Sexual Violence and Mental Health Symptoms Among National Guard and Reserve Soldiers

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BACKGROUND: Reserve and National Guard (NG) soldiers report disproportionate mental health problems relative to active duty military upon returning from the Iraq and Afghanistan conflicts. However, few studies have examined whether exposure to particular types of traumatic events (e.g., lifetime sexual violence) is associated with this increased burden of psychopathology.

OBJECTIVE: The current study examined the prevalence of lifetime sexual violence exposure as well as the adjusted odds and population attributable fraction of psychopathology associated with sexual violence in a large sample of male and female Reserve and NG soldiers.

DESIGN: Baseline structured telephone interviews were conducted in 2009.

PARTICIPANTS: 1,030 Reserve (23 % female) and 973 NG (15 % female) soldiers.

MAIN MEASURES: Four items assessed lifetime and deployment-related sexual violence. Probable lifetime and past-year posttraumatic stress disorder (PTSD) and depression were assessed with the PTSD Checklist and the Patient Health Questionnaire, respectively.

KEY RESULTS: Lifetime sexual violence prevalence was 37.4 % and 27.6 % among Reserve and NG women, and 4.3 % and 3.7 % among Reserve and NG men, respectively. Recent deployment-related sexual violence ranged from 1.4 to 2.6 % for women and 0 % for men. Regression analyses indicated that the adjusted odds of probable past-year and lifetime PTSD and depression were 1.2 to 3.5 times greater among those reporting sexual violence relative to non-victims. The proportion of probable lifetime PTSD and depression attributable to sexual violence was 45.2 % and 16.6 %, respectively, in the Reserves, and 10.3 % and 6.2 %, respectively, in the NG.

CONCLUSIONS: Lifetime sexual violence prevalence was high among female soldiers, with approximately one-third of Reserve and National Guard women reporting a history. The majority of sexual violence was not related to the most recent deployment; however, sexual violence contributed to a high burden of psychopathology. Findings emphasize a need to screen for lifetime sexual violence and associated mental disorders in military samples.

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BACKGROUND

Sexual violence, which refers to rape (i.e., penetration by force, threat of force, or drug or alcohol incapacitation) and the broader experience of sexual assault (i.e., unwanted sexual contact occurring by force, threat of force, or manipulation), is highly prevalent in the US; one in five women and one in 71 men report lifetime rape, while 27.2 % of women and 11.7 % of men report lifetime unwanted sexual contact.[1] Relative to other forms of violence, sexual violence is associated with the highest losses in quality-adjusted life years[2] and significant costs to society in police and victim advocate services; medical and mental health treatment; and loss of productivity, wages, and quality of life.[3] Sexual violence also contributes to psychopathology. Posttraumatic stress disorder (PTSD) and depression are the most commonly reported, as well as impairing mental health consequences.[4–7]

Best estimates suggest that 19–42 % of U.S. service members returning from Iraq and Afghanistan report mental health problems.[8–10] Although media attention to sexual violence among military personnel has increased in the last decade, few studies have systematically examined the prevalence and correlates of lifetime sexual violence in non-treatment seeking, non-Department of Veterans Affairs (DVA) military samples. Prior studies have examined unwanted sexual experiences (including harassment and assault) occurring during military service among patients seeking services through the DVA.[11–14] One rigorous study found that 15 % of women and 0.7 % of men reported unwanted military-related sexual experiences.[12] Only three studies have assessed sexual violence prior to military engagement using non-treatment seeking active duty samples.[15–17] Among a representative sample of Air Force women, 28 % reported lifetime sexual violence.[15] In two

studies using nonrepresentative samples of active duty soldiers, 38 % of female Navy recruits reported adolescent or adult sexual violence (since age 14),[16] and 6 % of Army men and 50 % of Army women reported lifetime sexual violence.[17] All three studies found that the majority of incidents involved assaults by civilians when the victims were civilians, suggesting that clinicians and researchers may be overlooking important risk factors for mental disorders when sexual violence is assessed only in the context of military service. To date, no epidemiologic studies have examined sexual violence among non-treatment seeking Reserve and National Guard men and women, which has hindered our understanding of the scope and burden of sexual violence among this unique subset of military personnel.

The present study advances research by documenting the prevalence of sexual violence (both lifetime and during most recent deployment) and associated psychopathology among two national samples of non-treatment seeking male and female soldiers. The present study also examined whether deployment was a risk factor for sexual violence and whether soldiers who had sought treatment through the DVA were more likely to report sexual violence.

METHODS

Participants and Procedures

Data were drawn from the baseline survey of an ongoing longitudinal study of military experiences, health/mental health status, and service utilization (R01MH082729). Reserve and National Guard soldiers serving as of June 2009 were recruited using a stratified random sample from the Defense Manpower Data Center. Contact information was obtained for 10,000 Reserve and 10,000 National Guard soldiers, a sampling frame representative of the national U.S. Reserve and Guard population. A random sample of 9,751 soldiers was invited to participate in a research study about experiences of military personnel; 1,097 returned an opt-out letter. After excluding incorrect/non-working telephone numbers (2,866 or 29.4 % of the possible 9,751), 6,885 working numbers (71 %) were called; 324 (3 %) were not eligible (e.g. no longer enrolled or retired), 1,097 (11 %) did not wish to participate, 61 (1 %) were disqualified because they did not speak English or had hearing problems, and 3,386 (35 %) were not yet contacted before the cohort closed. A total of 2,003 Reserve and National Guard service personnel were interviewed at baseline (January–July 2010). Using American Association for Public Opinion Research definitions,[18] the overall cooperation rate (defined as number consented divided by number of successfully contacted working numbers; 2,003+324+61/6,885–3,386) was 68.2 %, and the overall response rate (defined as those who completed the survey plus those who consented but were ineligible, divided by the number of working numbers minus disqualified; 2,003+324/6,885–61) was 34.1 %. Reserve responders were more likely than non-responders to be female (24 % vs. 20 %, $p<0.01$), white (75.4 % vs. 69.5 %, $p<0.001$), older (49.6 % vs. 41.3 %, $p<0.001$), college-educated (46.7 % vs. 34.6 %, $p<0.001$), and officers (28.1 % vs. 17.9 %, $p<0.001$). NG responders were more likely than non-responders to be white (83.5 % vs. 79.4 %, $p<0.001$), older (38.5 % vs. 32.6 %, $p<0.01$), college-educated (48.8 % vs. 37.1 %, $p<0.001$), officers (16.3 % vs. 10.5 %, $p<0.001$), and currently married (51.4 % vs. 46.4 %, $p<0.01$).

Trained interviewers obtained informed consent, administered a 60-minute telephone interview using computer-assisted telephone interview (CATI) technology, and offered $25 compensation. The study protocol was approved by the U.S. Army Medical Command's Congressionally Directed Medical Research Programs unit, the Human Research Protection Office at the U.S. Army Medical Research and Materiel Command, and the Institutional Review Boards at the Uniformed Services University of the Health Sciences and Columbia University.

Measures

Sexual Violence. As part of a screening for twenty-one different traumatic events, participants were asked, "In your lifetime, have you ever 1) been raped? 2) experienced another kind of sexual assault or unwanted sexual contact as a result of force, threat of harm, or manipulation?" Participants who responded affirmatively to either question were considered lifetime sexual violence victims. A follow-up yes/no question was asked regarding whether that experience was related to the respondent's most recent deployment. Deployments were defined as "any mobilization both nationally and internationally and in any military capacity." Affirmative responses to other traumatic events were summed to create a score for "other traumas."

Probable PTSD. Participants who reported any traumatic event were instructed to identify the "worst" event. For those who noted that they responded to this event with fear, helplessness, or horror, a modified version of the PTSD Checklist-Civilian[19] (PCL-C) version was administered. The PCL-C consists of seventeen items corresponding to the Diagnostic and Statistical Manual of Mental Disorders—4th Edition (DSM-IV) criteria for PTSD. Participants responded to each item on a Likert-type scale ranging from *1=Not at All* to *5=Extremely.* Participants also rated degree of symptom interference with occupational or social pursuits from *1=Not at All* to *4=Extremely.* The PCL-C was modified to ask how much participants were "ever" bothered by PTSD symptoms related to their worst event and a follow-up question was asked regarding when they were last bothered by symptoms (e.g., within the previous 12 months). To meet probable PTSD

criteria, respondents must have endorsed: 1) a traumatic event; 2) a response that involved helplessness or terror; 3) at least one re-experiencing symptom of moderate severity; 4) at least three avoidance/numbing symptoms of moderate severity; 5) at least two hyperarousal symptoms of moderate severity; 6) a symptom duration of at least one month; and 7) impairment in social or occupational functioning or extreme distress due to these symptoms. The PCL-C has good reliability, validity, and psychometrics in this population.[20–22]

Probable Depression. Participants completed the Patient Health Questionnaire[23] (PHQ-9) to assess nine DSM-IV symptoms of Major Depression experienced for a period of two weeks or more. If participants responded affirmatively to any depression items, they rated the severity of that symptom from *1= several days* to *3= nearly every day*. To meet criteria for probable depression, participants had to endorse two or more depression symptoms plus anhedonia or depressed mood at least more than half the days over the course of a two-week period in their lifetime. Finally, participants were asked whether the two weeks of depressive symptoms had occurred in the previous year. Clinical validation work with this population suggests that this broader definition of depression (versus Major Depression specifically) assessed on the PHQ-9 corresponds most closely to depression as assessed in clinical interviews.[21,22]

Potential Covariates. Sexual violence, PTSD, and depression have been associated with younger age, being unmarried, enlisted rank, and number of other traumatic events experienced.[14] Covariates that were significantly associated with PTSD and depression were included in multivariate analyses.

Statistical Analyses

First, chi-square analyses were used to examine differences between the Reserve and NG samples on demographic characteristics. Second, prevalence of lifetime and deployment-related sexual violence was examined by sample (Reserves and NG) and by gender (female, male). Third, unadjusted and adjusted (for significant covariates) odds ratios and corresponding 95 % confidence intervals (CIs) were calculated from logistic regression analyses predicting probable PTSD and depression from sexual violence. Consistent with other studies examining the effects of violence exposure on mental health outcomes,[24] population attributable fractions (PAFs) were calculated using the following formula: (P(OR–1)/1+P(OR–1), where P is the proportion of individuals in the population endorsing sexual violence, and OR is the adjusted odds ratio for sexual violence and probable PTSD or depression. Fourth, sensitivity analyses examining whether sexual violence prevalence estimates differ among deployed versus non-deployed soldiers as well as among those who have and have not sought services through the VA were examined. Weights adjusting for sample design, non-response characteristics (see responder and non-responder analyses above), and participant sociodemographic characteristics (relative to those of the overall Reserve and NG population) were constructed in SUDAAN using the Wtadjst procedure, and have been applied in all analyses.

RESULTS

Demographic Characteristics and Covariate Analyses

The Reserve sample contained more women and soldiers 45 or older compared to the NG sample (Table 1). Reserve soldiers were more likely to be ethnic minority, college or graduate school educated, and officers (versus enlisted) when compared to NG soldiers. NG soldiers were more likely to have ever been deployed relative to Reserve soldiers. Reserve and NG soldiers reported a similar number of other traumatic events. Sexual violence victims and non-victims did not differ on age or rank; however, victims reported a greater number of other traumatic events compared to non-victims.

Sexual Violence Prevalence

Figure 1 shows that lifetime sexual violence prevalence ranged from 27.6 % for NG women to 37.4 % for Reserve women. Among men, estimates were 3.7 % in the NG sample and 4.3 % in the Reserve sample. The prevalence of sexual violence during the most recent deployment ranged from 1.4 % (n=2) for NG women to 2.3 % (n=5) for Reserve women. For men, estimates were 0.0 % for both samples.

Probable Lifetime and Current PTSD and Depression by Lifetime Sexual Violence

Reserve Sample. The prevalence of probable lifetime and past-year PTSD by sexual violence was 33.2 and 16.8 %, respectively (Table 2). Prevalence of probable lifetime and past-year depression was 39.7 and 15.4 %, respectively. Adjusted models indicated that sexual violence victims had 3.5 times greater odds of probable lifetime PTSD, 2.5 times greater odds of reporting probable past-year PTSD, and 1.5 times greater odds of reporting probable lifetime depression relative to those without sexual violence. PAFs indicated that 45.2 % of probable lifetime PTSD, 20.1 % of probable past-year PTSD, and 16.6 % of probable lifetime depression could be attributed to lifetime sexual violence.

NG Sample. Prevalence of probable lifetime and past-year PTSD among sexual violence victims was 22.9 and 11.7 %, respectively; prevalence of lifetime and past-year

Table 1. Descriptive Information and Differences Between Samples on Demographic Characteristics

Characteristic	Reserve (*N*=1030)	NG (*N*=973)	
	n (%)	n (%)	P Value
Gender			< 0.001
Male	792 (78.8)	826 (85.6)	
Female	238 (21.2)	147(14.4)	
Age			< 0.001
18–24	211 (26.4)	243 (32.6)	
25–34	316 (31.5)	332 (32.0)	
35–44	273 (24.0)	253 (23.6)	
45+	214 (18.2)	134 (11.7)	
Race			< 0.001
White (incl. Hispanic)	733 (75.4)	770 (83.5)	
Black (incl. Hispanic)	149 (18.9)	94 (12.6)	
Other (incl. Hispanic)	145 (5.8)	103 (4.0)	
Education			< 0.001
HS/GED or less	159 (19.9)	200 (26.1)	
Some College/Tech. Training	424 (48.2)	447 (50.9)	
College/Graduate degree	442 (31.9)	321 (23.0)	
Marital Status			< 0.001
Married	558 (50.3)	499 (47.5)	
Divorced/Separated/Widowed	122 (11.9)	126 (12.3)	
Never Married	349 (37.8)	344 (40.2)	
Rank			< 0.001
Officer	292 (16.8)	177 (9.7)	
Enlisted, cadets & civilian employed	738 (83.2)	789 (90.3)	
Ever Deployed			< 0.001
No	284 (29.6)	230 (25.7)	
Yes	739 (70.4)	739 (74.3)	
Trauma History	Mean (SD)	Mean (SD)	
Number of lifetime traumatic events (excluding sexual trauma)	9.7 (5.8)	9.3 (5.8)	0.06

ns numbers
Raw ns and weighted percentages are presented

depression was 33.1 and 14.4 %, respectively. Adjusted models indicated that sexual violence victims had 1.5 times greater odds of probable lifetime and past-year PTSD and 1.2 times greater odds of probable lifetime depression. PAFs indicated that 10.3 % of probable PTSD, 5.5 % of probable past-year PTSD, and 6.2 % of probable lifetime depression could be attributed to lifetime sexual violence.

Sensitivity Analyses

Chi-square analyses revealed that never deployed soldiers were more likely to report lifetime sexual violence exposure relative to ever deployed soldiers. Among Reserves, 9.5 % (n=71) of ever deployed reported sexual violence compared to 15.3 % (n=46) of never deployed, p <0.01. In NG, 5.8 % (n=26) of ever deployed reported sexual violence compared to 10.3 % (n=41) of never deployed, p <0.01. Sexual violence victims and non-victims in both the Reserves and NG did not differ in likelihood of seeking services through the VA or military.

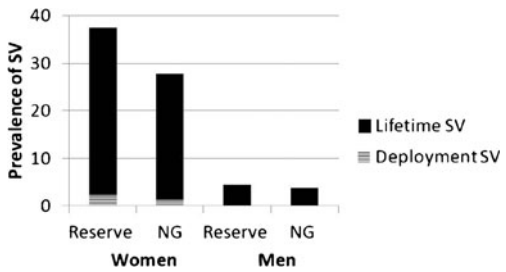

Figure 1. Prevalence of any sexual violence and deployment-related sexual violence for women and men in the reserves and National Guard.

COMMENT

This study is the first to document pervasive exposure to sexual violence over the lifecourse in two large national samples of female and male Reserve and National Guard soldiers. Approximately 27–37 % of women and 4 % of men reported lifetime sexual violence; 0–2.6 % of soldiers reported sexual violence during their most recent deployment. In both samples, sexual violence was associated with increased risk for probable lifetime and past-year PTSD and depression, although findings were attenuated in the NG sample after controlling for covariates. Furthermore, a substantial proportion of probable lifetime PTSD and a modest proportion of probable lifetime depression and past-year PTSD could be attributed to sexual violence exposure, particularly in the Reserve sample.

General population prevalence estimates suggest that 18 % of women and 1.4 % of men report rape, while 27 % of women and nearly 12 % of men report unwanted sexual contact.[1] Thus, while female soldiers reported higher prevalence of lifetime sexual violence compared to the general population, male soldiers reported prevalences that are consistent or lower than those in the general population. Differences between community-residing women and female soldiers suggest that women who are drawn to military service may have more severe early life adversity, including sexual violence. Indeed, prior studies assessing sexual violence among women in the military have found estimates ranging from 28 to 50 %; estimates in the current study were consistent with some prior reports,[15,16] but lower than others.[17] The majority of sexual violence reported in this study occurred prior to the most recent deployment. Contrary to studies with DVA patients that have found military sexual trauma prevalence estimates of 0.7 % for men and 15 % for women, the current study found that 0 % of men to 2.6 % of women reported sexual violence during the most recent deployment. Assessments may have underestimated sexual violence occurring during any military service as questions pertained only to most recent deployment; however, this concern was tempered by findings that deployment was not associated with increased reports of

Table 2. Prevalence, Adjusted Odds, and Population Attributable Fractions (PAFs) of Reporting Lifetime and Past-Year PTSD and Depression for Lifetime Sexual Violence Victims

	Lifetime PTSD				Past-Year PTSD				Lifetime Depression				Past-Year Depression			
	N (%)	OR	AOR	PAF %	N (%)	OR	AOR	PAF %	N (%)	OR	AOR	PAF %	N (%)	OR	AOR	PAF %
Res	39 (33.2)	5.2 (5.0,5.3)	3.5 (3.3,3.6)	45.2	19 (16.8)	5.2 (5.1,5.4)	2.5 (2.4,2.6)	20.1	49 (39.7)	2.9 (2.8,2.9)	1.5 (2.4,1.5)	16.6	16 (15.4)	2.1 (2.0,2.2)	1.0 (0.9,1.1)	0.0
NG	15 (22.9)	2.3 (2.2,2.3)	1.5 (1.4,1.6)	10.3	7 (11.7)	2.4 (2.3,2.5)	1.5 (1.4,1.6)	5.5	21 (33.1)	1.83 (1.8,1.9)	1.2 (1.2,1.2)	6.2	8 (14.4)	1.7 (1.6,1.8)	1.0 (0.9,1.0)	0.0

Res Reserve; NG National Guard; OR unadjusted odds for sexual violence relative to non-sexual violence; AOR adjusted (for age, race, gender, educational attainment, marital status, ever deployed, and number of other traumatic events) odds for sexual violence relative to non-sexual violence; PAF population attributable fraction; ns numbers
Raw ns and weighted percentages and estimates are presented

lifetime sexual violence. Gender differences in deployment and lifetime sexual violence may explain this finding, as women reported more lifetime sexual violence and were less likely to have been deployed relative to men. Recent deployment-related sexual violence also may have been lower than reports from veteran samples, because only the most severe sexual violence (rape and sexual assault) was assessed with confidential, but not anonymous, surveys.

Findings highlight the importance of measuring sexual violence over the lifecourse, even among non-treatment seeking samples, to best understand the impact of sexual violence on soldiers' mental health. Adjusted models indicated that the odds of probable past-year and lifetime PTSD were two to three times higher among sexual violence victims compared to non-victims, although associations between sexual violence and mental health problems were attenuated in the NG sample. Similarly, PAFs suggested that eliminating sexual violence would reduce the prevalence of probable lifetime PTSD and depression by 45 % and 16.6 %, respectively, in the Reserves, and 10 % and 6 %, respectively, in the NG. The NG sample was younger, less educated, more likely to be enlisted, and more likely to have been deployed, which could increase risk for mental health problems; additional research is required understand why associations between sexual violence and mental health problems were attenuated in this group.

Results should be considered in the context of study limitations. Data regarding sexual violence exposure and symptoms of PTSD and depression were self-reported, and thus may be susceptible to biases or inaccuracies in recall. Further, the use of single questions that required individuals to label their experiences as rape or sexual assault likely underestimated the prevalence of sexual assault (as opposed to methods that use multiple behaviorally specific items that avoid labels like "rape").[25] In contrast to the DVA definition of military sexual trauma, the current study did not query soldiers about sexual harassment experiences during military service. Additionally, measures used in the present study assessed various types of traumatic events, but did not assess the number of times each event occurred or ages at which respondents experienced events. Deployment-related sexual violence was assessed only during the most recent deployment; thus, we cannot account for sexual violence exposure occurring during previous deployments in this analysis. Further, sexual violence can occur in other non-deployment military contexts (e.g., stateside, during training). Future studies should collect information about the nature, time line, and context in which sexual violence experiences occurred. Additionally, data were cross-sectional. Thus, pre-military functioning measures are not available, and definitive statements about directionality cannot be made without additional longitudinal research. Although cooperation rates were consistent with those of other recent epidemiologic samples,[26] efforts should be made to improve participation. Finally, although weights were applied to account for non-response bias, soldiers who refused to participate could, in theory, differ from those who did not on key variables of interest (e.g., sexual violence, mental health).

Despite these limitations, our findings begin to address an important issue among Reserve and National Guard personnel that has implications for the assessment of sexual violence and associated psychopathology among military samples. Practitioners who focus only on sexual violence during military service may miss an important contingent of soldiers with lifetime sexual violence experiences that could be contributing to mental health problems. Although lifetime sexual violence estimates were similar to those found in prior studies with female soldiers, recent deployment-related sexual violence was lower than the prevalence reported among treatment-seeking veterans. Sexual violence is commonly under-reported,[27] and soldiers may be especially concerned about stigma, fear of negative consequences, and feelings of shame.[11] However, soldiers with military or pre-military sexual violence exposure may benefit from the evidence-based treatments that have been developed to address PTSD and depression,

thus, destigmatizing sexual violence disclosure and mental health treatment-seeking among military samples should be an important focus of clinical, research, and policy efforts.

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