

# Impact of Traumatic Stress on Sleep and Management Options in Women

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## KEYWORDS

- Trauma • Posttraumatic stress disorder • Women • Insomnia • Nightmares • Pharmacotherapy
- Cognitive behavioral therapy • Imagery rehearsal therapy

## KEY POINTS

- After exposure to traumatic stress, women are at greater risk than men for developing symptoms of some psychiatric disorders, including insomnia and nightmares.
- Individuals with posttraumatic stress disorder (PTSD) often experience residual sleep disturbance after completing cognitive behavioral therapies for PTSD.
- Cognitive behavioral therapy for insomnia, imagery rehearsal therapy, and combinations of these techniques are possibly effective in treating insomnia and nightmares in trauma-exposed women.
- Prazosin as an adjunct to other psychotropic medications or psychotherapy is a potentially efficacious strategy for treating nightmares in trauma-exposed women.

## INTRODUCTION

Insomnia, including trouble falling and staying asleep, is one of the most commonly reported symptoms after trauma exposure.<sup>1,2</sup> These symptoms are often persistent and may affect trauma survivors long term, even for several decades.<sup>3</sup> After exposure to a traumatic event, women are at greater risk than men for developing symptoms of psychiatric disorders, including posttraumatic stress disorder (PTSD), depression, and anxiety disorders.<sup>4,5</sup> Insomnia and recurrent nightmares about trauma are symptoms of some of these disorders.<sup>6</sup> Women and adolescent girls are more likely than men and boys to report insomnia and nightmares in the general population<sup>7–10</sup> and also after trauma exposure.<sup>11–13</sup> Therefore, it is particularly important for women to be properly assessed and treated for sleep disturbances after trauma. Although women face unique sleep challenges after

trauma, treatment studies focusing on trauma-related sleep disturbances in women are limited. The purpose of this article is to briefly review findings from studies about sleep disturbances in trauma-exposed women. This article then focuses on psychotherapy and pharmacotherapy clinical trials examining efficacy for treating sleep-related symptoms in trauma-exposed women and suggests areas for further research.

## SUBJECTIVE AND OBJECTIVE SLEEP CHANGES IN TRAUMA-EXPOSED WOMEN

A large proportion of trauma-exposed women suffer from insomnia and/or trauma-related nightmares. Sleep disturbance is particularly pronounced in women with PTSD, the diagnostic criteria for which include insomnia and recurrent trauma nightmares along with other symptoms, such as intrusive trauma memories, hyperarousal,

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and avoidance of trauma reminders.<sup>6</sup> In a sample of female Vietnam veterans, 73% veterans with PTSD and 62% of those without PTSD endorsed trouble initiating sleep; 91% of veterans with PTSD versus 59% without PTSD reported trouble maintaining sleep.<sup>14</sup> In male Vietnam veterans, 44% of veterans with PTSD and 6% of those without PTSD reported trouble initiating sleep, and 91% with PTSD versus 63% without PTSD endorsed trouble maintaining sleep.<sup>15</sup> Female veterans may be more vulnerable to sleep-onset insomnia compared with male counterparts. Nightmares were reported by 73% of female rape victims with PTSD and by 27% of those without PTSD 4 weeks after rape, and persisting nightmares were experienced at 12 weeks post-rape, especially in victims with PTSD (reported by 63% of victims with PTSD and by 12% of victims without PTSD).<sup>2</sup>

Despite significant sleep disturbances reported by trauma-exposed individuals of both genders, trauma-related or PTSD-related objective sleep alterations are subtle and often observed in measures of sleep depth (ie, amount of light N1 stage of sleep and deep slow-wave sleep) or rapid eye movement sleep.<sup>16,17</sup> Lipinska and Thomas<sup>17</sup> examined effects of PTSD and trauma exposure on subjectively and objectively measured sleep by comparing female sexual assault survivors with and without PTSD and non-trauma-exposed controls. Their analysis of laboratory polysomnographic sleep revealed that trauma exposure was associated with decreased deep sleep (stage N3 slow-wave sleep) and that PTSD was related to increased light sleep (sleep stage N1). They did not find, however, any other trauma-related or PTSD-related objective sleep alterations.

Perceived safety of the laboratory sleep environment has been suggested as a potential explanation for the discrepancy between laboratory polysomnography and self-report survey findings in trauma-exposed individuals.<sup>18</sup> Consistent with this hypothesis, female sexual assault survivors, in particular those with PTSD, in the study by Lipinska and Thomas,<sup>17</sup> reported perceiving the laboratory sleep environment as quieter, safer, and more comfortable than home. Individuals with PTSD endorsed worse subjective sleep quality compared with the other groups in the home, but this group difference was not found in the laboratory setting.<sup>17</sup> In addition, an actigraphy study captured longer sleep-onset latency and lower sleep efficiency in women exposed to mixed types of trauma with PTSD compared with women without PTSD, suggesting sleep initiation and

maintenance difficulties in the home sleep environment in women with PTSD.<sup>19</sup>

It has been suggested that people who experienced trauma in situations associated with sleep (eg, in a bedroom or darkness) are vulnerable to sleep disturbances because they are likely to experience heightened vigilance in sleep environments and perform sleep-interfering safety behaviors, such as checking locks multiple times or leaving lights on.<sup>20</sup> Women are more likely than men to be exposed to traumatic events that often occur in sleep-related situations and carry increased risk for persistent psychological disturbances, such as sexual violence, childhood sexual abuse, and intimate partner violence.<sup>4,21,22</sup> It is important that clinicians assess possible associations between the trauma context and sleep-interfering behaviors while planning insomnia treatment strategies for women.

## COGNITIVE BEHAVIORAL STRATEGIES

Sleep disturbance has been considered one of the most refractory symptoms of PTSD.<sup>23,24</sup> Cognitive behavioral therapies (CBTs) for PTSD, including cognitive processing therapy (CPT) and prolonged exposure (PE), are evidence-based treatments for PTSD and reduce symptoms of insomnia, but patients often report clinically significant residual sleep symptoms after completing the treatment. Zayfert and DeViva<sup>24</sup> found that in 27 civilian participants (89% female) who achieved remission of overall PTSD after CBT for PTSD, approximately half of participants continued to report residual insomnia. In 2 studies of female sexual assault survivors with PTSD,<sup>23,25</sup> both sleep quality and insomnia symptoms improved after CPT or PE; however, overall subjective sleep disturbance remained at clinical levels post-treatment. **Table 1** lists findings of these and other studies of psychological treatments for trauma-related sleep disturbances that included female participants.

One of the most used evidence-based treatments for insomnia is CBT for insomnia (CBT-I). CBT-I is multimodal treatment, typically lasting between 6 sessions and 8 sessions, that includes sleep hygiene education, sleep restriction, stimulus control, sleep compression, relaxation, and cognitive therapy.<sup>26</sup> Stimulus control works through the extinction of a conditioned arousal in bed and bedroom by breaking associations between a person's bed/bedroom and wakefulness and by strengthening associations of the bed/bedroom with sleep. To promote the ability to relax and fall asleep in bed, patients are instructed to

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