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Research report

Risk for suicidal behaviors associated with PTSD, depression, and their comorbidity in the U.S. Army

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ABSTRACT

Background: Suicide rates have risen considerably in the United States Army in the past decade. Suicide risk is highest among those with past suicidality (suicidal ideation or attempts). The incidence of posttraumatic stress disorder (PTSD) and depressive illnesses has risen concurrently in the U.S. Army. We examined the relationship of PTSD and depression, independently and in combination, and rates of past-year suicidality in a representative sample of U.S. Army soldiers.

Methods: This study used the DoD Survey of Health Related Behaviors Among Active Duty Military Personnel (DoD HRB) ($N=5927$). Probable PTSD and depression were assessed with the PTSD Checklist (PCL) and the 10-item short form of the Center for Epidemiologic Studies Depression Scale (CES-D), respectively. Past-year suicidality was assessed via self-report.

Results: Six percent of Army service members reported suicidality within the past year. PTSD and MDD were each independently associated with past-year suicidality. Soldiers with both disorders were almost three times more likely to report suicidality within the past year than those with either diagnosis alone. Population-attributable risk proportions for PTSD, depression, and both disorders together were 24%, 29%, and 45%, respectively.

Limitations: The current study is subject to the limitations of a cross-sectional survey design and the self-report nature of the instruments used.

Conclusions: PTSD and depression are each associated with suicidality independently and in combination in the active duty component of the U.S. Army. Soldiers presenting with either but especially both disorders may require additional outreach and screening to decrease suicidal ideation and attempts.

1. Introduction

Suicide rates in the United States Army have historically been lower than civilian rates (Eaton et al., 2006). With the advent of Operation Iraqi Freedom and Operation Enduring Freedom (OEF/OIF), suicide rates have increased, surpassing civilian rates for the first time (Kuehn, 2009, 2010). From 2001 to 2009, rates of suicide in the Army increased from 9 to 22 per 100,000 (Black et al., 2011), the highest Army suicide rate in nearly three decades (Alverez, 2009). Past suicidality (i.e., suicidal ideation, intent and/or plan, and attempt) is one of the strongest risk factors for future attempts (Mann et al., 2008, 1999) as well as completed suicide (Beck et al., 1999; Brown et al., 2000; Nordstrom et al., 1995). Suicidality is associated with psychiatric disorders in both military (Gadermann et al., 2012; Thomsen et al., 2011) and civilian populations (Kessler et al., 2005; Nock et al., 2010; Petronis et al., 1990), with approximately 80% of suicide attempters and two-thirds of ideators having a preexisting psychiatric disorder (Nock et al., 2010). The rates of posttraumatic stress disorder (PTSD) and major depressive disorder (MDD) in the military have risen considerably relative to previous estimates, with MDD rates increasing by 20% and rates of PTSD nearly doubling (Armed Forces Health Surveillance, 2012). To date, there have been no large-scale epidemiological studies of the relationship between PTSD, depression, and suicidality in the active duty component of the United States military.

PTSD has been shown to be a risk factor for suicidality in civilian (Nock et al., 2009; Sareen et al., 2007) and military samples (Bryan and Corso, 2011; Bush et al., 2011; Guerra et al., 2011; Maguen et al.,

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2012b). A recent meta-analysis of 50 studies indicated that while PTSD was not associated with completed suicide, it was significantly associated with prior and current suicidal ideation (SI) and prior suicide attempts (Krysinska and Lester, 2010). These relationships remain after adjusting for psychiatric comorbidity (e.g., depression).

Depressive disorders are strongly associated with suicidal behaviors in the general population (Beautrais et al., 1996; Kessler et al., 2005; Nock et al., 2010; Petronis et al., 1990). Among individuals who attempt suicide, 39–62% have a depressive disorder diagnosis (Beautrais et al., 1996; Kessler et al., 2005; Petronis et al., 1990). Although there are some data available on the association between depression and suicidality in military samples (Bryan et al., 2013; Bush et al., 2011; Goodwin et al., 2013; Guerra et al., 2011), most of these studies are limited to inpatient, veteran, or other non-representative samples of the U.S. military.

PTSD and depression are highly comorbid in national surveys (Cougle et al., 2009; Kessler et al., 1995) and in military samples (Calabrese et al., 2011; Galatzer-Levy et al., 2013; Milliken et al., 2007). Among military samples, the contribution of PTSD to suicidality above and beyond that of depression has been examined in only a few studies (Bryan and Corso, 2011; Bryan et al., 2013; Griffith, 2012; Maguen et al., 2012b; Richardson et al., 2012). Among these studies, there have been conflicting findings with regard to whether there is a significant independent association between PTSD and suicidality. Furthermore, as prior studies have been conducted with small, non-representative samples of military service members or veteran samples, associations at the population level are yet unknown. The current study includes a large, representative sample of Army active duty service members, and therefore is better equipped to allow generalization of findings to the entire U.S. Army active duty population.

The purpose of the current investigation was to determine the relationships between PTSD, depression, and suicidality in Army service members so that delivery of appropriate resources to those individuals most at risk may be facilitated. In order to better understand the independent contributions of PTSD and depression to suicidality in practical terms, we also estimated the proportion of past-year suicidality attributable to PTSD and depression in the current population.

2. Methods

2.1. Participants and procedures

The target population of the 2008 Department of Defense Survey of Health Related Behaviors Among Active Duty Military Personnel (DoD HRB) included all active duty service members of the United States Military with the exception of recruits, academy cadets, and those who were absent without leave or incarcerated. More detailed discussion of sampling methods can be found elsewhere (Bray et al., 2009, 2010). A two-stage sampling method was used. First, a stratified, probability proportional to size methodology was applied, with stratification by service and region of the world. The sample was then stratified by pay grade and gender, and officers and women were oversampled to account for low numbers in these groups. The survey data were weighted to represent the active duty population, and sampling and nonresponse differences were accounted for in the weighting. Of 40,436 active duty service members sampled worldwide, 28,546 were available and completed surveys. Among Army service members, 10,400 were sampled, with 5927 responses representative of 508,088 soldiers. To examine the association of depression and PTSD to suicidality in the active Army, an analytic sample of $N=5472$ was used (weighted $N=468{,}788$). About 45% of the active Army was age 17–25, 86% were male, 63% were non-Hispanic white, 33% had a high school education or less, 43% were not married, and 82% were enlisted (Table 1). Survey respondents were apprised of the anonymous and voluntary nature of the self-report written survey. The Uniformed Services University of the Health Sciences Institutional Review Board approved this study.

Table 1
Demographics, mental health diagnoses, and suicidality[a] in the U.S. Army.

Risk factors	Weighted proportion (%)	Weighted *N*[b]	Unweighted *N*
	100	467,925	5461
Demographics			
Age			
17–20	14	64,046	677
21–25	31	145,553	1692
26–34	31	143,610	1721
≥35	25	114,716	1371
Gender			
Male	86	403,385	3962
Female	14	64,540	1499
Race			
Non-Hispanic White	63	296,449	3054
White	37	171,476	2407
Education			
High school or Less	33	152,243	1683
Some College	45	209,620	2494
College Degree or More	23	106,062	1284
Married			
No	43	200,897	2442
Yes	57	267,028	3019
Enlisted			
No	18	84,178	1091
Yes	82	383,747	4370
PTSD			
No	88	409,672	4772
Yes	12	58,253	689
Depression			
No	66	307,710	3547
Yes	34	160,215	1914
Comorbidity of PTSD & Depression			
Neither diagnosis	65	302,143	3484
Both PTSD & depression	11	52,686	626
Either PTSD or depression alone	24	113,096	1351
PTSD only	1	5567	63
Depression only	23	107,529	1288
Suicidality[a]			
No	94	439,782	5115
Yes	6	28,143	346

[a] Suicidality is defined as seriously considered and/or attempted suicide within the past-year.
[b] Differences from totals are due to rounding.

2.2. Measures

2.2.1. Suicidality

Participants responded to a series of questions that assessed suicidality in the past year. They were asked separately, "Have you