The ABCs of CBT for Insomnia: A Brief Review of Cognitive-Behavioral Interventions for the Treatment of Insomnia

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Goals of Presentation

- Provide a brief overview of normal sleep
- Describe insomnia, prevalence, and impact
- Explain model of development of insomnia that serves as basis for cognitive-behavioral therapy for insomnia (CBT-I)
- Describe major elements of CBT-I
off the mark

by Mark Parisi

THE SANDMAN DEALS WITH A PARTICULARLY TOUGH CASE OF INSOMNIA.
What is “normal” sleep

- Total sleep need varies from one person to the next.
- Most of us need between 7-9 hours of sleep per night.
- Normal sleep should make us feel relatively rested.
- As we age our sleep becomes lighter.
Ascending Reticular Activating system promotes and maintains wakefulness via excitatory activities of certain neurotransmitters.

Neurotransmitter gamma aminobutyric acid GABA) from brain stem and basal forebrain inhibits activating system resulting in sleep.
Sleep States, Stages and Cycles

2 Sleep States: REM and Non-REM

4 Sleep Stages: Stage N1, N2, N3 and REM

4-6 Sleep Cycles per night: Each 90-120 minutes
Normal sleep in young adult

Why we feel Sleepy?  **Two Processes**

- Two processes combined determine sleep propensity and the duration of sleep

  - **Homeostatic sleep drive:**
    - Process driven by amount of time awake
    - Linear and cumulative—one gets progressively more tired with each passing hour ("sleep load" increases)

  - **Circadian rhythm:**
    - Process driven by biological clock (time of day)
    - Cyclical—periods of sleepiness occur at roughly the same times each day
The physiological pressure to sleep progresses linearly.

The biological pressure to sleep occurs cyclically.

University of Virginia Center for Biological Timing.
Available at: http://www.cbt.virginia.edu/tutorial/HUMAN_CLOCK.html.
What is Insomnia?

Definition:

- Complaint of inadequate or insufficient sleep
  - Difficulty initiating sleep (30+ minutes to fall asleep)
  - Frequent awakenings from sleep (multiple & lengthy)
  - Short sleep time
  - Complaint of non-restorative sleep
  - 1 month or greater duration

- Complaint of daytime consequences such as fatigue or impairment in social, occupational or other areas of functioning.
Classification of insomnia

- **Primary Insomnia** - complaint not thought to be due to effects of another psychiatric condition, medical factor, medication, or sleep disorder.
  - Psychophysiologic insomnia
  - Sleep state misperception (paradoxical insomnia)
  - Idiopathic insomnia
  - 12-15% of patients seeking treatment at sleep disorder centers
Classification of insomnia

- Secondary insomnia
  - Presumed to be the direct consequence of another condition:
    - Psychiatric condition
    - Medical condition
    - Medication
    - Other sleep disorder
    - Situational or other extrinsic factors
Problems with classification

- Treatment or resolution of “primary” condition presumed to cause secondary insomnia does not reliably “cure” insomnia.
- CBT (Cognitive Behavioral Treatment) for insomnia, once thought to be effective only in Primary Insomnia, is proving to be clinically effective in individuals with comorbid conditions.
- Secondary insomnia ➤➤ Comorbid insomnia.
Insomnia and Hyperarousal

- Insomnia considered by many to be, at least in part, a disorder of hyperarousal
  - Increased heart rate
  - Faster brain wave activity
  - Higher core body temperature
  - Elevated cortisol levels
Impact of Insomnia

- 40-70 million Americans affected by intermittent or chronic insomnia
- Chronic Insomnia estimated to be between 9-12%
- 5-25% of persons with insomnia seek treatment
- 75% of insomnia is treated by primary physicians
- Increased health care utilization
- Increased work absenteeism
- Predictor of depression
Impact of Insomnia

Who’s at risk?

- Medical and Psychiatric Patients
- Shift Workers
- Women
- Older individuals
Four Factor Model of Insomnia

- Predisposing factors
  - Increased arousal level
  - Medical and mental health factors

- Precipitating factors
  - life stress
  - trauma

- Perpetuating factors
  - sleep hygiene issues
  - excessive time in bed
  - incompatible non-sleep related behavior in bed
  - cognitive arousal, worry about sleep, sleep effort

- Conditioned arousal – “classical conditioning”
Cognitive-Behavioral Treatment of Insomnia

4 FACTOR MODEL

Predisposing
Precipitating
Perpetuating
Conditioned arousal

Threshold

Target for CBT Tx of insomnia

Pre-morbid Acute Early Chronic Acute Tx +Response

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Why CBT for Insomnia?

- Most extensive review of chronic insomnia management (Buscemi, et al. (2005) indicates benefits of benzodiazepines agonists inflated and offset by potential harm.
- Meta-analysis of hypnotic use (Glass, J, et al. (2005) concludes that modest benefits outweighed by risk of harm in older adults.
- Recent studies comparing cognitive-behavioral treatments with sleep medication show behavioral treatments of equal or greater effectiveness and with sustained improvement at 12 and 18 months.
- Sleeping pills present risk for drug dependent insomnia
Drug dependent insomnia

**Figure 11.1.** The vicious cycle of drug-dependent insomnia.
Meta-Analysis of CBT-I Results

**Statistical Significance**
- SOL reduced 65 ➔ 35 min.
- WASO reduced 70 ➔ 30 min.
- Awakenings reduced 2 ➔ 1
- TST increased from 6 to 6.5 hours

**Clinical Significance**
- Subjective rating of improved sleep quality.
- 50% improvement in target symptoms
- SOL and WASO (35) close to defined cutoff score
- Sleep efficiency improved
- Reduced hypnotic use
Why Aren’t Behavioral Techniques Used more frequently?

- Lack of physician awareness
- Techniques are time intensive
- Difficulty with reimbursement issues
- Lack of skilled behavioral clinicians
- Limited research on behavioral techniques – why they work and what combination of strategies optimize effectiveness
I wonder how long it takes for this natural sleep remedy to kick in?
Types of Cognitive-Behavioral Therapy for Insomnia

- Stimulus control
- Sleep restriction
- Cognitive therapy
- Relaxation training
- Sleep hygiene
- Multimodal Cognitive-behavioral therapy for insomnia combines elements of above strategies
The sleep log as key tool for self-monitoring and treatment

| Name: ____________________________ |

**COMPLETE IMMEDIATELY PRIOR TO BED ABOUT YOUR DAY:**

<table>
<thead>
<tr>
<th>Day and Date</th>
<th>9/19</th>
<th>Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was this a typical day?</td>
<td>Y/N</td>
<td>Y</td>
</tr>
<tr>
<td>What was your level of stress?</td>
<td>None 1----2---3---4---5 A lot</td>
<td>2</td>
</tr>
<tr>
<td>How was your mood?</td>
<td>Bad 1--2--3--4--5 Good</td>
<td>3</td>
</tr>
<tr>
<td>How alert did you feel?</td>
<td>Not Very 1--2--3--4--5 Very</td>
<td>4</td>
</tr>
<tr>
<td>What was you level of fatigue?</td>
<td>None 1--2--3--4--5 Very</td>
<td>2</td>
</tr>
<tr>
<td>Pain you experienced today:</td>
<td>None 1--2--3--4--5 A lot</td>
<td>1</td>
</tr>
<tr>
<td>List other significant health events:</td>
<td>(E.g. menstruation)</td>
<td></td>
</tr>
<tr>
<td>Time you spent exercising today:</td>
<td>Minutes</td>
<td>20</td>
</tr>
<tr>
<td>Number of alcoholic beverages:</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>List naps you took:</td>
<td>Start and end times</td>
<td>1:30-2:30</td>
</tr>
<tr>
<td>What time did you go to bed?</td>
<td>Clock time</td>
<td>11:00</td>
</tr>
</tbody>
</table>

**COMPLETE IMMEDIATELY AFTER YOU GET UP**

| What time did you get out of bed? | Clock time | 6:00 |
| About how long did it take you to fall asleep? | Minutes | 30 |
| How many times did you awaken after you fell asleep? | | 3 |
| About how much time were you awake after you fell asleep? | Minutes | 65 |
| About how much sleep did you get last night | Hours | 5 3/4 |
| List any over the counter or prescription sleep medications you took last night: | Sleep Aid |
| What was the quality of your sleep? | Poor 1--2--3--4--5 Very good | 3 |
| How did you feel when you got up? | Not rested 1--2--3--4--5 Very Rested | 2 |

**FOR CLINIC USE:**

1^SOL: 2^WASO: 3^TST: 4^SE: 5^SQI: P M C

Developed by Michael Schmitz, Psy.D, LP, CBSM. For clinical use only.
Teaching clients how to keep track of their sleep

- Bedtime
- Time it takes you to fall asleep
- Nighttime awakenings
- Time you are awake during the night after you fall asleep
- Time you got out of bed.
- Naps
- Remind clients that all data is a “guesstimate”
Stimulus Control Therapy

- **Assumption**: Bed space becomes associated with sleep incompatible behaviors and experience as individual tries to decrease physical and cognitive arousal associated with sleep effort.

- **Goal**: Re-associate bedroom with sleep. May influence homeostatic and circadian sleep mechanisms.

- **Findings**: Positive results for all sleep parameters. Considered by the American Academy of sleep medicine to be the first-line behavioral treatment for chronic insomnia.
Stimulus Control Therapy

- **Technique:**
  1. Go to bed only when sleepy
  2. Use bedroom only for sleep and sex.
  3. Get out of bed if awake for more than 15-10 minutes and go to another room.
  4. Return to bed when sleepy. Repeat steps 3 and 4 as often as necessary.
  5. Maintain consistent wake time
  6. Avoid napping
Stimulus Control Treatment Challenges

- Finding the best wake time.
- Method alone does not specifically address the effect that maladaptive beliefs and cognitions may have on arousal, anxiety, and maintenance of wakefulness.
- Individuals with mobility and pain issues may find instructions difficult to follow.
Sleep Restriction Therapy

- **Assumption**: Individual spends excessive time in bed in an effort to cope with sleep loss and obtain more sleep. This may affect the homeostatic drive mechanism of sleep.

- **Goal**: Promote mild sleep deprivation, increase homeostatic pressure for sleep.

- **Findings**: Good results for most sleep parameters. Used in most multiple component CBT therapies.
Sleep Restriction Therapy

- **Technique:**
  - Cut time in bed (TIB) to amount of time sleeping.
  - Increase TIB when sleep efficiency is >90%. Sleep efficiency is one’s total sleep time divided by time spent in bed.
  - Decrease TIB when sleep efficiency is <85%
  - Keep hours same with sleep efficiency 85%--90%
  - Adjust schedule weekly until optimum duration of sleep achieved.
Relaxation Therapy

- **Assumption**: High levels of somatic and cognitive arousal prevent sleep initiation and maintenance.

- **Goal**: Reduce arousal with specific techniques

- **Findings**: Most demonstrate significant improvements in reducing problems with sleep initiation. May be less effective than stimulus control
Relaxation Therapy

- **Techniques:**
  - Somatic Arousal
    - PMR - tensing and relaxing muscle groups
    - Biofeedback - audio or visual feedback
    - Deep Breathing
  - Cognitive Arousal
    - Imagery
    - Thought Stopping
Sleep Hygiene Instruction

- **Assumption:** Poor sleepers have worse sleep habits than good sleepers.
- **Goal:** Improve environmental factors and health behaviors
- **Findings:** Limited benefits used alone. Used in conjunction with other behavioral therapies in most CBT protocols.

Method used most in primary care. Often mistakenly assumed by health care practitioners to be the core of CBT for insomnia.
Healthy Sleep Habits

- Avoid alcohol, nicotine, caffeine, chocolate
  - For 4-6 hours before bedtime
- Cut down on non-sleeping time in bed
  - Bed only for sleep and satisfying sex
- Avoid trying to sleep
  - You can’t make yourself sleep, but you can set the stage for sleep to occur naturally
- Avoid a visible bedroom clock with a lighted dial
  - Don’t let yourself repeatedly check the time!
  - Can turn the clock around or put it under the bed
Health Sleep Habits (cont.)

- Establish a regular sleep schedule
  - Get up at the same time 7 days a week
  - Go to bed at the same time each night
  - Exercise every day - exercise improves sleep!

- Establish a relaxing routine before bed

- Deal with your worries before bedtime
  - Plan for the next day before bedtime
  - Set a worry time earlier in the evening

- Adjust the bedroom environment
  - Sleep is better in a cool room, around 65 F.
  - Darker is better
Cognitive therapy

- **Assumption:** Maladaptive thoughts produce stress and arousal affecting sleep

- **Goal:** Alter faulty beliefs about sleep to reduce emotional distress.
  - Identify beliefs about sleep that are incorrect
  - Challenge their truthfulness
  - Substitute realistic thoughts
Maladaptive beliefs about sleep

- Misconceptions about causes of insomnia
  - “Insomnia is a normal part of aging.”

- Unrealistic expectations re: sleep needs
  - “I must have 8 hours of sleep each night.”

- Faulty beliefs about insomnia consequences
  - “Insomnia can make me sick or cause a mental breakdown.”

- Misattributions of daytime impairments
  - “I’ve had a bad day because of my insomnia.”
  - I can’t have a normal day after a sleepless night.”
Multi-Component CBT for Insomnia

- **Assumption**: Perpetuating factors and conditioned arousal increase psychophysiological arousal and negatively affect intrinsic sleep promoting processes.

- **Goal**: Identify primary factors contributing to maintenance of insomnia and apply appropriate cognitive-behavioral components to reduce arousal and emotional distress about sleep while promote behaviors that are sleep compatible.

- **Findings**: Trend is toward multi-component CBT for insomnia and compares positively to trials with several sleep medications.
Individualizing CBT-I

- Assess the relative impact of sleep hygiene, sleep schedule, sleep anxiety (beliefs) and other factors on sleep.

- Assess motivation for behavior change:
  Does the individual expect a “quick fix” or appreciate improvement in sleep will take time and effort?
  Does he/she view insomnia as an intrinsic disease or primary as the result of behavioral factors and conditioning?

- Appreciate and explore the often multiple and frustrating efforts to treat insomnia. Discuss how this may serve to maintain insomnia
Individualizing CBT-I

- Provide general information about sleep and sleep hygiene.
- Explain developmental model of insomnia, elements of treatment and efficacy.
- Discuss sleep log, self-monitoring.
- Explore challenges and barriers to implementing treatment. Negotiate about specific behavioral change.
- Initiate stimulus control, usually combined with sleep restriction.
- Weave cognitive therapy into course of treatment by having client identify and challenge unhelpful beliefs about insomnia.
- Relaxation training is usually adjunctive and often combined with strategies to reduce tension and stress throughout the day.
Other Considerations

- Core body temperature and sleep
  - Very hot bath (~15-30 min. Duration) 1 1/2 hour before bedtime may improve ability to maintain sleep, increase SWS
  - Turn down thermostat, no electric blankets

- Effects of light on sleep
  - Early morning bright light will advance the circadian clock *i.e.* make you sleepy earlier
  - Late afternoon bright light will delay your body clock *i.e.* make you sleepy later
  - Wear dark glasses to minimize light to retina if your body clock is already shifted
  - Avoid bright light at night, use incandescent light with the lowest wattage possible.