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Research report

Grief and physical health outcomes in U.S. soldiers returning from combat ☆

Robin L. Toblin [a,*], Lyndon A. Riviere [a], Jeffrey L. Thomas [a], Amy B. Adler [b], Brian C. Kok [a], Charles W. Hoge [a]

[a] Military Psychiatry Branch, Center for Military Psychiatry and Neuroscience, Walter Reed Army Institute of Research, 503 Robert Grant Avenue, Silver Spring, MD 20910, USA
[b] US Army Medical Research Unit-Europe, Nachrichten Kaserne, Karlsruherstrasse 144, 69126 Heidelberg, Germany

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ABSTRACT

Background: Few studies have measured the burden of physical health problems after Iraq/Afghanistan deployment, except in association with post-traumatic stress disorder (PTSD) or mild traumatic brain injury (mTBI). Grief, a correlate of health problems in the general population, has not been systematically examined. We aimed to identify the prevalence of post-deployment physical health problems and their association with difficulty coping with grief.

Methods: Infantry soldiers (n = 1522) completed anonymous surveys using validated instruments six months following deployment in November–December 2008. Multiple logistic regression was used to assess the association of difficulty coping with grief and physical health.

Results: The most frequent physical health symptoms reported were: sleep problems (32.8%), musculoskeletal pain (32.7%), fatigue (32.3%), and back pain (28.1%). Difficulty coping with grief over the death of someone close affected 21.3%. There was a dose–response relationship between level of difficulty coping with grief and principal physical health outcomes (ps < .002). Controlling for demographics, combat experiences, injuries, PTSD, depression, and other factors, grief significantly and uniquely contributed to a high somatic symptom score (adjusted odds ratio (AOR) = 3.6), poor general health (AOR = 2.0), missed work (AOR = 1.7), medical utilization (AOR = 1.5), difficulty carrying a heavy load (AOR = 1.7), and difficulty performing physical training (AOR = 1.6; all 95% confidence intervals > 1).

Limitations: Data are cross-sectional and grief was measured with one item.

Conclusions: Over 20% of soldiers reported difficulty coping with grief. This difficulty was significantly associated with physical health outcomes and occupational impairment. Clinicians should be aware of the unique role grief plays in post-deployment physical health when treating patients.

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1. Introduction

Military service in a combat zone has been consistently linked to a broad range of health outcomes (Hoge et al., 2007; Hyams et al., 1996; Jones et al., 2002). The physical, neurocognitive, and psychological symptoms and occupational and social impairment associated with combat are well-documented. Despite an extensive literature on generalized health concerns following previous wars (Committee on Gulf War and Health, 2010; Engel et al., 1999; Proctor et al., 1998), few studies of the conflicts in Iraq and Afghanistan have characterized the prevalence or risk factors of post-war physical health problems (Hotopf et al., 2006), except in relation to post-traumatic stress disorder (PTSD) and/or mild traumatic brain injuries (mTBI; i.e., concussion) (Fear et al., 2009; Hoge et al., 2007, 2008; Polusny et al., 2011). Other mental health

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* Corresponding author at: Military Psychiatry Branch, Center for Military Psychiatry and Neuroscience, Walter Reed Army Institute of Research, 503 Robert Grant Avenue, Silver Spring, MD 20910, USA. Tel.: +1 301 319 2064; fax: +1 301 310 9484.
E-mail address: robin.l.toblin@us.army.mil (R.L. Toblin).

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concerns also known to be associated with physical health, including grief, have received little attention (Papa et al., 2008).

In the general population, there is evidence that grief predicts negative health outcomes independently from PTSD and depression (Bonanno et al., 2007), and that direct exposure to trauma worsens grief (Neria et al., 2007; Sung et al., 2011). Grief has also been linked to poor physical health (Mancini and Bonanno, 2011; Stroebe et al., 2007) and functional impairment (Mancini and Bonanno, 2011; Neria et al., 2007; Stroebe et al., 2007). A 2010 study of soldiers returning from operations in Iraq found that over 80% "knew someone who had been seriously injured or killed," and over one-quarter "had a buddy shot or hit near them" (Thomas et al., 2010). The impact of losing a team member in combat has been likened to losing a close family member (Hoge, 2010; Papa et al., 2008). Although there have been over 6000 service members killed in Iraq or Afghanistan as of the writing of this paper (U.S. Department of Defense, 2011), little research has been conducted on the health consequences of grief in service members during the current wars (Papa et al., 2008).

The Congressional Budget Office estimated that medical costs to the Department of Veterans Affairs (VA) for the Iraq and Afghanistan wars will reach $7–9 billion over the next ten years (Goldberg, 2007). Given the large number of fatalities in these wars and the significant impact of post-war physical health outcomes, it is critical to understand how grief may contribute to these outcomes. This study reports the prevalence of post-deployment physical health problems and examines the unique role grief plays in physical health among soldiers after their return from combat.

2. Methods

2.1. Study population and data collection

From November to December 2008, we surveyed 2064 soldiers from three U.S. infantry brigade combat teams six months post-deployment. The survey was a later iteration within a larger effort to study the impact of combat that began in 2003 (Hoge et al., 2004; Thomas et al., 2010). We coordinated with unit commanders, who provided time for large group recruitment briefings. Soldiers could volunteer to participate in the study under a protocol approved by the institutional review board of the Walter Reed Army Institute of Research. Participants were informed of the anonymity/confidentiality of their responses and that they could skip individual items. Approximately 50% of all soldiers from participating units were present during the recruitment phase, consistent with similar surveys (Hoge et al., 2004, 2007, 2008; Thomas et al., 2010). Soldiers unable to attend the recruitment sessions had other work-related duties, were on leave, ill, or on temporary duty elsewhere. After description of the study, 86% of soldiers attending the recruitment sessions gave written informed consent. On average, 97% of those soldiers responded to each item associated with the outcomes examined.

Of the 2064 soldiers who completed the survey, 1532 reported being deployed to Iraq or Afghanistan for at least one month. Ten soldiers who reported moderate or severe traumatic brain injury (i.e., loss of consciousness >30 min) were excluded in order to isolate the specific contribution of mTBI as a correlate of physical health problems. Studies have identified mTBI/concussion as a potential correlate of post-deployment health problems (Fear et al., 2009; Hoge et al., 2008; Polusny et al., 2011). The final sample was 1522.

2.2. Measures

Independent variables examined in relation to physical health outcomes included combat experiences, injury, adverse childhood experiences (ACEs), alcohol misuse, depression, PTSD, and grief. There were 34 combat experience questions, which were dichotomized into "at least once" and "never", summed (range: 0–34), and divided into quartiles (Hoge et al., 2008). Combat injury was grouped into no injury, non-mTBI injury, mTBI with alteration of but no loss of consciousness (AOC), and mTBI with loss of consciousness (LOC) (Hoge et al., 2008). ACE scores were calculated using methods found in the literature (Cabrera et al., 2007; Felitti et al., 1998). Our questionnaire included four ACEs: growing up with a parent with alcohol problems, growing up with a parent with mental illness, experiencing emotional abuse, or experiencing physical abuse (range: 0–4). Alcohol misuse was defined using the Two-Item Conjoint Screen (TICS) (Brown et al., 2001; Santiago et al., 2010). Depression (i.e., major depressive disorder) and PTSD were defined using the Patient Health Questionnaire—9 (PHQ-9) and the PTSD Checklist (PCL), both using the strict cutoff criteria used in previous studies (Hoge et al., 2004, 2008; Thomas et al., 2010). The case definition for depression used current psychiatric diagnostic criteria and evidence of impairment in work, at home, or in interpersonal functioning that was categorized as at the "very difficult" level as measured by the PHQ. For the PCL, the total score also had to be at least 50 on a scale of 17 to 85 (with a higher number indicating a greater number of symptoms or greater severity), a well-established cutoff. Grief was assessed with an item that asked, "In the past month, how much have you experienced difficulty coping with grief over the death of someone close?" Responses were "not at all," "a little bit," "moderately," "quite a bit," and "extreme." Any positive response was categorized as evidence that the soldier was experiencing difficulty coping with grief.

The six study outcomes included past month physical/somatic symptoms, self-rated overall health, missed work days, medical utilization (i.e., number of "sick call" visits), and occupational impairment measured by difficulty carrying a heavy load and difficulty performing physical training (PT), important military requirements. Physical symptoms were measured with the Patient Health Questionnaire—15 (PHQ-15) (Hoge et al., 2007; Kroenke et al., 2002). The menstrual cramping item was excluded due to the low proportion of women taking the survey. Symptoms were scored on a three-point scale (0–2) using the response options "not bothered at all," "bothered a little," and "bothered a lot" (except for sleep problems and fatigue, which utilized the responses, "not at all," "few or several days", and "more than half the days"/"nearly every day"). A total score ≥ 15 (out of 28) indicated a high total score (Hoge et al., 2007; Kroenke et al., 2002). Individual symptoms were also dichotomized using "bothered a lot"/"more than half the days" as the cutoff. Other commonly reported post-deployment symptoms often attributed to mTBI (i.e., being easily annoyed or irritable, concentration problems, memory problems, balance problems, ringing in the ears, and sensitivity to light) were dichotomized using the same responses from the PHQ-15 (Hoge et al., 2008).