Journal of Psychiatric Research 44 (2010) 470–476

Contents lists available at ScienceDirect

Journal of Psychiatric Research

journal homepage: www.elsevier.com/locate/jpsychires

Predictors of emotional distress reported by soldiers in the combat zone

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ARTICLE INFO

Article history:
Received 27 July 2009
Received in revised form 19 October 2009
Accepted 20 October 2009

Keywords:
PTSD
Trauma
Brain injury
Depression
Military
Stress

ABSTRACT

Objective: Few studies have examined rates of distress of military personnel during deployment to a war zone. Our study sought to (a) identify rates of self-reported posttraumatic stress disorder (PTSD) and depression symptoms during combat deployment, (b) characterize higher order dimensions of emotional distress experienced by soldiers during deployment, and (c) identify predictors of these dimensions of emotional distress.

Method: Participants were 2677 National Guard soldiers deployed as part of Operation Iraqi Freedom in 2006–07. We performed a principal components factor analysis on items of the PTSD Checklist – Military Version and the Beck Depression Inventory to identify dimensions of emotional distress, followed by multiple regression analyses to identify factors that predicted these dimensions of distress.

Results: Rates of PTSD and depression in our sample were 7% and 9%, respectively. Five dimensions of emotional distress emerged: negative affect/cognitions, trauma-specific re-experiencing and avoidance, vegetative symptoms, loss of interest/numbing symptoms, and arousal/irritability. Two dimensions, trauma-specific symptoms and arousal/irritability, appeared to be more indicative of trauma sequelae, while the other three dimensions were more indicative of depressive symptoms. Demographic factors, combat exposure (including injury and exposure to explosive blast), and attitudinal variables predicted trauma-specific aspects of distress. Symptoms characteristic of depression or generalized distress were predicted by female gender, recent prior deployment, and attitudinal factors but were not predicted by blast exposure or injury.

Conclusions: These findings suggest specific targets for contextual and individual interventions to reduce deployment-related distress and point out the need for longitudinal follow-up to determine long-term implications for post-deployment functioning.

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1. Introduction

Deployment to a combat zone is known to have psychological effects on military personnel (Tanielian and Jaycox, 2008). Stressors faced by deployed service members include exposure to combat situations, witnessing human suffering and deprivation, difficult living and working conditions, separation from home and family, and conflict with military peers or supervisors (King et al., 2006). In the current conflict in Iraq, the vast majority of service members report exposure to stressor events with likely consequences for emotional functioning (Hoge et al., 2006). Although most military personnel do not develop mental disorders as a result of combat zone stressors, emotional distress may impair functioning in a combat zone and increase risk for future development of psychological disorders or poor readjustment after deployment. Growing awareness of the potential for violence within units of deployed United States (US) troops and the climbing suicide rate in deployed troops (Kennedy, 2009; US Army Surgeon General, 2008) has led to increased need to assess and treat distress in a combat zone. Most studies describe psychological symptoms several months following deployment and report rates of probable posttraumatic stress disorder (PTSD) between 8% and 15% and rates of depression between 5% and 10% (Hoge et al., 2004; Seal et al., 2007; Tanielian and Jaycox, 2008).

Although helpful in describing the psychological aftereffects of combat, characterization of emotional distress after deployment may fail to capture the range and severity of distress during a combat deployment. Assessing psychological distress during, rather than after, deployment may also be important because emotional

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0022-3956/$ - see front matter Published by Elsevier Ltd.
doi:10.1016/j.jpsychires.2009.10.010

distress in a combat zone could impact soldiers' abilities to perform duties and carry out missions. Finally, a better understanding of the nature of distress experienced in a combat zone may also guide interventions to improve troop resilience. Preliminary data regarding the prevalence of psychological distress of deployed US Army soldiers were obtained in a series of studies conducted by the Mental Health Advisory Team (MHAT). In 2008, 18% of these deployed soldiers reported some psychological problems, 16% met criteria for PTSD as assessed by the PTSD Checklist (PCL; Weathers et al., 1993), and 7% reported depression (US Army Surgeon General, 2008). We sought to characterize and predict emotional distress of soldiers in the combat zone by assessing the psychological functioning of US Army National Guard soldiers during deployment to Operation Iraqi Freedom (OIF).

While studies of distress during combat deployment are limited, research on service members who have recently returned from deployment has suggested possible risk factors for conditions such as PTSD and depression. Exposure to blasts from improvised explosive devices may result in traumatic brain injury (TBI). Mild TBI (mTBI), also known as concussion, has been reported in as many as 15–20% of OIF soldiers (Hoge et al., 2008; Tanielian and Jaycox, 2008). Higher levels of combat exposure are consistently associated with greater emotional distress (Hoge et al., 2004; Tanielian and Jaycox, 2008), and some research suggests that the presence of mTBI increases likelihood of psychological distress beyond what combat exposure predicts (Belanger et al., 2009; Chemtob et al., 1998; Vasterling et al., 2000). Importantly, certain "resilience factors" may mitigate the effects of stressors during deployment. Military personnel who perceive their missions as important and meaningful and who maintain regular contact with friends and family back home may experience less psychological distress during deployment (Gray et al., 2004).

Self-report measures are frequently used to characterize and study mental health of military personnel in a combat zone. Unfortunately, shared variance of self-report measures of different syndromes, such as PTSD and depression, confounds assessment of these problems in traumatized samples (O'Donnell et al., 2004) and can lead to inflated estimates of correlations between constructs. Prior studies in this area have not accounted for overlap between measures of emotional distress and thus may not fully address correlates of specific dimensions of distress. The goal of the present study was to better characterize and predict the emotional distress of military personnel within the combat environment to determine factors that could mitigate risk for psychological disruption in deployed troops. First, we examined rates of probable PTSD and depression in deployed National Guard soldiers using standard survey-based criteria for each "diagnosis." Second, we sought to better understand the distress reported by soldiers in the combat zone by identifying separate dimensions of emotional distress. Finally, we sought to determine which events and characteristics of deployment most strongly predicted the unique facets of emotional distress. We were interested specifically in how distinct aspects of distress in a combat zone are predicted by (a) recent prior deployment, current combat operations, exposure to explosive blast, and mild TBI, and (b) attitudes and experiences during deployment (e.g., unit support, contact with home, and meaningfulness of the mission).

2. Materials and methods

2.1. Sample and design

Participants were 2677 soldiers who made up approximately 67% of a US Army National Guard Brigade Combat Team completing a 16-month extended deployment to Iraq (from March 2006 to July 2007). Approximately 1 month prior to being redeployed home, soldiers attending a redeployment transition briefing were invited to participate in the current study by our on-site military investigator (MR). Soldiers were given a packet containing an informed consent document, survey, and envelope. The informed consent document described the study's risks and benefits and emphasized the confidential and voluntary nature of participation. A waiver of documentation of informed consent was obtained, and consistent with standard survey procedures, soldiers were informed that completion and return of the survey implied consent. In order to maintain confidentiality of participation and responses, subjects were asked to seal their completed or uncompleted survey in the envelope before returning to the on-site military investigator to ship (via Federal Express) to the research team for processing and analysis. Following military regulations, no compensation was provided to participants who completed surveys. The study protocol was approved by the Minnesota Army National Guard command and the institutional review boards of the Army, University of Minnesota, and Department of Veterans Affairs.

Participants selected the race/ethnicity that best described their ethnocultural group. Among participants, 92% were male; 83% were Caucasian; 5% were Hispanic or Latino, 4% were African-American; and 2% were Asian. Nearly half (42%) of the participants were married or cohabitating prior to deployment. The mean age of participants was 29.9 (SD = 8.0). Redeployment briefings were targeted for Army National Guard soldiers but a small proportion of the sample (4%) were active duty component personnel who also attended. Most participants were in the enlisted ranks (89%). The sample was represented by the following categories of military occupational specialties (MOS): Combat Arms (50.8%), Combat Support (14.7%), and Combat Service Support (34.6%).[1]

2.2. Measures

2.2.1. PTSD symptomatology

PTSD symptomatology was assessed using the PTSD Checklist-Military Version (PCL-M (Weathers et al., 1993), a 17-item self-report scale widely used to assess PTSD in military population studies (Ramchand et al., 2008). Items corresponding to Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV) (American Psychiatric Association, 1994) criteria for PTSD are rated on a 5-point scale in reference to the most stressful event experienced during deployment. Cases of probable PTSD were identified based on Hoge and colleagues' strict criteria defined as meeting DSM-IV criteria on the PCL-M (reporting moderate levels at least of one intrusion symptom, three avoidance symptoms, and two hyperarousal symptoms) and a total score of at least 50 (Hoge et al., 2006). These criteria have also been used in previous studies of distress in military populations (US Army Surgeon General, 2003, 2005, 2006a,b, 2008).

2.2.2. Depressive symptomatology

Depressive symptoms were assessed using the Beck Depression Inventory-II (BDI-II; Beck et al., 1996), a widely used self-report scale. Participants were asked to rate their experiences of 21 symptoms of depression over the past 2 weeks on a 4-point scale ranging from 0 to 3, with higher scores indicating the presence of more severe symptoms. Cases of probable depression were determined

[1] Rates of missing data ranged from 0% to 1.9% for each variable, with a mean of 1.2% of responses missing across variables. To examine the role of missing data in results, analyses were run once using listwise deletion and again using maximum likelihood imputation for missing data. Results were very similar across both methods. The results presented here are based on the non-imputed dataset with listwise deletion.