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Documented family violence and risk of suicide attempt among U.S. Army soldiers

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ABSTRACT

Suicide attempt (SA) rates in the U.S. Army increased substantially during the wars in Afghanistan and Iraq. This study examined associations of family violence (FV) history with SA risk among soldiers. Using administrative data from the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS), we identified person-month records of active duty, Regular Army, enlisted soldiers with medically documented SAs from 2004 to 2009 (n = 9650) and a sample of control person-months (n = 153,528). Logistic regression analyses examined associations of FV with SA, adjusting for socio-demographics, service-related characteristics, and prior mental health diagnosis. Odds of SA were higher in soldiers with a FV history and increased as the number of FV events increased. Soldiers experiencing past-month FV were almost five times as likely to attempt suicide as those with no FV history. Odds of SA were elevated for both perpetrators and those who were exclusively victims. Male perpetrators had higher odds of SA than male victims, whereas female perpetrators and female victims did not differ in SA risk. A discrete-time hazard function indicated that SA risk was highest in the initial months following the first FV event. FV is an important consideration in understanding risk of SA among soldiers.

1. Introduction

Rates of suicidal behaviors, including suicide deaths, attempts, and ideation, among U.S. Army soldiers increased considerably during the wars in Iraq and Afghanistan (Schoenbaum et al., 2014; Ursano et al., 2015a). Understanding factors that predict suicide attempts is important for risk detection and prevention. Previous research has examined risk as a function of socio-demographics and service-related characteristics, such as deployment history (Ursano et al., 2015a, 2015b, 2017). Little attention has been focused on the association of family violence with suicide attempts.

Family violence involves violent, aggressive, or abusive behaviors targeted towards spouses or partners and/or children. Most family violence studies focus on the recipients of assault or abuse (i.e., victimization). Family violence victimization increases the likelihood of developing posttraumatic stress disorder (PTSD) and other mental health disorders (Dutton et al., 2006; Marshall et al., 2005), which are risk factors for suicidal behavior in both active duty military personnel and veterans (Bachynski et al., 2012; Bossarte et al., 2012; Hyman et al., 2012; LeardMann et al., 2013). Family violence victimization has also demonstrated direct associations with suicidal behavior; however, previous studies frequently combined suicide-related outcomes of differing severity (e.g., ideation and attempts), making it difficult to determine the unique relationships of family violence to specific outcomes.

Family violence victimization was associated with greater risk of suicidal ideation in male and female active duty Air Force personnel (Langhinrichsen-Rohling et al., 2011) and a sample of veterans using

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Veterans Health Administration services (Cerulli et al., 2014). History of spousal abuse and sexual assault were associated with suicide attempts in active duty Canadian men and women (Belik et al., 2009). The association of family violence victimization with suicidal behavior is similarly observed among civilians (Devries et al., 2011; Gulliver and Fanslow, 2013). In a nationally representative sample of 5238 U.S. adults (Simon et al., 2002), physical assault by a relative or intimate partner was more likely to be associated with suicidal ideation and behavior than assault by a stranger, suggesting that violence involving family members may be particularly devastating to victims.

Fewer studies have focused on family violence perpetrators. A number of small military and civilian studies, however, have indicated a relationship between family violence perpetration and suicidal ideation and behavior (Conner et al., 2001; Heru et al., 2006; Lucas et al., 2002; Wolford-Clevenger et al., 2015). We are not aware of any studies that have examined how the relative effects of family violence victimization and perpetration can inform understanding of suicide risk. Further, although research has focused on the effects of family violence among male and female victims and perpetrators, there has been no systematic examination of how the association of family violence victimization and perpetration with suicide attempt may be influenced by gender.

This study examined the association of family violence with risk of suicide attempt among enlisted U.S. Army soldiers on active duty from 2004 through 2009 using administrative data from the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS) (Ursano et al., 2014). Adjusting for basic socio-demographic and service-related variables, we examined the overall association of family violence with suicide attempt, as well as factors that have received little attention in previous studies, such as the number and recency of family violence events, and a soldier's role as perpetrator or victim. We also examined whether the association of family violence with suicide attempt varied by gender, deployment status (never deployed, currently deployed, previously deployed), and time in service, which are associated with suicide attempts among soldiers (Ursano et al., 2015a, 2015b, 2017) and may play unique roles in modifying the effects of family violence. History of family violence may carry different risks based on phases of deployment, which may be particularly salient for those who have been exposed to combat, and may be influenced by family stressors upon return home.

2. Methods

2.1. Sample

This longitudinal, retrospective cohort study used data from the Army STARRS Historical Administrative Data Study (HADS), which integrates 38 Army/DoD administrative data systems, including every system in which suicidal events are medically documented. The HADS includes individual-level person-month records for all soldiers on active duty between January 1, 2004 and December 31, 2009 (n = 1.66 million) (Kessler et al., 2013). This component of Army STARRS was approved by the Institutional Review Boards of the Uniformed Services University of the Health Sciences, University of Michigan Institute for Social Research, University of California, San Diego, and Harvard Medical School, which determined that the present study did not constitute human participant research because it relies entirely on deidentified secondary data.

The HADS contains administrative records for the 975,057 Regular Army soldiers on active duty during the study period (excluding activated Army National Guard and Army Reserve), including 9791 who had a documented suicide attempt. This study focused on Regular Army enlisted soldiers, who accounted for nearly 99% of suicide attempts from 2004 through 2009 (Ursano et al., 2015b), with the final analytic sample including all enlisted soldiers who attempted suicide (n = 9650 cases) and a 1:200 equal-probability sample of control person-months (n = 153,528). In selecting controls, the population of enlisted soldiers was stratified by gender, rank, time in service, deployment status (never, currently, or previously deployed), and historical time. Control person-months excluded all soldiers with a documented suicide attempt or other non-fatal suicidal event (e.g., suicidal ideation) (Ursano et al., 2015a), and person-months in which a soldier died. Data were analyzed using a discrete-time survival framework with person-month as the unit of analysis (Willett and Singer, 1993), such that each month in the career of a soldier was treated as a separate observational record. Each control person-month was assigned a weight of 200 to adjust for undersampling.

2.2. Measures

2.2.1. Suicide attempt

Soldiers who attempted suicide were identified using Army/DoD administrative records from: the Department of Defense Suicide Event Report (DoDSER) (Gahm et al., 2012), a DoD-wide surveillance mechanism that aggregates information on suicidal behaviors via a standardized form completed by medical providers at DoD treatment facilities; and ICD-9-CM diagnostic codes E950-E958 (indicating self-inflicted poisoning or injury with suicidal intent) from the Military Health System Data Repository (MDR), Theater Medical Data Store (TMDS), and TRANSCOM (Transportation Command) Regulating and Command and Control Evacuating System (TRAC^{2}ES), which together provide healthcare encounter information from military and civilian treatment facilities, combat operations, and aeromedical evacuations (eTable 1, available online at www.starrs-ls.org/#/list/publications). We excluded suicide deaths and DoDSER records indicating only suicide ideation. The E959 code (late effects of a self-inflicted injury) was excluded, as it confounds the temporal relationships between the predictor variables and suicide attempt (Walkup et al., 2012). Records from different data systems were cross-referenced to ensure all cases represent unique soldiers. For soldiers with multiple suicide attempts, we selected the first attempt using a hierarchical classification scheme that prioritized DoDSER records (Ursano et al., 2015a).

2.2.2. Socio-demographic and service-related variables

Socio-demographic (gender, current age, race/ethnicity, education, marital status) and service-related variables (age at Army entry, time in service [1–2 years, 3–4 years, 5+ years], deployment status [never, currently, or previously deployed], and military occupation [combat arms vs. other]) were drawn from Army/DoD administrative data (eTable 1). Combat arms included occupations that were identified, based on expert consensus, as those most typically exposed to direct combat. This includes some, but not all, of the occupations traditionally classified as combat arms (e.g., see eTable 2 in the supplement). Previous research indicates that these combat arms soldiers are at elevated risk of suicide attempt compared to other occupations (Ursano et al., 2017). We also created an indicator variable for any prior mental health diagnosis during Army service by combining categories derived from administrative medical record ICD-9-CM codes (e.g., major depression, bipolar disorder, posttraumatic stress disorder, personality disorders), excluding postconcussion syndrome, tobacco use disorder, and supplemental V-codes that are not disorders (e.g., stressors/adversities, marital problems) (e.g., see eTable 3 in the supplement).

2.2.3. Family violence

Family violence events were identified using 2002–2009 administrative records from Army legal data systems (including family violence-related aggravated and/or simple assault, emotional and/or sexual abuse, and family-related non-violent offenses) and the Army Central Registry (ACR), a Family Services data system specifically designed to capture family violence-related events for the purpose of intervention (including spouse and child abuse, with physical, sexual, emotional, and neglect subtypes). Additional events were captured