Psychiatry Research 210 (2013) 1042–1048

Contents lists available at ScienceDirect

Psychiatry Research

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

Risk factors for post-deployment posttraumatic stress disorder in national guard/reserve service members ☆

M. Tracie Shea [a,b,*], Madhavi K. Reddy [b,c], Audrey R. Tyrka [b,c], Elizabeth Sevin [b]

[a] Veterans Affairs Medical Center, 830 Chalkstone Ave., Providence, RI 02908, USA
[b] Department of Psychiatry and Human Behavior, Alpert Medical School of Brown University, Providence, RI 02912, USA
[c] Butler Hospital, 455 Blackstone Blvd., Providence, RI 02906, USA

ARTICLE INFO

Article history:
Received 30 December 2012
Received in revised form
24 June 2013
Accepted 18 August 2013

Keywords:
PTSD
War
Trauma
Military personnel
Risk factors

ABSTRACT

Identification of factors that increase risk for PTSD in military personnel following deployments is critical to early intervention and prevention. The study tested hypothesized main and moderating risk factors for PTSD in National Guard/Reserve members deployed to Iraq or Afghanistan. Members of the National Guard/Reserves ($n=238$) completed diagnostic interviews and measures of risk factors at a post-deployment assessment conducted an average of four and a half months following return from deployment. Hierarchical multivariate logistic regression analyses were used to test hypotheses. Higher levels of combat exposure, life and family concerns during deployment, and post-deployment social support independently predicted PTSD. Life/family concerns during deployment and perceived adequacy of training and preparation were significant moderators of the association between combat exposure and PTSD. Among those with higher levels of both combat exposure and life and family stress, 27% had PTSD in contrast to 3% of those with high exposure but lower levels of such stress during deployment.

In addition to combat exposure, life and family stress during deployment is a particularly important predictor of PTSD. The findings highlight the importance of identifying and addressing such stress.

Published by Elsevier Ireland Ltd.

1. Introduction

Studies of veterans of the Vietnam War and more recently of military personnel and veterans of the wars in Iraq (Operation Iraqi Freedom—OIF) and Afghanistan (Operation Enduring Freedom—OEF) have documented the high mental health toll of war. Post-traumatic Stress Disorder (PTSD), one outcome known for its wide ranging adverse effects, is defined by a characteristic set of re-experiencing, avoidance and numbing, and hyperarousal symptoms following exposure to an extreme traumatic stressor. Between 15% to 30% of Vietnam veterans were estimated to have PTSD (Kulka et al., 1990; Dohrenwend et al., 2006). Prevalence estimates for PTSD among OEF/OIF veterans have ranged from 5% to 20% in non-treatment-seeking samples, and up to 50% in treatment-seeking samples (Ramchand et al., 2010). Some of the negative consequences of PTSD include the increased likelihood of comorbid disorders such as depression or substance use disorders, higher rates of marital conflict and divorce, job loss, unemployment, arrests and incarceration (Kulka et al., 1990). Studies of OEF/OIF Veterans have shown high rates of mental health concerns (Hoge et al., 2006), and poorer functioning, lower living conditions, and lower life satisfaction at a level comparable to Vietnam Veterans (Schnurr et al., 2009). Given the chronicity of PTSD (up to 50% in veterans with PTSD) and the often profound disruption in functioning and quality of life in veterans, knowledge regarding specific factors that increase risk for this disorder is critical to prevention and early intervention efforts.

Numerous studies have examined risk factors for PTSD following civilian and military related trauma. Pre-trauma risk factors including neuroticism (Schnurr and Vielhauer, 1999; Miller, 2003) and a history of prior trauma (Brewin et al., 2000; Ozer et al., 2003) have been shown to increase risk, although reviews have suggested that the contribution of pre-trauma variables to developing PTSD is small compared to trauma-related and post-trauma factors (Brewin et al., 2000; Ozer et al., 2003). Trauma-related factors associated with increased risk include severity of the trauma, perceived life threat, and amount of distress (Ozer et al., 2003). Lower social support (Brewin et al., 2000; Ozer et al., 2003) and higher amounts of life stress (Brewin et al., 2000) following the trauma have also been associated with increased risk.

The relative importance of specific risk factors appears to differ for military compared to civilian samples. For example, trauma severity and lack of social support appear to have significantly

☆These findings were presented in part at the Association for Behavioral and Cognitive Therapy annual meeting, San Francisco CA, November 2010.

* Corresponding author at: Veterans Affairs Medical Center, Bldg. 32, 830 Chalkstone Avenue, Providence, RI 02938, USA. Tel.: +1 401 273 7100; fax: +1 401 457 3311.
E-mail address: m_shea@Brown.edu (M. Tracie Shea).

0165-1781/$ - see front matter Published by Elsevier Ireland Ltd.
http://dx.doi.org/10.1016/j.psychres.2013.08.039

larger average effect sizes in studies of military vs. civilian samples (Ozer et al., 2003). Until recently, most research on risk factors for PTSD in military samples was conducted many years after exposure to war-zone trauma. This has changed with recent studies reporting on risk factors for PTSD in OEF/OIF troops (Booth-Kewley et al., 2010; Renshaw, 2010; Vasterling et al., 2010; Polusny et al., 2011; Renshaw, 2011; Vogt et al., 2011). Despite this advance, an important limitation of most studies to date is the use of self-report measures for the assessment of PTSD. Although such measures provide the advantage of ease of administration and less intensive use of resources, they are limited by the absence of clinical judgments in rating symptoms and associated impairment, and the inability to differentiate PTSD symptoms from those due to other primary disorders such as depression (Litz and Schlenger, 2009). Furthermore, self-report measures preclude assessing symptoms in reference to clearly identified and specific traumatic events, a defining feature of the DSM PTSD (Breslau et al., 2002). Research has suggested that self-report measures of PTSD, including the commonly used PTSD Checklist (PCL) may be overly sensitive to everyday distress and influenced by personality trait characteristics such as negative affectivity/temperament (Shapinsky et al., 2005). Thus, self-report measures cannot be assumed to provide valid assessments of a PTSD diagnosis and are recommended for use as screening measures. The current study was designed to address this limitation by using structured clinical interviews for PTSD and Axis I comorbidity. To our knowledge, this is the first study using comprehensive "gold standard" interviews for the assessment of PTSD (the Clinician Administered PTSD Scale—CAPS; Blake et al., 1995) and for assessment of all Axis I disorders (the Structured Clinical Interview for DSM-IV—SCID) (First et al., 1996) in research on risk factors for PTSD in OEF/OIF service members following return from deployment.

The purpose of the current report is to present findings regarding risk factors for PTSD in OEF/OIF National Guard/Reserve (NGR) military personnel. This population appears to be at increased risk of PTSD and other mental health problems relative to regular active duty members (Browne et al., 2007; Milliken et al., 2007; Smith et al., 2008; Thomas et al., 2010). NGR members are pulled from civilian life to deploy, and are thus exposed to unique sources of stress relative to active duty troops, including interruption in jobs and careers, lack of prior experience, absence of expectation of long separations from family, less support for the families at home, and possibly less confidence in their training and preparedness for combat. In addition, the proportion of these "civilian soldiers" has been high in the current wars, comprising about 38% of deployed army and 28% of all deployed military personnel (Belasco, 2007). In contrast, less than 1% of troops serving in the Vietnam War were NGR.

Our conceptual framework for this research was guided by a diathesis–stress model, originally used in the medical field to conceptualize physical disorders and expanded for use in psychological disorders (e.g., Elwood et al., 2009). The basic assumption of this model is that vulnerability factors (or diatheses) influence the ease and frequency with which insults (stress) will upset physical or psychological equilibrium, and increase the probability of a disorder (Ingram and Luxton, 1991). Diathesis–stress models vary in terms of how they conceptualize the nature of the relationship between the vulnerability and the stressor, for example additive relationships assume that the probability of the disorder depends upon a linear, dose–response relationship, synergistic or interactive models assume that interactions between the diathesis and stress yields an effect beyond their combined separate effects, and risk–resilience models focus on protective factors and resilience—the opposite of vulnerability. Although diathesis–stress models originally focused on within-individual factors as diatheses, interpersonal and situational variables can also represent vulnerabilities. For example, the well-known buffering hypothesis states that psychosocial stress will have greater negative impacts on health and well-being among those with little or no social support (e.g. Cohen and McKay, 1984). The benefits of social support have been viewed as both at all levels of stressful exposure, and conditional—operating more strongly at high levels of stress exposure (e.g. Fontana et al., 1997) when the individual's ability to cope with the stress is increasingly taxed (Hobfoll, 1989).

We examined risk factors from pre-deployment, deployment, and post-deployment time frames (Brewin et al., 2000; Ozer et al., 2003). The specific risk factors investigated were chosen on the basis of prior research as well as their fit with the diathesis–stress model. We hypothesized that the predeployment variables of negative temperament, prior history of stressful life events, and perceived inadequacy of training would, as vulnerability factors, be associated with increased risk of PTSD. Both negative temperament and history of prior trauma have been related to a higher risk of PTSD. We included perceived adequacy of training given our sample of "civilian soldiers" and the likelihood that they have less prior training and experience than active duty military. We predicted that these variables would operate in an additive manner (adding variance beyond combat exposure), and would also interact with severity of combat exposure (i.e., their effect on risk would increase at higher levels of trauma exposure). Deployment variables included the primary stressor (severity of exposure to combat) and additional situational stressors (life and family stress, deployment environment, low unit support). We hypothesized that life and family stress and low unit support would increase risk additively or through interactions with combat exposure. Postdeployment variables (lower social support and higher life stress) were hypothesized to increase risk additively.

2. Method

2.1. Participants

The sample consisted of 238 members of National Guard and Reserve units recently returned from deployment to Iraq ($n=231$) or Afghanistan ($n=7$). Participants were mostly male (92%), Caucasian (88%), and most had at least some post high school education (69%). The mean age was 33.5 (S.D.=9.5), and 41% were married (Table 1).

2.2. Procedures

The study was approved by institutional review boards at Brown University, Department of Veterans Affairs, and Department of Defense. Participants provided written informed consent after receiving a complete description of the study.

Recruitment occurred at the initial or follow-up Post Deployment Health Assessment (PDHA) or Re-assessment (PDHRA) debriefings, or during drill weekends, between December 2006 and July of 2009. Contact information was obtained for those who gave permission to be contacted; they were then contacted by phone to schedule an interview. All returning personnel were eligible to participate. We were able to present the study to an average of about 67% ($n=517$) of military personnel returning from the units approached. Sixty-six percent ($n=340$) of those hearing about the study agreed to be contacted, and 70% of those agreeing to be contacted (or 46% of those hearing about the study) participated in the study. Initial assessments for the full sample of 238 took place an average of 4.7 months (range 2 weeks to 10 months) following return from deployment. One hundred and sixty-two (68%) participants received their initial assessment prior to 6 months post-return, and 90 (38%) were assessed within the first 4 months. Participants with initial assessments within the first 4 months following return received a second assessment at 6 months. Of the 90 participants assessed within the first 4 months, 24 did not return for the 6 month interview, resulting in 215 participants with 6 months of post-return data. Participants not on active duty status were paid $80 for completion of each interview.

2.3. Assessments

The SCID-I/P W/PSY Screen (First et al., 1996) was used to diagnose current and lifetime Axis I disorders other than PTSD by DSM-IV criteria. The SCID is a widely