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Characterizing Sexual Assault Among Female U.S. Soldiers With Suicidal Behavior

Kristin K. Sznajder, Ihsan Abdur-Rahman, Eren Youmans Watkins, Brent Edward Mancha, Kirsten Anke, Keri Kateley, Marc Rattigan, and Amy Millikan Bella

ABSTRACT

Associations between sexual assault and demographic and military characteristics, health indicators, and socioenvironmental factors among female U.S. Army soldiers who exhibited suicidal behavior from 2004 to 2013 and had data on sexual assault were examined. Multivariable logistic regression models were used to determine factors associated with a history of sexual assault stratified by type of suicidal event. The sample included 2,236 female soldiers with suicidal behavior: died by suicide (n = 43), suicide attempt (n = 1,142), and suicidal ideation (n = 1,051). Among soldiers in each of the suicide behavior categories, those diagnosed with posttraumatic stress disorder (PTSD) had significantly higher odds of a sexual assault compared to those who were not diagnosed with PTSD. Future research is needed to improve the U.S. Army’s prevention of sexual assault in this population.

KEYWORDS

Suicide; posttraumatic stress disorder; U.S. army; victim; suicidal ideation; attempted suicide; sexual assault; military stress

Introduction

Over the past decade, the U.S. Army has prioritized reducing both suicidal behavior (i.e., suicide, suicide attempt, suicidal ideation) and sexual assault to maintain ready and resilient soldiers and units, and prevention research has grown considerably for both suicide and sexual assault (Jewkes, Nduna, Jama Shai, & Dunkle, 2012; Johnson, Frank, Ciocca, & Barber, 2011). These efforts, however, have not yet come together to assess contributing factors related to sexual assault among individuals with suicidal events.

Suicide rates in the U.S. Army started to increase in 2004 and peaked in 2012 (29.7 suicides per 100,000; Department of Defense [DoD], 2013; Schoenbaum et al., 2014). After the peak in 2012, the suicide rate among active duty U.S. Army soldiers has decreased and remained stable, whereas approaching the age- and sex-adjusted suicide rate for the U.S. population (Nweke et al., 2016). Risk factors for suicidal behavior in both the U.S. Army and the U.S. population are similar and include gender, heavy alcohol use, psychopathology, family history of mental disorders, childhood adversity, stressful life experiences, and poor social support (Borges et al., 2010; Elliott, Mok, & Briere, 2004; Herberman-Mash et al., 2014; Nock et al., 2014; Suominen et al., 2004). Within the U.S. Army, additional risk factors for suicidal behavior include relationship problems and enlisted rank (S. Black, Gallaway, Bell, & Ritchie, 2011; Friedman, 2014; Nock et al., 2014).

Prevalence estimates of sexual assault victimization (experiencing nonconsensual sexual contact) in the general U.S. population range from 18.3% to 39% for women and 1.4% to 4% for men (M. C. Black et al., 2011; Elliott et al., 2004). The prevalence of sexual assault victimization in the U.S. Army ranges from 6.1% to 43% for female soldiers and 0.03% to 12.4% for male soldiers (Baltrushes & Karnik, 2013; DoD Sexual Assault Prevention & Response [SAPR], 2015; Hoyt, Klosterman Rielage, & Williams, 2011). The wide range for U.S. Army estimates may be likely due to differences in data sources and underreporting. It is estimated that 66% of women and 76% of men serving in the armed forces who experienced non-consensual sexual contact did not report the incident to a military or civilian official (DoD SAPR, 2015). Among military and civilian survivors of sexual assault, sexual assault victimization is associated with a number of psychological...
The study population was restricted to female U.S. Army active duty (including activated U.S. Army National Guard and Reserve) soldiers who displayed suicidal behaviors based on information collected in the Department of Defense Suicide Event Report (DoDSER) through (2013). The DoDSER, which began as a pilot program in 2001 and evolved into a DoD-wide system in 2008, is the standard for surveillance of suicidal behaviors for all military branches. Data in this study include completed DoDSERs for suicide (beginning in 2001), suicide attempt (beginning in 2004), and suicidal ideation (beginning in 2007) cases. Cases of suicide attempts and ideations were captured only if they resulted in hospitalization or medical evacuation to a higher level of care. A more detailed description of the data collection methodology and the information available in the DoDSER has been published previously (Gahm et al., 2012).

DoDSER data and other information used in the analysis were obtained from the Army Behavioral Health Integrated Data Environment (ABHIDE) maintained by the U.S. Army Public Health Center (Spiess et al., 2016). Initiated in 2009, the ABHIDE is a case registry of soldiers who displayed suicidal behaviors and contains comprehensive information on demographic and military characteristics, social and familial stressors, medical history and diagnoses, criminal history and domestic violence incidences. For soldiers with multiple records in the DoDSER system, only one event was included in this analysis. For soldiers with multiple event types, the suicide event was chosen first, followed by suicide attempt and then suicidal ideation. For soldiers with multiple events of the same type, the most recent event was chosen. The United States Army Public Health Center Office of Human Protections approved this study.

**Sexual assault victimization**

Sexual assault victimization, the outcome of interest, was identified both in the DoDSER and the U.S. Army’s criminal justice administrative datasets: the Centralized Operational Police Suite (COPS) and Criminal Investigation Division Information Management System (CIMS). COPS is a military police reporting system. CIMS contains event level details of investigative data and may contain military police reports. Both are maintained by the U.S. Army Criminal Investigative Command. In the DoDSER, which is completed by a behavioral clinical provider, the sexual assault question reads, “Prior to the [suicidal] event, was the patient/decedent an alleged or confirmed victim of sexual abuse or assault?” If “Yes,” the respondent is asked to indicate whether the incident occurred within the past 30 days, 3 months,
1 year, or >1 year. Soldiers were categorized as having a history of sexual assault victimization if they responded “Yes” to being a victim of sexual abuse/assault regardless of when the sexual assault or abuse took place before the suicidal event or if they had a record of founded sexual assault victimization in COPS or CIMS prior to the suicidal event. A value of “No” was given if the first DoDSER sexual abuse/assault question response was “No,” if the follow-up time period question was unanswered, and if there was no history of sexual assault victimization in the U.S. Army’s criminal justice administrative datasets. In this analysis, the sexual assault was included if it was documented in the DoDSER or if the date in the criminal database was before the suicidal event assessed in this study. However, data were not available to determine the whether the previous sexual assault occurred before or after the suicidal event. Sexual assault data retrieved from COPS/CIMS databases included information on MST. However, data from the DoDSER could include sexual assault before entry into military service. There were 93 unique sexual assault cases from COPS/CIMS included in this analysis that had either missing information on sexual assault in the DoDSER or no sexual assault was indicated in the DoDSER. Sexual assault victimization was dichotomized into yes or no.

Demographic and military characteristics
Demographic and military characteristics present at the time of the suicidal event were obtained from the Defense Manpower Data Center (DMDC) Master Personnel File. Soldier age at the time of the suicidal event was grouped as follows: 17–24, 25–34, and 35–60. The upper bound of the oldest age category was set at 60 years to limit the population to active duty soldiers because soldiers older than 60 are eligible for retirement. Race was categorized as White (non-Hispanic White), African American (non-Hispanic Black), and Other (Hispanic, non-Hispanic Native American, non-Hispanic Asian, non-Hispanic Pacific Islander, and Unknown). Marital status was categorized as never married, married, divorced, or other (annulled, widowed, or legally separated). Rank was categorized as E1–E4 (junior enlisted rank), E5–E9 (Noncommissioned Officer), or O1–O9/W1–W5 (Officer/Warrant Officer). Deployment data were categorized based on the number of past deployments (i.e., 0, 1 or 2+).

Social, familial and physical stressors
Details of the social, physical, and familial stressors were extracted from responses to DoDSER questions. For each stressor category, an initial question asked whether the stressor ever occurred. If “Yes,” a follow-up question asked whether the stressor occurred within the past 30 days, 3 months, 1 year, or >1 year ago. For this analysis, dichotomized (Yes/No) stressor variables were created to indicate whether or not the stressor occurred within one year of the suicidal event. “Don’t Know/Data Unavailable/Unknown” responses were coded as missing.

The social stressor category included DoDSER questions pertaining to relationship problems and military/work stress. Relationship problems included evidence of a failed or failing relationship. Military/work stress included job problems (e.g., laid off, fired, excessive pressures), supervisor or coworker issues or problems, poor work performance review or evaluation (e.g., adverse administrative or punitive actions, or unit or workplace hazing). The familial stressor category included chronic or severe illness of a spouse or family member, death of a spouse or family member (other than suicide), and family member suicide. The physical health stressor category included reporting a physical health problem in the DoDSER (i.e., Prior to the suicidal behavior event, was there evidence of a physical health problem?).

Behavioral health diagnoses
Diagnoses for BH conditions were obtained from medical encounter claims data from the Medical Health System Data Repository. International Classification of Diseases, version 9 (ICD-9) codes for medical encounters indicating PTSD (309.81), mood disorders (major depression [296.2 or 296.3], dysthymia [300.4], depression not otherwise specified [311.0], bipolar disorder [296.0, 296.4, 296.8], or other mood disorders [296, 296.1, 296.9]), substance use disorder (291, 292, 303, 304, and 305.2–305.9), or anxiety disorders (300.0, 300.10, 300.2, and 300.3), that occurred within a year of the soldier’s suicidal event were included in the analysis. The Healthcare Effectiveness Data and Information Set 22 criteria for a diagnosis of depression were used to classify the conditions of interest.

A BH encounter was considered a diagnosis when an ICD-9 code appears in any diagnostic position (Dx1–Dx8) for an inpatient hospitalization or appears in the first diagnostic position (Dx1) for an outpatient medical encounter. A BH diagnosis was also considered when ICD-9 codes appear in the second, third, or fourth diagnostic positions (Dx2–Dx4) in the electronic medical record for the same diagnostic condition at least twice within a year but not on the same day (National Committee of Quality Assurance, 2010).
For example, a soldier would be considered to have a diagnosis of anxiety disorder if she had a medical encounter coded ICD-9 300.00 (anxiety state) documented in the electronic medical record as the third diagnostic position (Dx3) and a subsequent encounter coded in the ICD-9 300.00–300.3 (anxiety disorder diagnoses) range in the fourth diagnostic position (Dx4) within a year of the first event (but not on the same day).

**Analysis**

Descriptive statistics (frequencies and percentages) were calculated to examine the prevalence of sexual assault victimization among suicidal behavior cases (categorized by suicide, suicide attempt, and suicidal ideation) and to characterize the study population. Logistic regression was used to examine the association between the abovementioned factors and sexual assault victimization for suicide, suicide attempt, and suicidal ideation cases separately. Results from the bivariate analysis illustrate associations between one factor and sexual assault stratified by type of suicidal event. Multivariable logistic regression models were used to determine which factors were independently associated with sexual assault victimization in each suicidal event type category. Multivariable regression models were built by including factors significant in the bivariate analysis for each event type. All data analyses were performed in SAS, version 9.2 (SAS Institute, Inc., Cary, NC).

**Results**

This study included 2,236 female soldiers, comprising 43 suicide cases, 1,142 suicide attempt cases, and 1,051 suicidal ideation cases (Figure 1). The prevalence of sexual assault victimization was 37% among the suicide cases, 46% among the suicide attempt cases, and 44% among the suicidal ideation cases. In the bivariate analysis, sexual assault did not differ by marital status or the number of past deployments across suicidal behavior event type (Table 1). In our bivariate analysis, we found that soldiers age 17–24 were 16 times more likely to have a documented sexual assault than soldiers 35–60 years old and soldiers age 25–16 years were 4 times more likely to have a documented sexual assault than soldiers 35–60 years old and soldiers age 25–16 years.

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**Figure 1.** Analytic population flow chart.
with a history of PTSD were 26 times more likely to have a documented sexual assault compared with soldiers without a history of PTSD among cases of suicide. African American (odds ratio [OR] = 0.7), Hispanic (OR = 0.7), junior enlisted rank (OR = 1.4), family illness (OR = 1.8), mood disorder (OR = 1.4), anxiety disorder (OR = 1.7), PTSD (OR = 3.8), substance use disorder (OR = 1.5), and poor physical health (OR = 1.8) were associated with sexual assault among suicide attempt cases. Among soldiers who have had a documented suicidal ideation; African-American (OR = 0.7), mood disorder (OR = 1.4), anxiety disorder (OR = 1.7), PTSD (OR = 3.8), relationship problems (OR = 1.7), and poor physical health (OR = 1.6) were associated with sexual assault.

In the multivariable logistic regression analysis, a PTSD diagnosis was independently associated with a history of sexual assault victimization for all suicidal behavior event types (suicide, OR = 32.3; suicide attempt, OR = 3.4; suicidal ideation, OR = 4.3). A physical health problem (OR = 1.5), being of junior enlisted rank (OR = 1.9), and having an anxiety disorder (OR = 1.7) were independently associated with a history of sexual assault victimization among the suicide attempt cases. Among suicidal ideation cases, substance use disorder (OR = 1.7), family illness (OR = 1.8), and relationship problems (OR = 1.7) were associated with an increased probability of sexual assault (Table 2).

Discussion

This study assessed the prevalence of sexual assault victimization among female U.S. Army active duty soldiers who displayed suicidal behaviors (i.e., suicide, suicide attempt, suicidal ideation) and assessed whether there were differences in the socio-demographic factors associated with a history of sexual assault victimization by type of suicidal event. To the authors’ knowledge, this study is the first to use DoDSER data to characterize the prevalence of sexual assault victimization and factors associated with a history of sexual assault victimization in soldiers who displayed suicidal behaviors.

Table 1. Prevalence of Demographic and Military Characteristics, Health Indicators, and Socio-environmental Factors Stratified by Sexual Assault and Suicidal Behavior (n = 2,236a).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Suicide, n (%)</th>
<th>Suicide attempt, n (%)</th>
<th>Suicidal ideation, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>SA (n = 16)</td>
<td>No SA (n = 27)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17–24</td>
<td>1,390</td>
<td>8 (62)</td>
<td>5 (38)</td>
</tr>
<tr>
<td>25–34</td>
<td>612</td>
<td>7 (37)</td>
<td>12 (63)</td>
</tr>
<tr>
<td>35–60</td>
<td>232</td>
<td>1 (9)</td>
<td>10 (91)</td>
</tr>
<tr>
<td><strong>Race–ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>595</td>
<td>5 (50)</td>
<td>5 (50)</td>
</tr>
<tr>
<td>Hispanic and Other</td>
<td>442</td>
<td>3 (43)</td>
<td>4 (57)</td>
</tr>
<tr>
<td>White</td>
<td>1,197</td>
<td>8 (31)</td>
<td>18 (69)</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never married</td>
<td>1,236</td>
<td>9 (43)</td>
<td>12 (57)</td>
</tr>
<tr>
<td>Married</td>
<td>783</td>
<td>7 (39)</td>
<td>11 (61)</td>
</tr>
<tr>
<td>Divorced</td>
<td>189</td>
<td>0 (0)</td>
<td>4 (100)</td>
</tr>
<tr>
<td>Other</td>
<td>26</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td><strong>Rank</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1–E4</td>
<td>1,818</td>
<td>10 (45)</td>
<td>12 (55)</td>
</tr>
<tr>
<td>ES–E9</td>
<td>316</td>
<td>6 (50)</td>
<td>6 (50)</td>
</tr>
<tr>
<td>O1–O9/W1–W5</td>
<td>101</td>
<td>0 (0)</td>
<td>9 (100)</td>
</tr>
<tr>
<td><strong>Number of deployments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1,595</td>
<td>7 (44)</td>
<td>9 (56)</td>
</tr>
<tr>
<td>1</td>
<td>424</td>
<td>8 (44)</td>
<td>10 (56)</td>
</tr>
<tr>
<td>2+</td>
<td>217</td>
<td>1 (11)</td>
<td>8 (89)</td>
</tr>
<tr>
<td><strong>Familial stressors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family illness</td>
<td>169</td>
<td>1 (50)</td>
<td>1 (50)</td>
</tr>
<tr>
<td>Death in family</td>
<td>177</td>
<td>0 (0)</td>
<td>3 (100)</td>
</tr>
<tr>
<td>Suicide in family</td>
<td>23</td>
<td>0 (0)</td>
<td>2 (100)</td>
</tr>
<tr>
<td><strong>Behavioral health</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mood disorder</td>
<td>1,121</td>
<td>7 (32)</td>
<td>15 (63)</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>546</td>
<td>8 (50)</td>
<td>8 (50)</td>
</tr>
<tr>
<td>PTSD</td>
<td>312</td>
<td>8 (89)</td>
<td>1 (11)</td>
</tr>
<tr>
<td>Substance abuse</td>
<td>369</td>
<td>3 (30)</td>
<td>7 (60)</td>
</tr>
<tr>
<td><strong>Social/physical health</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship problems</td>
<td>848</td>
<td>8 (33)</td>
<td>16 (67)</td>
</tr>
<tr>
<td>Military/work stress</td>
<td>1,234</td>
<td>7 (27)</td>
<td>19 (73)</td>
</tr>
<tr>
<td>Physical health problem</td>
<td>474</td>
<td>6 (50)</td>
<td>6 (50)</td>
</tr>
</tbody>
</table>

Note. SA = sexual assault; PTSD = posttraumatic stress disorder.

a Sample size includes soldiers with missing data.
Having a PTSD diagnosis was the strongest factor associated with sexual assault victimization across all suicidal behavior groups. Studies among military populations have shown that PTSD or PTSD symptomatology is the most widely cited condition associated with MST (Elklit & Christiansen, 2013; Kelly, Skelton, Patel, & Bradley, 2011; Kimerling et al., 2010; Murdoch, Pryor, Polusny, & Gackstetter, 2007; Street, Stafford, Mahan, & Hendricks, 2008; Suris & Lind, 2008; Yaeger, Himmelfarb, Cammack, & Mintz, 2006; Zinzow et al., 2010). More specifically, MST has been found to be associated with a nine-fold increased risk for a diagnosis of PTSD (Suris, Lind, Kashner, Borman, & Petty, 2004). Soldiers may develop PTSD as result of sexual assault or soldiers with a history of sexual assault may be more vulnerable to PTSD after exposure to additional trauma (Smith et al., 2008).

Soldiers who attempted suicide were more likely to have a history of sexual assault if they were of junior enlisted rank (E1–E4) as compared to senior enlisted soldiers, to have been diagnosed with an anxiety disorder, and to have a history of physical health problems. The increased risk for sexual assault among junior enlisted soldiers is consistent with the data reported in the DoD (2014) annual report on sexual assault (Response, 2015). One possible explanation is that junior enlisted soldiers may be more willing to report sexual assault than senior soldiers who may be more influenced by self-perceptions of stigma. Some studies have found an association between anxiety and sexual assault (Kimerling et al., 2010; Skinner et al., 2000). This association may be due to feelings of personal isolation faced after reporting the sexual assault.
assaulted may be likely to have a physical health problem after the assault (Smith et al., 2011; Suris & Lind, 2008). Soldiers who experienced MST were more likely to have cardiac risk factors, such as alcohol use problems, sedentary lifestyle, and obesity, that could mediate an association between sexual assault and physical health problems (Frayne, Skinner, Sullivan, & Freund, 2003).

Previous research has shown an association between sexual assault and substance use disorder (Booth, Mengeling, Torner, & Sadler, 2011; Creech & Borsari, 2014; Han et al., 2013; Hankin et al., 1999; Kimerling et al., 2010; Messman-Moore, Ward, Zerubavel, Chandley, & Barton, 2014; Murdoch et al., 2007; Schumm & Chard, 2012; Zinzow et al., 2010). In this analysis, a diagnosis of substance use disorder was a significant factor related to sexual assault among females that have attempted suicide. Furthermore, in the bivariate analysis, substance use disorder was a significant factor related to sexual assault among females that have attempted suicide. However, it was not clear from our analysis whether the substance use disorder is a risk factor or a consequence of sexual assault. Among females with suicidal ideation, familial illness was independently associated with sexual assault. Familial stressors, including family illness, death, or suicide have been shown to be risk factors for sexual assault (Leardmann et al., 2013). In one study, female service members who experienced sexual assault were 2.4 times more likely to experience moderate to severe life stress. Relationship problems were also associated with sexual assault among females that have a documented history of suicidal ideation. A recent separation or divorce, and poor physical, work, and social functioning have been shown to be associated sexual assault victimization (Leardmann et al., 2013; Murdoch et al., 2007). This association could be due to stress caused by the sexual assault, intimate partner violence, or the effect of childhood sexual abuse on adult relationships (Berthelot, Godbout, Hébert, Goulet, & Bergeron, 2014; Sigurdardottir, Halldorsdottir, & Bender, 2014).

Although bivariate associations were not statistically significant among women with a history of suicide, African American women had a 2.3 times higher odds of sexual assault compared with White women, and Hispanic/other women had a 1.7 times higher odds of sexual assault when compared to White women. Among suicide attempt and suicidal ideation cases, African American and Hispanic women both had lower odds of sexual assault when compared to White women, but these associations were not statistically significant in the multivariable model. This finding may be due to lower reporting of sexual assault among African American and Hispanic women. Hispanic women have been found to be less likely than other ethnicities to report a sexual assault (Rennison, 2007). Furthermore, research has shown some women choose not to report sexual assault because they believe law enforcement would not think the assault was important and that law enforcement could not help (James & Lee, 2015).

Soldiers who reported military/work stress within the past year were more likely to have a history of sexual assault victimization than soldiers without those stressors when considering soldiers with suicidal ideation, although this association was only in the bivariate analysis. In one study, poorer workplace relationship satisfaction was associated with suicidal ideation among females but not males (Langhinrichsen-Rohling, Snarr, Slep, Heyman, & Foran, 2011). Workplace relationships can be further strained if the sexual assault victimization occurred in the work environment. Military/work stress could also result from interacting with or being in close proximity to the sexual assault perpetrator, or it may be because of hostility to/from or fear of reprisal by the assailant, leadership, or other soldiers. Historically, the immediate response and subsequent services available to sexual assault victims have been perceived as inadequate (Holland, Rabelo, & Cortina, 2014). Therefore, the victim may be more likely to suffer from feelings of isolation and betrayal, which may increase his or her risk of suicidal behavior.

**Recommendations**

The identification of soldiers with factors related to sexual assault including PTSD, anxiety disorders, substance use disorders, relationship problems, and poor physical health may assist in interventions to improve clinical outcomes. Applying a multidisciplinary approach to preventive and clinical services may support improvements in the behavioral health of individual soldiers and army units. In addition, targeted prevention strategies may reach soldiers at risk of sexual assault and suicidal behavior.

Efforts to destigmatize sexual assault victimization and encourage reporting by all victims, whether female or male, are critical. As female soldiers are integrated into previously all-male military occupational specialties (MOS) and select U.S. Army units, primary prevention interventions may need to be customized for both male and female soldiers serving in
these MOSs and units (Lopez, 2014; Secretary of the Army, 2016). Individuals, units, and the U.S. Army community at large need to remain vigilant in their efforts to promote awareness of sexual assault and of how to report and obtain assistance.

The military’s hierarchical organization and its emphasis on respect for rank may contribute to perceptions of power and be a mechanism for quid pro quo. Military structure may be a risk or protective factor in military units, which could provide opportunities for intervention (Turchik & Wilson, 2010). For example, military culture may promote the objectification of others, sexualized or violent language, obedient behavior, and unit leaders that tolerate abuse (Turchik & Wilson, 2010). However, in units where sexual assault and sexualized or violent language is not tolerated, the incidence of sexual assault may be reduced. Across the U.S. Army, initiatives are in place to mitigate risk factors and promote protective factors (positive command climate, peer-to-peer support through “battle buddies”) to build individual and unit-level resilience, and sustain force readiness (DoD, 2014).

Adverse childhood experiences may predispose individuals to risk for sexual assault and suicidal behavior, which may surface during adulthood (Berthelot et al., 2014; Sigurdardottir et al., 2014). Being aware of an individual’s history may provide opportunities to offer prevention services. Mandatory routine performance counseling is an opportunity for leaders to inquire about a history of sexual assault, concerns about suicidal behavior, and offer helping resources. In addition, mandatory periodic unit training affords opportunities for soldiers to connect with community-based services to help address concerns early. Further, the increased integration of services within the U.S. Army’s Sexual Harassment and Assault Response Program (SHARP) and training strategies through the U.S. Army Ready and Resilient capabilities may provide opportunities to promote individual and unit readiness to include prevention of suicidal behaviors.

The robust military medical system provides opportunities for early identification of sexual assault victims and those at risk for suicidal behaviors. Identifying and removing individual and unit-level barriers to BH medical services is an ongoing part of the U.S. Army’s evaluation of community-wide programs intended to build resilience. For example, in 2016 the U.S. Army began full implementation of Embedded Behavioral Health Teams (EBHT) across U.S. Army installations. “The EBHT serves as the single point of entry into BH care for each unit’s soldiers and leaders and facilitates early identification and intervention. Soldiers receive expedited evaluations and community-level treatment from a single provider, which greatly improves continuity of care” (Ivany & Dean, 2012). Of soldiers with a suicide attempt or ideation in 2016, 66% had a BH encounter in the 30 days before the event (Nweke et al., 2016). This may suggest successful efforts to bring soldiers into BH care (Nweke et al., 2016). Furthermore, Integrated Behavioral Health Consultants are available in primary care clinic settings to assist with triage and referral for behavioral health concerns. Soldiers are required to complete an annual periodic health assessment; this is an opportunity for clinical screening and intervention with soldiers to include information on adverse childhood events, sexual assault, in addition to suicidal behavior. A recent study showed that when compared to sexual assault victims that received behavioral health care, victims of sexual assault were six times more likely to die by suicide if they did not receive behavioral health care (Rosellini et al., 2017). Further, a recent study among veterans found a strong association between MST and increased suicide risk (Kimerling et al., 2016). This data underlines the importance of linkages to clinical behavioral health care and the integration of community-based prevention and intervention services.

Limitations

This study has a number of limitations that should be considered when interpreting the results. DoDSERs include information only those suicide attempts and suicidal ideation cases deemed serious enough to warrant hospitalization or evacuation to a higher level of care; less severe suicidal behavior cases are not included. Therefore, we have not included suicidal behavior cases that may have been recorded in medical records. This analysis only focused on the most severe suicidal behavior events among soldiers. Furthermore, we included only sexual assault cases that were recorded in the DoDSER or that were founded in the criminal database and did not include unfounded cases or unsubstantiated cases from the Central Registry. Like other studies, sexual assault may be underreported (Mengeling, Booth, Torner, & Sadler, 2014). Therefore, it is possible that the associations found in the results are underestimates. Another limitation to interpretation of this data is that the DoDSER does not distinguish whether the sexual assault occurred before or after the soldier entered the military. Sexual assault may be better captured by the
analysis of self-report surveys and SHARP data, neither of which were available for this project. The ability to distinguish childhood sexual assault/abuse was not available in this data (Han et al., 2013; Kelly et al., 2011; Williams & Bernstein, 2011) nor was information about the soldier’s alcohol use at the time of the sexual assault, both of which are known risk factors for sexual assault victimization (Booth et al., 2011; Creech & Borsari, 2014; Han et al., 2013; Hankin et al., 1999; Innamorati et al., 2015; Kimerling et al., 2010; Mash et al., 2014; Messman-Moore et al., 2014; Murdoch et al., 2007; Schumm & Chard, 2012; Zinzow et al., 2010). Future assessments should include both childhood sexual assault/abuse and self-reported alcohol abuse at the time of the event in the analysis within this population. Another limitation was the small sample size. This may have underpowered our results and was especially noticeable in the wide confidence intervals in the analysis of suicide cases. Suicide is a very rare event, especially among female soldiers. The associations between possible associated factors and sexual assault held tighter confidence intervals for larger samples of female soldiers in the categories of suicide attempt and suicidal ideation. Finally, the data used for the analysis in this article did not support a longitudinal analysis that would help to elucidate temporality between the associations found in the data. Although sexual assault data were restricted to the time period before the suicidal event occurred, the exact time of the sexual assault was not available.

**Conclusion**

In summary, this study describes factors related to a history of sexual assault among female soldiers exhibiting suicidal behavior. Although the data in this study could not be used to describe direction between behavioral health and military characteristics with sexual assault, this study is a good first step to describing the health of this population that could lead to improved clinical responses and future research. Future investigations are warranted to better determine differences in risk and protective factors for sexual assault among U.S. Army soldiers comparing those with and without a history of suicidal behavior. Further, future research into the direction of effect for factors related to sexual assault within the population of soldiers who experienced a suicidal event is crucial to develop a better understanding of this high-risk population to improve prevention services, reach soldiers, and develop interventions.

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**Conflict of interest notification**

None of the authors has any financial or personal conflicts of interest to report that might bias the work or information presented in the manuscript.

**Disclaimer**

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**References**


American Journal of Preventive Medicine, 47(1), 17–25. doi:10.1016/j.amepre.2014.03.001


Rennison, C. M. (2007). Reporting to the police by Hispanic victims of violence. Violence and Victims, 22(6), 754


