

Insomnia and PTSD

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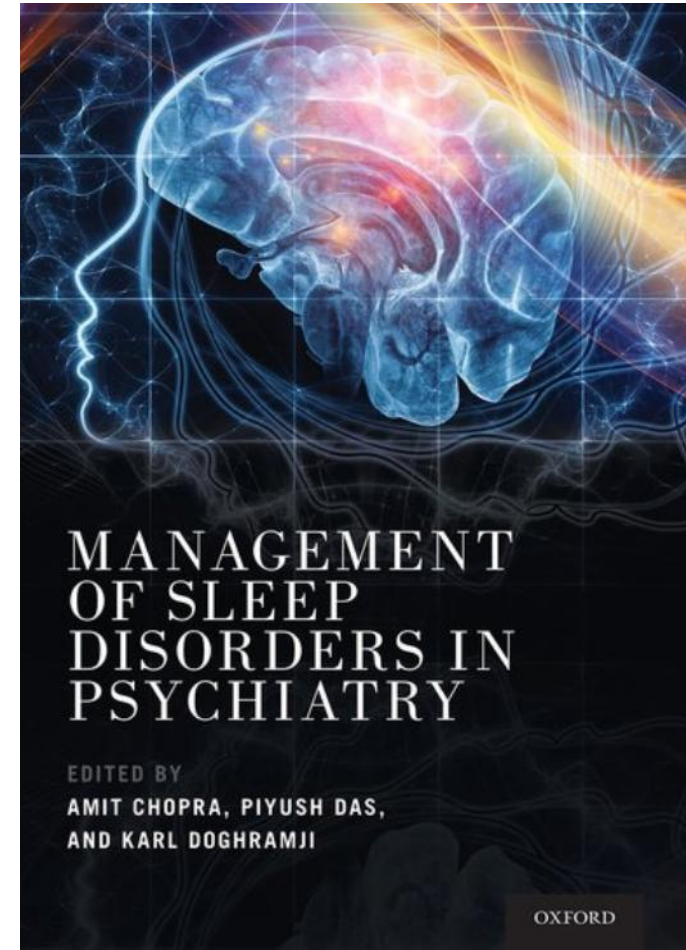
Assistant Professor, Harvard Medical School

Disclosures

Speaker: Psychopharmacology
Institute

Royalties: Oxford University
Press 'Management of Sleep
Disorders in Psychiatry'

Founder: 'Zen Minds'



Objectives

- Describe the comorbidity of Insomnia and its impact on clinical outcomes in PTSD
- Summarize sleep architectural changes associated with PTSD
- Review the clinical management of Insomnia in patients with PTSD

Insomnia Disorder

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.
Based on reference 4.

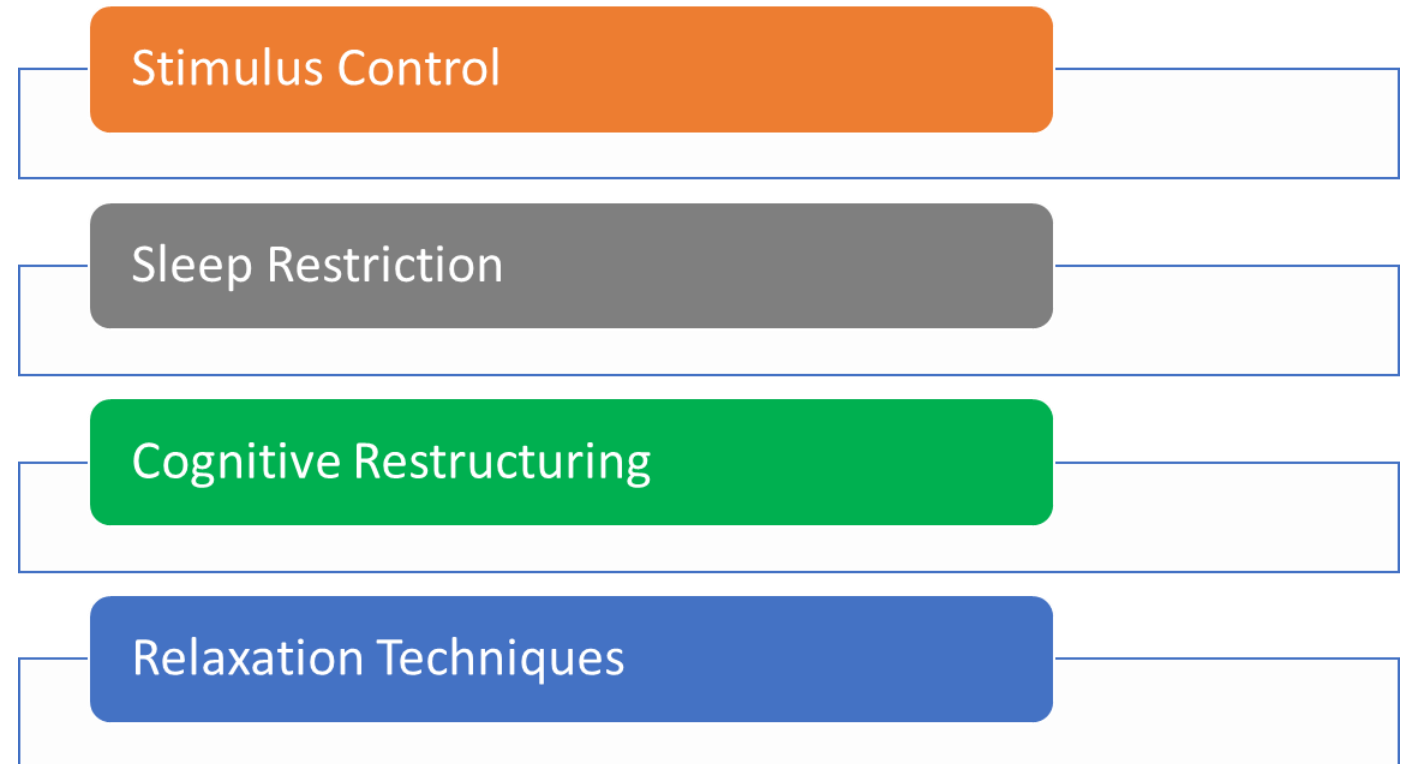
Epidemiology and Risk Factors

- Prevalence of insomnia disorder is approximately 10%
 - Approximately 50% of patients have a chronic course
- Risk factors
 - Female sex
 - Older age
 - Lower socioeconomic status
 - Marital status (higher risk in divorced/separated individuals)
 - Race (greater risk in African Americans)
 - Family history
 - Medical comorbidity
 - Comorbid psychiatric disorders

ICSD-3

CBT for Insomnia (CBT-I)

CBT-I is the first-line treatment for the management of insomnia



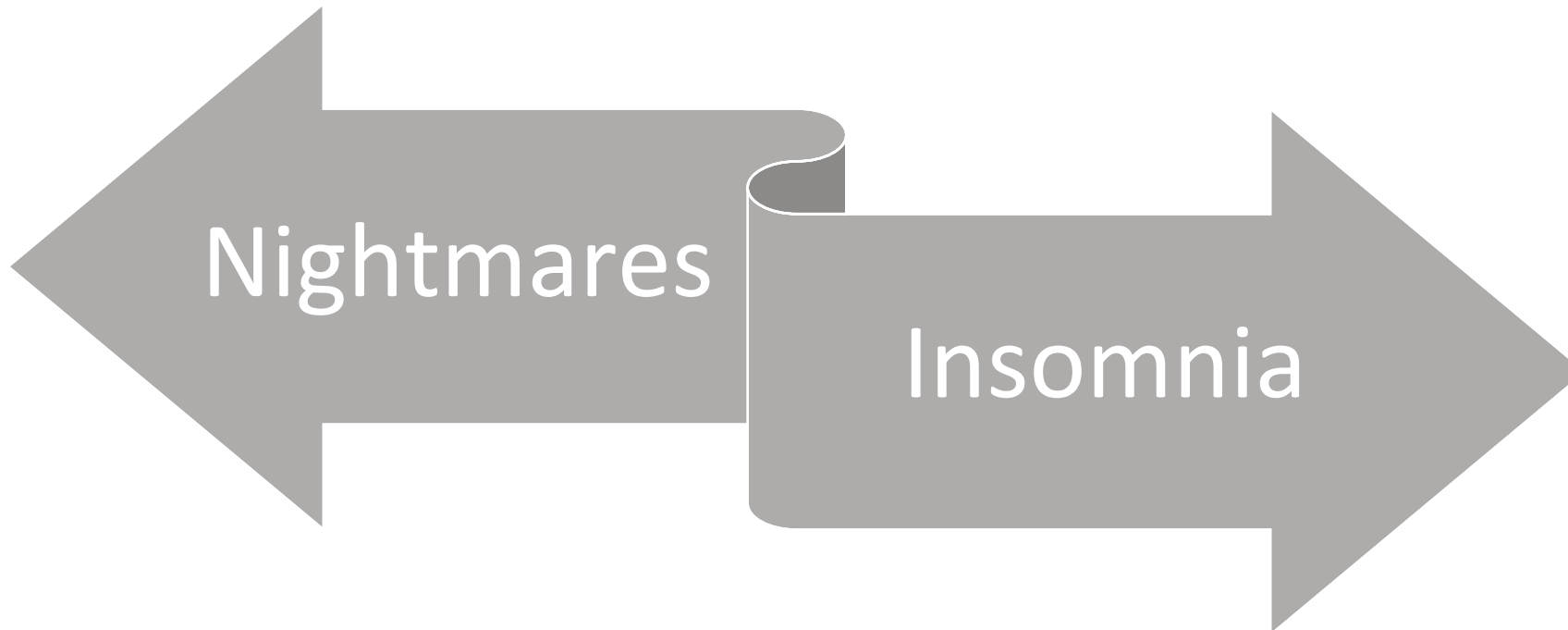
Edinger et al., 2021

PTSD Diagnostic Criteria

- Exposure to trauma
- Distressing re-experiencing of traumatic memory
- Avoidance of cues associated with the traumatic event
- Alterations in cognition and mood
- Hyperarousal symptoms

PTSD Diagnostic Criteria

Disrupted sleep is a core component of PTSD



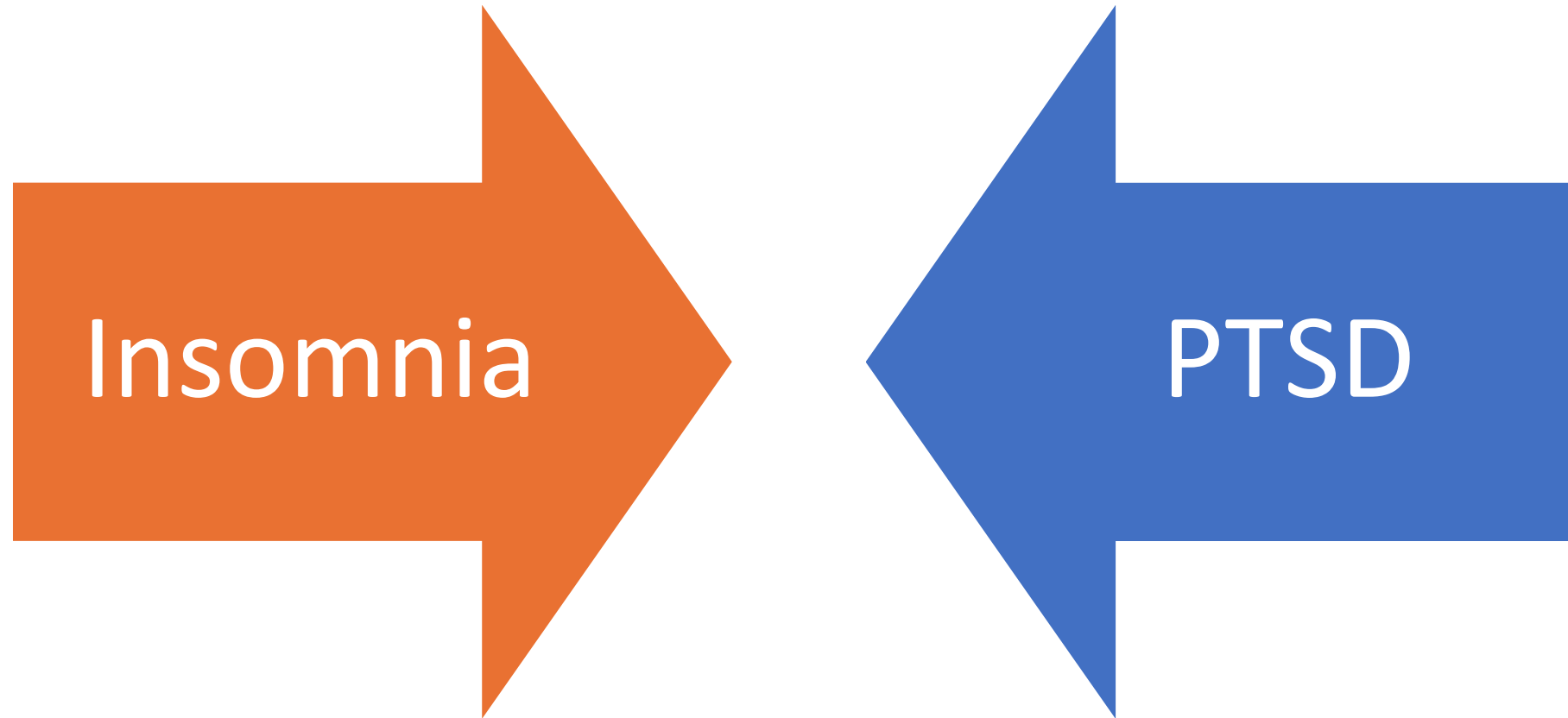
Germaine et al., 2008; Delage et al., 2024

Prevalence

80-90 %

Koffel et al., 2016; Colvonen et al., 2020

Bidirectionality



Gehrman et al., 2013, Wright et al., 2011, Slavish et al. 2022

INS vs INS+PTSD

- Fear of sleep
- Fear of dark
- Thoughts of trauma while lying in bed
- Restless sleep
- Sleep talking
- Yelling and shouting during sleep
- Waking up from a frightening dream and finding it hard to return to sleep
- Waking up confused and disorientated

Inman, Silver, & Doghramji, 1990

Clinical Impact of INS+PTSD

Increased PTSD symptom severity

Increased risk of comorbid psychiatric disorders

Increased risk of comorbid medical disorders

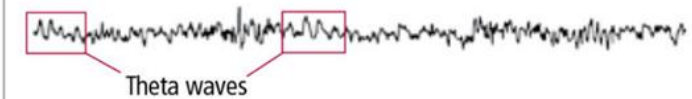
Poor functioning and clinical outcomes (Increased SI)

Nappi et al, 2012

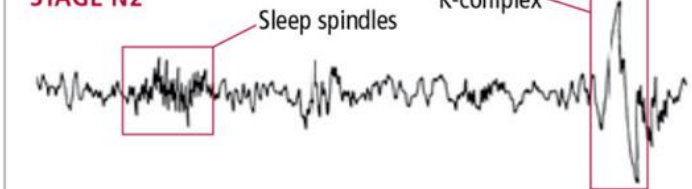
Sleep Architecture

Sleep Stage	Characteristic Features
N1	❖ causing awakenings or arousals is easy ❖ the occurrence of slow eye movements ❖ brain wave activity begins to slow ❖ theta activity (4–8 Hz, 50–100 μV) is typical in EEG ❖ the presence of abrupt muscle spasms or hypnic jerks
N2	❖ causing awakenings or arousals becomes harder ❖ the slow eye movements discontinue ❖ brain waves continue to slow with specific sleep structures: sleep spindles and K-complexes ❖ body temperature decreases ❖ heart rate begins to slow
N3	❖ awakenings or arousals are rare ❖ the presence of delta waves (1–4 Hz, 100–200 μV) ❖ the most restorative stage of sleep ❖ the occurrence of parasomnias
REM	❖ awakenings and arousals can occur more easily ❖ brain waves are more active (15–30 Hz, < 50 μV) ❖ eye movements are rapid, moving from side to side ❖ the occurrence of hypotonia of skeletal muscle ❖ the presence of instability of pulse and respiratory rate

STAGE N1



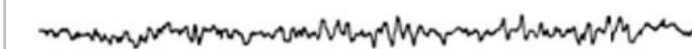
STAGE N2



STAGE N3 or DEEP SLEEP



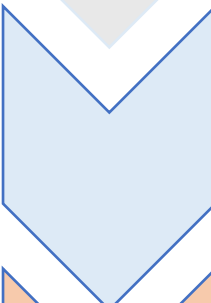
REM or DREAMING SLEEP



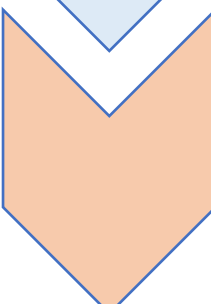
Sleep and Emotional Processing



- Memory Consolidation



- Emotional Regulation



- Fear Extinction

Pace-Schott et al., 2015

PTSD and Sleep Architecture



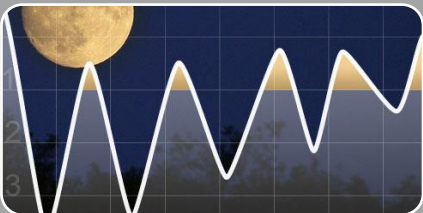
Parameters of Sleep Continuity

- Increased sleep onset latency (SOL) and wake after sleep onset (WASO)
- Decreased sleep efficiency (SE)



Parameters of Sleep Depth

- Decrease in slow wave sleep (SWS)

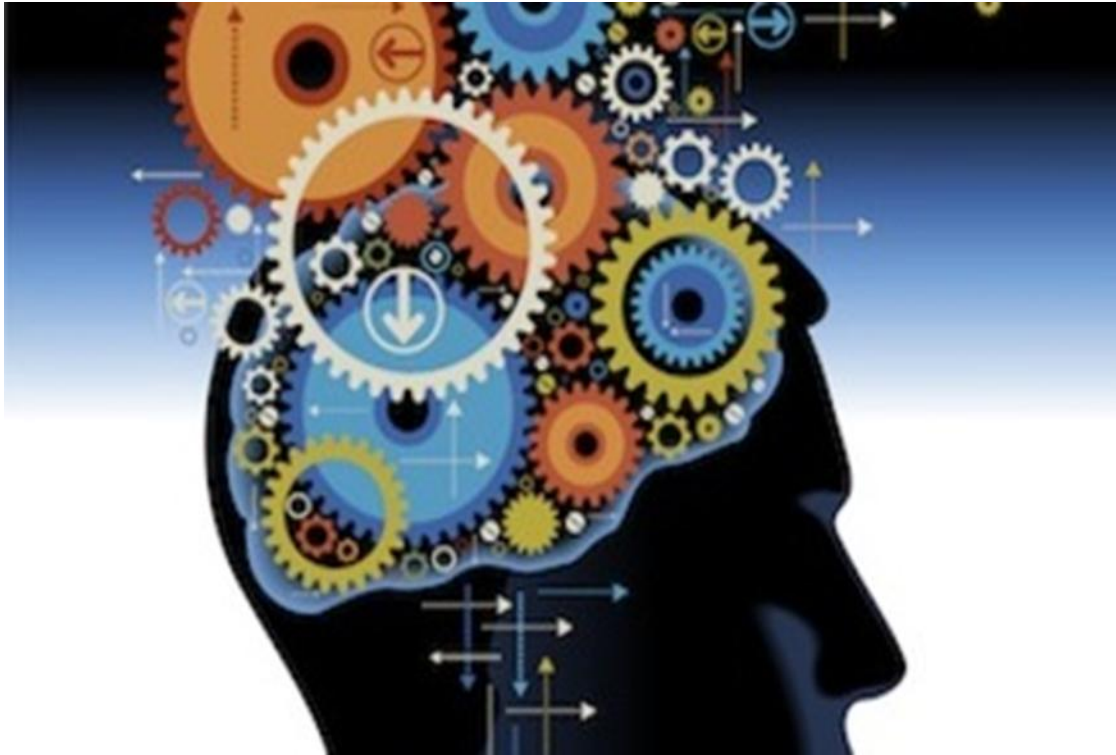


Parameters of REM Sleep

- Fragmented REM Sleep; increased REM density
- Increased transitions from REM sleep to stage 1 or awake state

Weber and Wetter.,
2022

Clinical Approach for INS+PTSD



Screen for sleep-related factors
and comorbidities associated with
PTSD

Sleep Disorder Comorbidity

Primary sleep disorders
are frequently comorbid
with PTSD



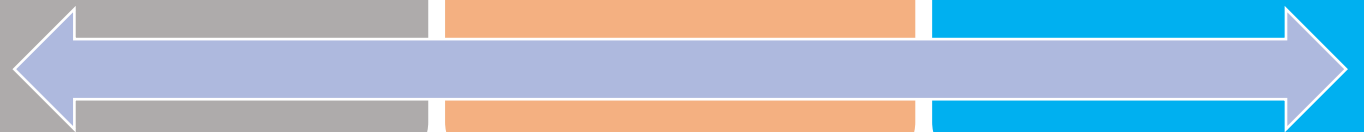
Obstructive
Sleep Apnea



Restless Legs
Syndrome/PLMD



Parasomnias



Trauma-Associated Sleep Disorder

Trauma-related nightmares

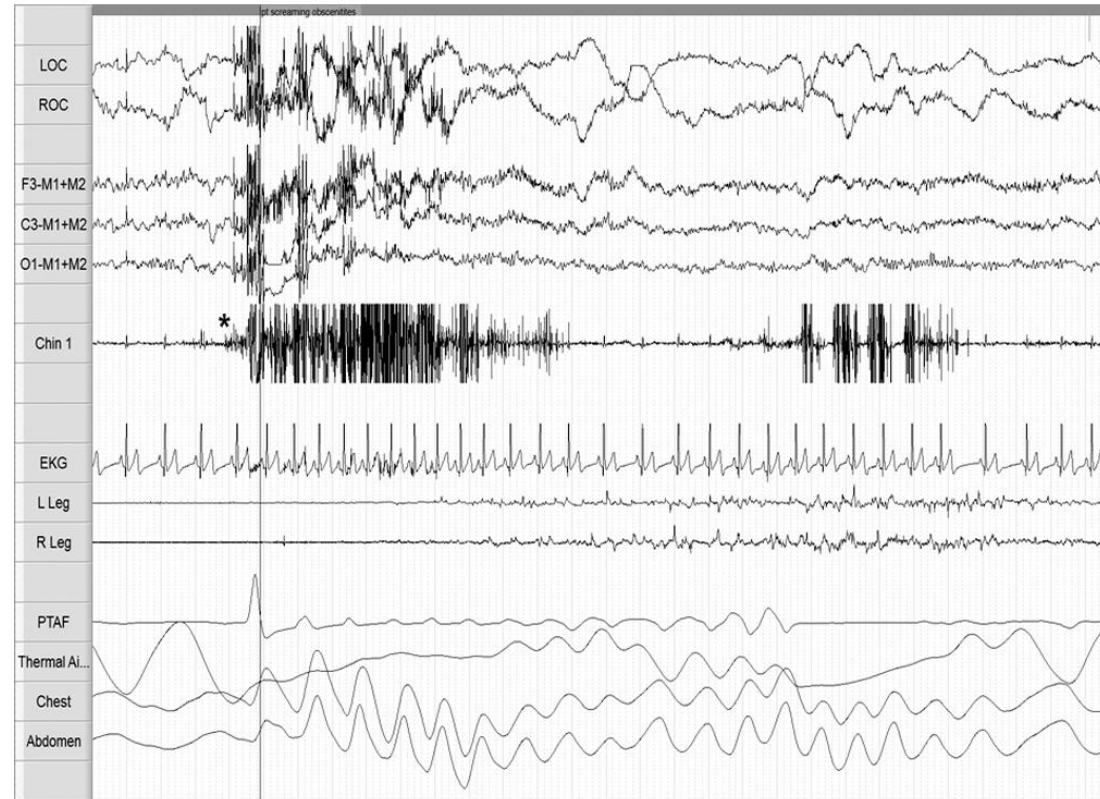
Disruptive nocturnal behaviors

REM without Atonia

Barone, 2024

Trauma-Associated Sleep Disorder

Figure 1—PSG epoch from case 1 depicting disruptive nocturnal behaviors in REM sleep and REM without atonia.



Mysliwiec et al., 2014

Psychiatric Comorbidity



Mood
disorders



Anxiety
Disorders

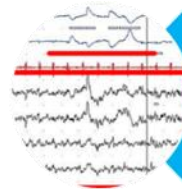


Substance Use
Disorders



Antidepressants and Sleep

First-line antidepressants
may not improve
insomnia in PTSD patients



Changes in Sleep Architecture



Insomnia



Worsening of Sleep Disorders

Davidson et al., 2001; Hutka et al., 2021

Treatments for INS+PTSD



CBT for Insomnia



Medications



Trauma-Focused
Therapies

Miller et al., 2020

CBT-I and PTSD

CBT-I participants reported improved subjective and objective sleep, 41% insomnia remission, improved mood, work, and interpersonal functioning

Randomized Controlled Trial > Sleep. 2014 Feb 1;37(2):327-41. doi: 10.5665/sleep.3408.

Cognitive behavioral therapy for insomnia in posttraumatic stress disorder: a randomized controlled trial

Lisa S Talbot ¹, Shira Maguen ¹, Thomas J Metzler ², Martha Schmitz ¹, Shannon E McCaslin ³, Anne Richards ¹, Michael L Perlis ⁴, Donn A Posner ⁵, Brandon Weiss ², Leslie Ruoff ², Jonathan Varbel ², Thomas C Neylan ¹

Affiliations + expand

PMID: 24497661 PMCID: PMC3900619 DOI: 10.5665/sleep.3408

CBT-I and PTSD

The effect size for the reduction of insomnia severity post-treatment was 1.5 (CI 1.0-1.9) for patients with PTSD

Review > Sleep Med Rev. 2022 Apr;62:101597. doi: 10.1016/j.smrv.2022.101597.

Epub 2022 Feb 9.

Cognitive behavioral therapy for insomnia in patients with mental disorders and comorbid insomnia: A systematic review and meta-analysis

Elisabeth Hertenstein¹, Ersilia Trinca², Marina Wunderlin³, Carlotta L Schneider², Marc A Züst³, Kristoffer D Fehér², Tanja Su⁴, Annemieke V Straten⁵, Thomas Berger⁶, Chiara Baglioni⁷, Anna Johann⁸, Kai Spiegelhalder⁷, Dieter Riemann⁷, Bernd Feige⁷, Christoph Nissen²

FDA-approved medications for Insomnia

Non-Benzodiazepine Hypnotics

Melatonin Agonists

H1 Receptor Antagonist

Dual Orexin Receptor Antagonists

Sateia et al., 2017

Other Treatments

Alpha-1 Adrenergic Antagonists

Sedating Antidepressants

Atypical Antipsychotics

Benzodiazepines

Cannabinoids

Lipinska, Baldwin, and Thomas, 2016

Take-Home Points



Insomnia plays a role in the development, maintenance, and exacerbation of PTSD symptoms



Insomnia is associated with poor clinical outcomes and quality of life in PTSD



Effective treatment of insomnia is associated with improvements in PTSD symptoms, depression, quality of life, and perceived physical health

Thank You!

