symptoms and waking consequences of chronic insomnia. © 2010 Wiley Periodicals, Inc. J Clin Psychol. In Session 66(11):1175-1184, 2010.

### MBT-I

- Developed by Jason Ong
- Uses basic behavioral strategies of CBT-I
  - Stimulus control
  - Sleep hygiene
  - Sleep restriction
- Also incorporates mindfulness meditation practice into every session and for homework

MBT-I = mindfulness-based therapy for insomnia.
MBT-I

- Helps focus insomnia patients on the present moment, having awareness without judgment
- With this, focus on the breath, relaxation are easier to achieve without engaging in noisy thoughts
- Jason Ong’s group was first to incorporate it in 2010 but now being used as a basic component in group CBT-I at the VA and Cleveland Clinic

Behavioral, Cognitive, or Combined?

- Combined behavior therapy plus cognitive therapy for insomnia is ideal, as opposed to monotherapy. More rapid response from behavior therapy over cognitive, but it is clear that combination of behavioral and cognitive strategies for insomnia is most effective


Maintenance and Relapse Prevention

- 1 or 2 nights does not mean relapse
- After 3 nights of poor sleep, take out a sleep diary and start tracking
- After a week of poor sleep, consider “restrict and control” if insomnia appears to have returned
- Do not compensate for a bad night
- Do not lay in bed awake

How to Implement CBT-I

- CBT-I done in as few as 4 sessions, as many as 12
- Brief, 1- or 2-session treatments have been found effective (Brief Behavioral Treatment for Insomnia [BBTI])
- Currently, though, 4 to 8 sessions is most common in uncomplicated cases
- Can be offered in both individual and group formats
- Can be offered in primary care
- Telephone- and web-based models also quite effective
- Can also easily bed one as an adjunctive treatment if someone is already in psychotherapy elsewhere

Where to Start?

- If patient has comorbid issue but time is limited, consider starting with a time-limited course of CBT-I
- If possible, longer sessions or 2 sessions a week to work on adjunctive problems plus insomnia for the first few weeks is ideal
- Self-help books are often helpful at the start or to further solidify gains once CBT-I has been introduced and you have moved to other issues such as depression
- Web therapy is helpful for many, especially those with recent onset of insomnia and without significant complications/comorbidities
What if a Patient is Already on Sleep Medication?

- Always consult with prescribing physician
- Different medications, different strategies
  - OTC vs prescribed medications
  - No standardized protocol for this: treatment manuals say to be off medication at start, but this typically is not practical
  - Assess how the patient is doing on the medications, motivation levels, who is initiating the medication taper
  - Consider medication timing/dosage when changing sleep patterns with sleep restriction, as well as stimulus control

CBT-I: It Works

The Gold Standard

- CBT-I is efficacious, effective, and as efficacious as sedative hypnotics during initial treatment (4–8 weeks)
- CBT-I is more efficacious than sedative hypnotics in the long term
- CBT-I is considered the “gold standard” treatment for insomnia by the American Academy of Sleep Medicine

Efficacy: The Classic Studies


- CBT-I produces significant improvement, with sleep restriction and stimulus control having the most impact
- Treatment effects are maintained over follow-up periods ranging from 3 weeks to 3 years

Effect Sizes Pre-to-Post with CBT-I


- Many, many effectiveness studies now
- CBT-I has been demonstrated to work in the real world and is considered to be the “gold standard” treatment of insomnia in the sleep field
A Recent Meta-Analysis

- Meta-analysis of comorbid insomnia with medical and/or psychiatric disorders in studies from 1965–2014, using rigorous criteria
- 23 studies including 1379 patients met inclusion criteria
- CBT-I improved subjective sleep quality post-treatment, with large treatment effects for the ISI and PSQI
- Sleep diaries showed
  - 20-minute reduction in sleep onset latency and wake after sleep onset
  - 17-minute improvement in total sleep time
  - 9% improvement in sleep efficiency post-treatment, similar to findings of meta-analyses of CBT-I in older adults
- CBT-I is an effective, long-lasting treatment for comorbid insomnia, with effects lasting as long as 18 months

CBT-I with Comorbid Issues

- CBT-I has been shown to be effective in treating insomnia in various comorbid conditions
- Having a medical or psychiatric comorbidity does not necessarily interfere with CBT-I results
  - Cancer: (Cannici et al (1983); Stam et al (1986); Savard et al (2005); Quaresmi et al (2003))

CBT-I vs Pharmacotherapy

- Common belief that sedative hypnotics are better than CBT-I
  - Is this actually true?
  - Each model has strengths/weaknesses
    - Hypnotics: rapid response, long-term treatment concerns
    - CBT-I: slow response, some drop-outs, longer-term durability effects
  - Combining zolpidem with CBT-I from the outset leads to significant gains after 1 week (when compared with CBT-I alone), however, the results at end-of-treatment week 6 were not different between the 2 groups (combined or monotherapy) (Morin CM, et al. Sleep Med. 2014;15(6):701-707.

Comparisons of Efficacy

- Pharmacotherapy is seen to lead to modest improvements in TST, whereas CBT-I leads to improvements in SL (Smith MT, et al. Am J Psychiatry. 2002;159(9):1391-1392)

CBT-I. It Works, So Let's Use It
**ACP Recommendations**

- **Recommendation 1:** ACP recommends that all adult patients receive CBT-I as the initial treatment for chronic insomnia disorder
  - Grade: strong recommendation, moderate-quality evidence
- **Recommendation 2:** ACP recommends that clinicians use a shared decision-making approach, including a discussion of the benefits, harms, and costs of short-term use of medications, to decide whether to add pharmacological therapy in adults with chronic insomnia disorder in whom CBT-I alone was unsuccessful.
  - Grade: weak recommendation, low-quality evidence

**Resources for Clinicians**


**Resources for Patients**

- Cleveland Clinic “Go To Sleep!” Web Therapy Program
- Shut-I Web Therapy Program

**Practical Take-Aways**

- Insomnia is extremely prevalent and should always be assessed when you are completing a thorough intake evaluation
  - Adding 2 simple questions to your basic intake evaluation will shed light on often missed diagnoses of insomnia and apnea: “Do you have any trouble sleeping?” and “Do you snore?”
- Do not ignore insomnia if a patient reports it, solely treating other disorders first will often lead to longer treatment response rates and quicker relapses after improvement
- Insomnia should instead be considered “comorbid” and not “secondary to” something else
- CBT-I is a highly efficacious, effective treatment and is considered the “gold standard” treatment for insomnia
  - Although not fully standardized yet through research, adding in mindfulness components to basic CBT-I can be quite helpful for your patients