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Research report

Veteran exposure to suicide: Prevalence and correlates

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ABSTRACT

Background: The aim of this study was to determine rates and consequences of suicide exposure in a veteran population and variables related to psychiatric morbidity.**Methods:** 931 veterans from a random digit dial survey conducted July 2012–June 2013 in the Commonwealth of Kentucky was utilized to examine associations between suicide exposure and depression and anxiety. For those with lifetime suicide exposure, perceptions of closeness to the decedent and additional traumatic death exposure were also examined.**Results:** Almost half of veterans (47.1%, $n=434$) reported lifetime exposure to suicide. Suicide-exposed individuals were almost twice as likely to have diagnosable depression ($OR=1.92$, $CI=1.31-2.8$) and more than twice as likely to have diagnosable anxiety ($OR=2.37$, $CI=1.55-3.61$). Suicide-exposed were also more likely than non-exposed to report suicide ideation (9.9% vs. 4.3%). Perceived closeness to decedent increased the odds of depression ($OR=1.38$, $CI=1.12-1.69$), anxiety ($OR=1.51$, $CI=1.21-1.89$) and PTSD ($OR=1.65$, $CI=1.27-2.16$) and more than doubled the odds of Prolonged Grief ($OR=2.47$, $CI=1.60-3.83$). A model examined time sequence of suicide and traumatic death exposure. Experiencing a suicide exposure first and subsequent traumatic death exposure in their military career almost quadrupled the odds of suicide ideation ($OR=3.56$, $p=.01$, $CI=1.34-9.46$).**Limitations:** Major study limitations include use of only one US state and random digit dial response rate.**Conclusions:** Suicide exposure confers psychiatric risks in veterans. Perceptions of closeness to decedents, which may extend beyond familial lines, may heighten these risks in the suicide exposed. Multiple exposures to suicide and traumatic death may lead to significant suicide risk.

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1. Introduction

Approximately 22 veterans die by suicide daily in the United States and suicide remains a critical problem in the United States military, despite the focus on suicide prevention within the U.S. Armed Forces and Department of Veterans Affairs (Kirsch, 2014). Recent investigations into the effects of war on suicide rates have focused on the impact of multiple deployments, traumatic brain injury, and combat exposure (Bryan and Clemans, 2013; Bryan et al., 2013). While military service has historically been associated through various eras with psychiatric disorders, such as post traumatic stress disorder (PTSD) due to exposure to sudden and traumatic death caused by combat and training accidents (Kessler et al., 2014; Nock et al., 2014; Schoenbaum et al., 2014), none of these recent investigations have examined the impact made by the exposure to suicide.

Suicide rates among veterans remain well above the civilian rate and, while veterans represent 1% of the U.S. population, they represent 20% of all suicide deaths every year (Department of Veteran Affairs, 2010). These findings are especially salient in light of recent trends for rising suicide rates among U.S. military personnel. The suicide rates for Army and Marine personnel who served in Iraq and Afghanistan more than doubled from 2005 to 2009 and for those who never deployed the suicide rate tripled (Hoge and Castro, 2012). By 2012, the number of Army soldiers dying by suicide each year exceeded the number killed in action.

Military service members deployed to combat zones necessarily experience trauma related to their service which frequently results in poor mental health outcomes, such as PTSD, depression, and anxiety. Exposure to combat has been associated with an increased risk of PTSD and the intensity of combat exposure has been linearly related to PTSD symptom severity (Miller et al., 2012). Recent research has pointed to an association between suicidal ideation with certain forms of combat exposure such as dead bodies, body parts, and other atrocities (Boscarino, 2006; Castro and McGurk, 2007; Saren et al., 2007).

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Multiple deployments and long deployments have also demonstrated an adverse impact on mental health outcomes and have been predictive of suicide attempts among military service members (Schoenbaum et al., 2014). Stress on the entire military due to the length of these recent conflicts and the burden placed on all the forces, regardless of deployment status, has been linked to suicide risk among those who were never deployed (Bryan et al., 2013). Other non-combat military-related events, such as exposure to death from training accidents, are expected incidents during military service but are also associated with PTSD, depression, and anxiety disorders (Boscarino, 2006).

Expected military events, such as exposure to traumatic death due to combat-related and training accidents, have been investigated for their association with poor psychiatric outcomes, but exposure to suicide and its effects on health outcomes has yet to be reported. Little is known about the mental and physical health outcomes on service members and veterans from their exposure to suicide death.

Investigations among civilians who are suicide bereaved demonstrate an association with suicide exposure and psychiatric disorders such as PTSD and Prolonged Grief Disorder (PG) (Latham and Prigerson, 2004). Exposure to suicide has also been demonstrated to be predictive of future suicidal ideation and attempts among those exposed to suicide death (Bolton et al., 2013) as well as family members of people who have died by suicide (Pitman et al., 2014).

In our previous investigations, we found that 47% of the overall sample experienced lifetime exposure to suicide (Cerel et al., in press). These included both military veterans and community members who had exposure to suicide. There were no differences between these groups in terms of rates of exposure; however there is a need to investigate how military-specific variables and exposure to sudden traumatic death during their military service are related to the effects of suicide exposure in veterans.

2. Methods

2.1. Sources of data

A random digit dial (RDD) survey was conducted July 2012–June 2013. This study was approved by the university IRB and Department of Defense (DOD)'s Human Research Protection Office (HRPO). A dual frame sample of landline and cell phone numbers were called, weighted to reflect the true distribution of landline only, cell only, and dual use households in the Commonwealth of Kentucky. Respondents were contacted using a modified, list-assisted Mitofsky–Waksberg R method (landline) or a Cellular RDD (cell phone) sampling technique.

As part of a larger study (Cerel et al., in press), 805 non-veterans were also recruited but this analyses only examines the veterans. For the overall study, the Council of American Survey Research Organizations (CASRO) response rate was 35.9%. The CASRO response rate assumes that the proportion of eligible cases in unknown cases is equivalent to the proportion of eligible cases in the sum of cases in the sample of which the eligibility or ineligibility could be determined (CASRO, 1982). Given that homes in which a veteran was not present were asked to participate in the larger study makes us unable to calculate response rates for the veteran-only sample.

Overall, calls to veteran participants averaged 15.20+6.17 min (Range=3.65–74.80). Following oral consent, the respondent was interviewed utilizing the following measures.

3. Independent variables

3.1. Exposure to suicide

Participants were queried as to whether they knew anyone who died by suicide at any point in their lifetime. Those who reported exposure to a suicide death were then asked about perceived closeness of

relationship to the decedent (or the death that had most impact on them where multiple exposures were present) on a 5 point Likert scale with higher scores indicating increased closeness. They were asked date of death (to assess for recency of suicide death), social and/or familial relationship to decedent (open-ended), and how many people they knew who had died by suicide (to determine exposure to multiple suicides). Veterans were also asked if the suicide occurred during their military career.

3.2. Demographics

This set of questions included the following: age, race (dichotomized to Caucasian or other race due to the low number of non-Caucasian participants), sex, marital status (married or not married), parental status (having children or not), and rural/urban residence status (with urban being defined as 1–7 and rural being defined as levels 8–9 on the nine-level rural–urban continuum code utilized by the United States Department of Agriculture (USDA) Economic Research Service) (US Department of Agriculture and Economic Research Service, 2012).

3.3. Veteran-specific demographics

This set of questions included the following: military branch, enlisted vs. officer, pay grade upon exiting the military, average duration of membership in armed forces in years, duration in active, reserve, and national guard duty in months and years, whether deployed to combat zone, total number of deployments, total amount of time in combat zone(s) in weeks, months, and years, and month and year of veteran status upon exiting the military.

3.4. Exposure to sudden traumatic death

This dichotomous question asked whether or not participants knew another service member during their military career who had died suddenly and traumatically that was not due to suicide (“During your military career, did you know another service member who died suddenly and traumatically that was not due to suicide like in combat or in a training accident?”).

3.5. Dependent variables

3.5.1. Anxiety and depression

The Patient Health Questionnaire (PHQ), anxiety and depression modules, were used to assess depressive and anxiety symptoms (Spitzer et al., 1999). The anxiety module, the PHQ-GAD-7, includes seven questions while the depression module, the PHQ-DEP9, includes nine questions. The PHQ takes less than three minutes per person to administer and has shown good agreement with diagnoses made by independent mental health professionals ($\kappa=.65$; overall accuracy, 85%; sensitivity, 75%; specificity, 90%) (Spitzer et al., 1999). A conservative cutoff of 10 on each measure was utilized which indicates moderate symptoms and a probable diagnosis. The prevalence rate from the PHQ of current PHQ depressive disorder in the general population is 9.2% (Martin et al., 2006).

3.6. Post-Traumatic Stress Disorder (PTSD) (for the suicide exposed)

The Short Screening Scale for PTSD is a 7-item measure used to determine PTSD symptoms (Breslau et al., 1999) which was administered to participants who endorsed suicide exposure. Of the seven items, five of the symptoms query about avoidance and numbing and two about hyper-arousal. A score of 4 or greater on this scale defined positive cases of PTSD with a sensitivity of 80% and specificity of 97% (Breslau et al., 1999).

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