Posttraumatic Stress Disorder and Sleep

Wilfred R. Pigeon, PhD, CBSM[a,b,c,*], Autumn M. Gallegos, PhD[a,b]

KEYWORDS

• Posttraumatic stress disorder • Insomnia • Cognitive-behavioral therapy for insomnia

KEY POINTS

- Sleep disturbance in general as well as several specific sleep disorders are observed at high rates among patients with posttraumatic stress disorder (PTSD).
- Nightmares are quite specific to PTSD and tend to ameliorate following standard treatments for PTSD; insomnia is more prevalent and tends to persist absent direct intervention.
- Prazosin and imagery rehearsal therapy have demonstrated efficacy for nightmares; benzodiazepine receptor agonists and cognitive-behavioral therapy for insomnia (CBT-I) have demonstrated efficacy and effectiveness for general insomnia.
- PTSD-related insomnia presents with unique features that require assessment and targeting.
- Standard CBT-I can be easily adapted to address the unique presentations of patients with PTSD and insomnia.
- Combining CBT-I with imagery rehearsal therapy is a promising approach to the nonpharmacologic management of co-occurring insomnia and nightmares in patients with PTSD.

INTRODUCTION

Sleep disturbances are a common feature of posttraumatic stress disorder (PTSD)[1] and have historically been considered the hallmark of PTSD.[2] They have been found to occur in 70% of participants meeting the diagnostic criteria for PTSD in a large-scale community survey.[1] Ample data suggest a strong association between trauma exposure and nightmares as well as between PTSD and nightmares.[3] Insomnia (difficulty initiating or maintaining sleep) is actually more prevalent than nightmares among people with PTSD and is the most commonly endorsed PTSD symptom.[4] This point underscores the specificity of nightmares for PTSD as well as the high prevalence of insomnia in trauma-exposed populations of 60% to 90% in contrast to the 6% to 20% prevalence rate in the general population.[5] Nightmares and insomnia are each independently associated with PTSD[6] and have also been found to be risk factors for developing PTSD in a handful of studies.[7–9] Finally, and quite importantly, the additional burden of insomnia and/or nightmares may directly exacerbate other PTSD symptoms and diminish patients' capacity to manage their PTSD symptoms.

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[a] Department of Veterans Affairs VISN 2 Center of Excellence for Suicide Prevention, Canandaigua VA Medical Center, 400 Fort Hill Road, Canandaigua, NY 14424, USA; [b] Sleep and Neurophysiology Research Laboratory, Department of Psychiatry, University of Rochester Medical Center, 300 Crittenden Boulevard, Rochester, NY 14642, USA; [c] Department of Veterans Affairs Center for Integrated Healthcare, Syracuse VA Medical Center, 800 Irving Avenue, Syracuse, NY 13210, USA
* Corresponding author. Sleep and Neurophysiology Research Laboratory, Department of Psychiatry, University of Rochester Medical Center, 300 Crittenden Boulevard, Rochester, NY 14642.
E-mail address: Wilfred_Pigeon@urmc.rochester.edu

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THE OBJECTIVE SLEEP OF PATIENTS WITH POSTTRAUMATIC STRESS DISORDER

Recent reviews of PTSD and sleep have concluded that the available literature is somewhat mixed with respect to polysomnography (PSG) findings in PTSD populations.[10,11] There have nonetheless been some consistent findings of note. Although evaluated in a smaller number of PSG studies, abnormalities of rapid-eye-movement (REM) sleep do seem to occur in patients with or developing PTSD. These abnormalities include increased levels of awakenings from REM and brief arousals during REM, more and shorter duration REM periods, and elevated REM density. These data suggest that beyond insomnia, the main PSG-determined characteristics of sleep in patients with PTSD are disturbances of REM sleep. Sleep disturbances, such as sleep-disordered breathing (eg, sleep apnea), parasomnias, and excessive nocturnal motor activity (eg, periodic limb movements), have been reported in PTSD populations[10,12,13]; but the primary focus of this article is on nightmares and insomnia and on nonpharmacologic interventions for these sleep disorders.

THE NATURE OF INSOMNIA AND NIGHTMARES IN POSTTRAUMATIC STRESS DISORDER

PTSD-related insomnia is similar to primary insomnia along several dimensions, including the subjective severity of insomnia and the association with a higher risk for other complications.[6,14–18] It is important to note that these findings come from a relatively small number of studies with small to modest sample sizes across a variety of civilian and combat-related PTSD populations. Nonetheless, the implications are that PTSD-related insomnia is similar to primary insomnia in many regards with the possibility that any increased severity is caused by additional disturbances that occur during sleep and/or are unique to patients with PTSD.

There is strong evidence that patients with insomnia exhibit hyperarousal across several dimensions, including physiologic and cognitive indices of arousal that interfere with sleep and thought to be a precipitant of insomnia.[19] Most theoretic models of chronic insomnia include the notion that, once acute insomnia has been precipitated, many of the same factors continue to maintain or perpetuate insomnia and that these are further exacerbated by behavioral factors commonly observed in insomnia. It is possible, and indeed likely, that some of these factors may be exacerbated in PTSD-related insomnia and that additional factors may further distinguish patients with PTSD.

In PTSD-related insomnia, the traumatic event serves to create a state level of arousal (cognitive and/or physiologic), which can then precipitate insomnia (or worsen/maintain preexisting insomnia). Morin and Espie[20] proposed that reactive anxiety (a central element of PTSD) is the main contributing factor in the acute phase of insomnia. Thus, the traumatic events and ongoing stressor of having PTSD are themselves unique features of PTSD-related insomnia. Patients with insomnia with PTSD (as opposed to those without PTSD) have significantly more fear of sleep, fear of the dark, disturbing thoughts in bed, daytime fatigue, and anxiety.

Perceived loss of control, which is thought to contribute to the maintenance of PTSD,[21] may also be exacerbated in the acute period following a traumatic event as sleep becomes disrupted and individuals attempt typically counterproductive strategies to control sleep. Because sleep itself involves a loss of vigilance and the restricted ability to monitor one's environment, sleep may be further perceived as a loss of control and/or something to fear.[22] For individuals with PTSD, fear and vigilance may lead to particular sleep behaviors and cognitions, such as the use of heavy blankets to feel safe (which may elevate body temperature and disrupt sleep), and exaggerated safety behaviors, such as securing and checking the sleep environment (which is also counterproductive to sleep). Finally, sleep itself can be directly related to fear experienced during a trauma. Patients with a history of being traumatized in bed, the bedroom, or darkness are more likely to report insomnia after successfully completing cognitive-behavioral therapy (CBT) for PTSD.[23] In sum, these represent distinct features of insomnia not typically observed in patients without PTSD.

Nightmares also represent a unique feature of PTSD-related insomnia. Although insomnia is more prevalent than nightmares in PTSD, nightmares seldom occur in the absence of insomnia and may contribute to the development or maintenance of insomnia in PTSD.[24] Nightmare sufferers, in general, delay going to bed or returning to bed following nightmares. To the extent that presleep anxiety develops because of nightmares, this serves to reduce the likelihood of initiating sleep. Nightmares are arousing and make returning to sleep difficult; as replays of traumatic experiences, nightmares can elicit and reinforce the same fear and avoidance responses as the original trauma, providing an avenue to associate sleep with the anxiety and fear experienced during nightmares.[25]