



Longitudinal relationships of insomnia, nightmares, and PTSD severity in recent combat veterans



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ABSTRACT

Objective: This observational, longitudinal study of veterans with recent combat exposure describes the prevalence, severity and associations of posttraumatic stress disorder (PTSD), insomnia, and nightmares over time.

Methods: Eighty recent combat veterans recruited from Veterans Health Administration primary care settings met inclusion criteria including hazardous alcohol use and at least subthreshold PTSD. Insomnia status and nightmare status were assigned based on the Insomnia Severity Index total score and the PTSD Checklist nightmare item, respectively. Participants were re-assessed six months following their baseline assessment. Analyses of variance compared insomnia and nightmare groups on PTSD, depression, and alcohol use severity. Analyses of covariance (controlling for baseline differences) examined whether insomnia and/or nightmares were associated with the clinical course of PTSD. Persistence of conditions was also examined.

Results: At baseline, 74% presented with insomnia and 61% endorsed distressing nightmares. Insomnia was associated with significantly higher PTSD and depression severity at both baseline and six months. The presence of nightmares was associated with significantly higher PTSD severity at both time points and with depression severity at baseline only. Despite decreases in PTSD and depression severity, insomnia severity was relatively unchanged after six months. The prevalence and severity of nightmare complaints diminished modestly over time.

Conclusion: Among this sample of recent combat veterans, insomnia and nightmares were each strongly associated with the severity of both PTSD and depressive symptoms. Over time, insomnia in particular did not appear to resolve spontaneously and was associated with ongoing PTSD. Addressing insomnia early, therefore, may be a strategy to alter the course of PTSD.

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Introduction

Sleep disturbances have often been considered a hallmark of posttraumatic stress disorder (PTSD) [1,2] with good reason. Both insomnia and nightmares are independently associated with PTSD and comprise specific symptoms in PTSD diagnostic criteria [3]. Insomnia occurs in 60–90% of PTSD patients and is the most commonly endorsed PTSD symptom; nightmares occur less frequently (~50%) [4,5].

Among the U.S. military service members deployed to combat and among veterans receiving primary care in the Veterans Health Administration (VHA) sleep disturbance is highly prevalent. Recent reports indicate that, during deployment, poor sleep environment, night-time duties, personal life-related stress, and combat-related stress

disturbed sleep more than half the nights for 33%, 30%, 11%, and 10% of soldiers, respectively [6]. Sleep disturbance also represents the second most common complaint of recent returning veterans [7]. Finally, among 886 veterans screened in primary care, 88% met risk criteria for at least one sleep disorder, 49% met for more than one sleep disorder, and 24% reported use of sleeping pills or alcohol at bedtime to help with sleep [8].

While nightmares tend to diminish following PTSD interventions, insomnia tends to remain as a common residual problem [9–12]. Thus, it is conceivable that patients with PTSD have more difficulty engaging in PTSD interventions when sleep disturbances are present, adding to the clinical importance of insomnia and nightmares among such patients.

Unlike the fairly extensive literature used to establish insomnia as a risk factor for depression [13], relatively few investigations examine the longitudinal relationship of sleep disturbance and PTSD. These include observations that pre-existing sleep difficulties predicted the development of PTSD following exposure to Hurricane Andrew [14], that following civilian injuries, PTSD at 1 year was significantly predicted

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by sleep complaints at 1 month [15], and that the development of PTSD symptoms was associated with fragmented REM sleep during the one month following serious injury [16]. In the only longitudinal study we are aware of that assessed sleep and the clinical course of PTSD, the presence of sleep disturbance reduced remission rates of PTSD from 56% to 34% over a five year follow-up period [17]. No such longitudinal data exists with respect to combat-related PTSD, despite reports that 4% of recent combat veterans seen in VHA care carry diagnoses for both PTSD and a sleep disorder [18] and that insomnia and PTSD are strongly associated in veterans [19].

In the current observational, longitudinal study, we first describe the prevalence of PTSD, insomnia and nightmares in a sample of recent combat veterans and then examine to what extent these conditions persist and whether insomnia and/or nightmares are associated with the clinical course of PTSD. Data was collected as part of a prospective study of recent veterans with PTSD symptoms and hazardous drinking (1101CX000175) testing mediators and moderators of the association between PTSD symptoms and alcohol consumption, including sleep disturbance. PTSD and hazardous drinking commonly co-occur. In fact, a recent national study of recent combat veterans found that 63% of recent combat veterans with an alcohol use disorder also had PTSD [20]. Further studies conducted in VHA primary care settings found that, among recent Iraq and Afghanistan veterans, 23–27% screened positive for hazardous drinking, 37–39% screened positive for PTSD, and 16% screened positive for both [21,22].

The current study was carried out in accordance with the Declaration of Helsinki principles and was approved by the Syracuse VA Institutional Review Board; all participants provided written informed consent.

Methods

Sample

Participants (N = 80) were predominately male (n = 64, 80%), recent combat veterans with a mean age of 30 years old (SD = 7.7); the sample characteristics are displayed in Table 1.

Veterans were recruited from VHA primary care based on positive screens on the three-item Alcohol Use Disorders Identification Test (AUDIT) Consumption screen [23] or the four item Primary Care PTSD screen (PC-PTSD; [24]), each of which is widely used to screen patients in VHA settings.

Eligibility criteria included: reporting war-zone exposure; being enrolled as a patient in the VHA; eighth grade reading level; meeting established cut-offs at baseline for hazardous alcohol use on the full AUDIT (score: ≥ 8 for men, ≥ 7 for women) [25]; meeting at least subthreshold PTSD criteria defined as experiencing a traumatic event, functional impairment, one re-experiencing symptom, and either three avoidance symptoms or two hyperarousal symptoms [26]; no suicide attempts six months prior to baseline or active suicidal ideation at baseline; and no active psychotic symptoms. Participants were not excluded based on their use of medication or the presence of medical or psychiatric comorbidities (except as noted directly above).

Procedure

Following informed consent, participants completed a clinical interview and a battery of self-report instruments that served as their baseline assessment. A follow-up assessment, consisting of interview and self-report measures, occurred approximately 6 months following the baseline assessment. Data collection occurred in-person for baseline, and either in-person or over the phone for follow-up at 6 months.

Measures

The *Clinician Administered PTSD Scale* (CAPS; [27]) is considered the gold standard measure of PTSD. It assesses each of the 17 core symptoms of PTSD on a 0 to 4 scale for both frequency (“never or none of the time” to “daily or all of the time”) and intensity (“none or no problem with symptom” to “extreme, incapacitating”). The CAPS was administered only at baseline to confirm the eligibility criteria of at least subthreshold PTSD. We also report the total CAPS score with and without the insomnia and nightmare items removed.

The *Demographics/Military Background* is a self-report measure developed for this study assessing basic socio-demographic and military history including number and length of deployments and months since returning from deployment.

The *PTSD Checklist – Military Version* (PCL; [28]) is a 17-item questionnaire that asks respondents to rate on a scale from 1 (“not at all”) to 5 (“extremely”) how much they have been bothered by a particular problem/symptom in the past month, with the cut-off score of ≥ 50 indicating diagnostic-level PTSD. The PCL was administered at baseline and the 6 month follow-up assessment. We report the total PCL score with and without the insomnia and nightmare items removed.

The *Insomnia Severity Index* (ISI; [29]) is a widely used and validated 7-item scale that assesses difficulty initiating and maintaining sleep, daytime consequences, worry about sleep, and satisfaction with sleep quality on a scale of 0 to 28. The established cut-off score of ≥ 11 for a clinical population was used to demonstrate clinically meaningful insomnia [30].

The *Presence of Nightmares* was assessed by the nightmare item on the PCL with item scores ≥ 3 (“moderately bothered”) coded as positive for nightmares.

The *Alcohol Use Disorders Identification Test* (AUDIT; [25]) is a 10-item questionnaire assessing hazardous alcohol use over the past year. Item scores range from 0 to 4 and are summed to derive a total alcohol use severity score, with higher scores corresponding to a greater likelihood of hazardous alcohol use and possible alcohol dependence.

Table 1
Sample characteristics

Characteristic	n (%)	M (SD)
Age		30.0 (7.7)
Male	64 (80.0%)	
Race		
White (non-Hispanic)	69 (86.3%)	
Black (non-Hispanic)	4 (5.0%)	
Hispanic	4 (5.0%)	
Multiracial/Other	3 (3.8%)	
Relationship status		
Married/living with partner	51 (63.8%)	
Single (never married)	16 (20.0%)	
Divorced/separated	13 (16.3%)	
Employment		
Full-time	28 (35.0%)	
Part-time	17 (21.3%)	
Unemployed	35 (43.8%)	
Education (years completed)		14.3 (1.5)
Yearly family income (000s)		38 (23)
Military branch		
Army	54 (67.5%)	
Marines	9 (11.3%)	
Navy	2 (2.5%)	
Air force	4 (5.0%)	
National guard	23 (28.8%)	
Reserves (any branch)	20 (25.0%)	
Months back from deployment		33.5 (14.8)
Number of deployments		1.5 (0.7)
Total months deployed		16.7(7.6)
Posttraumatic stress disorder		
Subthreshold	11 (13.7%)	
Diagnostic level	69 (86.3%)	
Traumatic brain injury	13 (16.3%)	

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