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Deployment-Related Military Sexual Trauma Predicts Heavy Drinking and Alcohol Problems among Male Reserve and National Guard Soldiers

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Abstract

Background—Military sexual trauma (MST) is associated with a range of deleterious mental and physical health consequences; however, far less attention has been paid to the associations between MST and negative health behaviors, such as substance abuse. This study examined two focal research questions: 1) what is the prevalence of experiencing military sexual trauma during deployment among male Reserve and National Guard soldiers, and 2) to what extent is the degree of MST exposure during deployment associated with frequent heavy drinking and alcohol problems post-deployment?

Methods—Data from male soldiers who had been deployed (N = 248) were drawn from the baseline wave of Operation: SAFETY (Soldiers And Families Excelling Through the Years) an ongoing study examining health among U.S. Army Reserve and National Guard and their partners. Participants were recruited over a 15 month period (Summer 2014 - Fall 2015) from units in New York State. Deployments occurred prior to the baseline wave of the study. Analyses examined the relation between degree of MST exposure during soldiers' most recent deployment and a) frequent heavy drinking and b) alcohol problems, measured at baseline, controlling for posttraumatic stress disorder symptoms and age.

Results—17.3% of the male service members reported experiencing MST during their most recent deployment. Further, greater MST exposure was associated with a greater likelihood of engaging in frequent heavy drinking (aRR = 1.03, 95% CI [1.01, 1.05]) and experiencing alcohol problems (aRR = 1.03, 95% CI [1.01, 1.06]) at baseline.

Conclusions—Findings demonstrate that MST rates are high among male Reserve and National Guard soldiers, and greater MST exposure is associated with an increased likelihood of engaging in frequent heavy drinking and experiencing alcohol problems among a population already at risk for problematic alcohol use.

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Keywords

Military sexual trauma; alcohol problems; frequent heavy drinking; deployment

The Veterans Health Administration (VHA) uses the term “military sexual trauma” (MST) to refer to sexual harassment and/or sexual trauma experienced during the course of military service (U.S. Code, Title 38, §1720D). MST encompasses a wide range of uninvited or unwanted verbal or physical contact of a sexual nature, including attention, verbal remarks, touching, sexual coercion, sexual assault, and rape. A recent survey of 108,478 active duty service members across all branches of the U.S. military (Defense Manpower Data Center, 2013) found alarmingly high rates of MST-related experiences over the prior 12 months, including experiencing crude or offensive behavior (41% of women, 20% of men), unwanted sexual attention (23% of women, 5% of men), sexually coercive behavior (8% of women, 2% of men), as well as unwanted sexual contact (including sexual touching and completed or attempted rape; 6% of women, 1% of men).

Health Consequences of MST

A growing body of research demonstrates associations between MST and deleterious mental health conditions, including increased risk for PTSD, anxiety disorders, depression, as well as a range of physical health conditions (Kimerling et al., 2007, Kimerling et al., 2010, O’Brien and Sher, 2013, Walsh et al., 2014b), which in some cases can persist for more than a decade after the MST occurred (Street et al., 2007, Vogt et al., 2005). However, far less attention has been paid to the associations between MST and negative health behaviors that are particularly prevalent in military populations. Excessive drinking, in particular, is entrenched in military culture (Ames and Cunradi, 2004). Substance abuse is one of the most commonly reported health problems among military personnel, especially among those who have served in Iraq and Afghanistan (Seal et al., 2007, Seal et al., 2011). Indeed, more problematic forms of alcohol use (e.g., frequent heavy drinking) and their associated consequences have been shown to increase post-deployment among this cohort (Jacobson et al., 2008, Seal et al., 2011). Further, the risk of new-onset heavy drinking, binge drinking, and alcohol-related problems has been shown to increase post-deployment (Jacobson et al., 2008). With more than 2.6 million service members having deployed as part of the Global War on Terror, it is important for researchers and clinicians focused on this population to develop a greater understanding of the various risk factors related to this problematic alcohol use.

MST experienced during deployment may contribute to these increases in problematic drinking post-deployment. For example, victims may use alcohol as a form of self-medication to help them cope with painful thoughts and emotions associated with their MST experiences (Langdon et al., 2017, Stewart, 1996). Cross-sectionally, MST is associated with 2 to 3 times greater odds of having an alcohol or substance use disorder (SUD) diagnosis among VHA patients (Kimerling et al., 2007, Kimerling et al., 2010). Additionally, high proportions of veterans seeking treatment for SUDs report histories of interpersonal trauma (Ouimette et al., 2000). However, simply examining the presence or absence of a SUD

diagnosis likely misses a great deal of MST-related problematic alcohol use, as well as important variability in the nature (e.g., quantity, frequency, duration) of that drinking. Additionally, this approach fails to consider other factors that may explain the common co-occurrence of MST and SUDs. For example, PTSD is highly comorbid with both SUDs (Jacobsen et al., 2001, Kessler et al., 1996) and MST (Kimerling et al., 2007, Kimerling et al., 2010, Suris and Lind, 2008).

National Guard and Reserve Populations

Prior research on the consequences of MST has heavily relied on medical records and surveys of active duty service members or veterans using VHA services; however, this approach misses a large and important proportion of the military who often do not have access to VHA care (i.e., Reserve/National Guard soldiers). Reserve and National Guard components constitute approximately 38.3 percent of the U.S. Armed Forces (Defense Manpower Data Center, 2017), yet only a few studies have focused specifically on their experience of MST (McCallum et al., 2015, Street et al., 2008, Walsh et al., 2014a, Walsh et al., 2014b). Additionally, there is evidence that these service members are at greater risk for a variety of problems compared to active duty military personnel post-deployment, including new-onset PTSD (Smith et al., 2008), need for mental health treatment (Milliken et al., 2007), and interpersonal problems (Milliken et al., 2007) including intimate partner violence (Heavey et al., 2017). Additionally, whereas excessive drinking is a widespread problem in the military, a recent meta-analysis found higher prevalence of substance use disorders among Reserve and National Guard service members compared to active duty (Cohen et al., 2015). Additionally, Reserve and National Guard service members are at greater risk for increased and new-onset heavy drinking and associated problems post-deployment than active duty service members (Jacobson et al., 2008). Further, establishing precise MST prevalence estimates in this population is complicated by variations in the methodology and definition of MST used across the few existing studies. The present research will contribute to a greater understanding of the rates and potential correlates of MST among this under-examined population by measuring the full range of MST experiences that correspond to VHA criteria for MST, as well as their relation to negative health behaviors and associated problems which are particularly prevalent in this population.

Gender Differences in MST

Research on sexual harassment and sexual assault, both within and outside of military contexts, has predominantly focused on women. However, risk of exposure to MST is also high among men (Kimerling et al., 2007); men are the victims of approximately 60% of annual sexual assaults in the active duty military (Morral et al., 2015). Additionally, much less is understood about the nature and consequences of MST for male service members. This is partially due to the fact that sexual assault is the most underreported violent act in the United States (Rennison, 2002), and men are less likely than women to report incidents to authorities (Morral et al., 2015). Indeed, approximately two thirds of men in the military fail to report sexual assault experienced during their military career (Morral et al., 2015).

Additionally, there are important differences in the nature of the harassment and assault men and women typically experience, which may have implications for the nature and severity of MST-related consequences. Whereas sexual assault against both men and women is most commonly perpetrated by men (Sadler et al., 2003, Waldo et al., 1998), research on MST among active duty service members has found that men are more likely than women to be victims of repeated, physically violent assaults, often committed by multiple assailants (Morral et al., 2015). Additionally, prior research suggests that there may be differences in the motivations behind MST perpetrated against men and women. For example, men are more likely than women to be the target of vulgar comments that reinforce gender role stereotypes, particularly a heterosexist hypermasculinity (Stockdale et al., 1999, Street et al., 2007). Indeed, attacks against men are more often described as being intended to abuse or humiliate them, whereas attacks against women are more often described as more purely sexual in nature (Morral et al., 2015). Further, multiple studies have found that MST can have a more negative impact on men's mental and physical health in certain contexts (Shipherd et al., 2009, Street et al., 2007, Vogt et al., 2005, Magley et al., 1999). For example, one study found that at higher levels of sexual harassment, men report more depression and poorer general mental health than women (Street et al., 2007). Fortunately, there has been growing attention in recent years to the need for more research focusing on men's experience of MST and how it may differ from women's (Allard et al., 2011, Hoyt et al., 2011, Mondragon et al., 2015, Street et al., 2007). In order to effectively respond to this important public health issue, research specifically focusing on MST among men is needed to develop a greater understanding of the nature and consequences of their experiences.

Present Research

The prevalence of MST and its associated consequences represents an important public health issue. However, more research is needed to better understand the prevalence of MST specifically among men and the extent to which it relates to the negative health behaviors particularly prevalent among Reserve and National Guard service members post-deployment. The present research aims to fill these critical gaps in the literature by examining two focal research questions: 1) what is the prevalence of experiencing MST, as defined by VHA criteria, during deployment among male Reserve and National Guard service members? and 2) to what extent is the degree of MST associated with two issues that are particularly prevalent in this population post-deployment—frequent heavy drinking and alcohol problems. These questions were examined in a sample of married, male service members, a population that constitutes the largest proportion of the U.S. Armed Forces (Office of the Deputy Assistant Secretary of Defense for Military Community and Family Policy, 2015). We hypothesize that MST experienced during the most recent deployment will be associated with more frequent heavy drinking and greater alcohol problems post-deployment.

Materials and Methods

Participants and Procedure

Data for the present research were drawn from Operation: SAFETY (Soldiers And Families Excelling Through the Years), an ongoing study examining the health and well-being of U.S. Army Reserve and National Guard soldiers and their partners over time (Devonish et al., 2017, Heavey et al., 2017, Kozlowski et al., 2017, Vest et al., In Press) Participants were recruited over a 15 month period (Summer 2014 - Fall 2015) from units across New York State. Participants were screened on six inclusion criteria: (1) the couple is married or living as if married; (2) one partner is a current U.S. Army Reserve and National Guard soldier; (3) the soldier is age 18 – 45; (4) both partners speak and understand English; (5) both partners are willing and able to participate; and (6) both partners have had at least one alcoholic beverage in the past year. Participants completed three online surveys (baseline with two yearly follow-ups) administered through a secure, HIPAA-compliant online survey programming software, StudyTrax™ which allowed for data encryption. Each participant received a $60 check for completing the baseline survey. The protocol was approved by the University at Buffalo Institutional Review Board, the Army Human Research Protections Office, Office of the Chief, Army Reserve, and the Adjutant General of the National Guard.

Participant flow through the study is presented in Figure 1. Screening of 47 units resulted in 731 eligible couples. Of those, 572 couples (78%) agreed to participate and 83% of couples (n = 418) had both couple members complete the baseline survey. The only significant difference between those that were eligible and enrolled vs those who were eligible and did not enroll occurred when a civilian partner screened for the study (n=11) they were less likely to enroll ($p < .001$). Given that the nature of the main study was to examine spousal influence, only surveys where both partners completed the entire survey were included for follow-up (N = 418); however, there were no differences between complete couples and incomplete couples on alcohol use, PTSD, or MST. Additionally, a small number of same-sex couples (n = 7) were excluded from present analyses.

The sample for the present work is composed of 248 male soldiers who had been previously deployed at the time of the baseline survey. Sample characteristics are presented in Table 1. The majority of the sample is non-Hispanic White (81.1%), with at least some college education (60.1%;) or a college degree (25.8%). The average household income bracket is $60,000-$79,000. The average age of participants was 33.39 (*SD* = 6.18) years. Most soldiers were married (75.4%), with the remainder living as if married. Soldiers had served an average of 11.93 years (*SD* = 5.92) and had been deployed an average of 1.65 times (*SD* = 0.92).

Measures

Military sexual trauma—MST experienced during soldiers' most recent deployment was measured retrospectively at baseline using the sexual harassment subscale of the Deployment Risk & Resiliency Inventory-2 (DRRI-2; Vogt et al., 2012). This subscale is comprised of 8 items examining soldiers' experiences in unwanted sexual contact or verbal conduct of a sexual nature during deployments (see Figure 2). These exposures resulted

from contacts from other unit members, commanding officers, or civilians in the warzone. Example items include, “Made crude and offensive sexual remarked directed at me, either publicly or privately,” “Used a position of authority to pressure me into unwanted sexual activity,” and “Physically formed me to have sex.” Items are rated on a 4-point Likert-type scale ranging from 0 (*Never*) to 3 (*Many times*). The scale has high internal consistency (α_{men} = .93). Items were summed to create a total MST exposure score with an overall range of 0 – 24.

Frequent heavy drinking—Consistent with other work (Homish and Leonard, 2007), current frequent heavy drinking was assessed using the maximum report of two items: 1) the reported frequency of getting drunk in the past year, ranging on a 9-point scale from 1 (*Never*) to 9 (*Every Day*) in the past year, and 2) the frequency in the past year of five or more drinks in a single setting, ranging on a 9-point scale from 1 (*Never*) to 9 (*Every Day*) in the past year.

Alcohol problems—Current experience of alcohol problems were assessed using the Alcohol Use Disorders Identification Test (AUDIT; Babor and Del Boca, 1992). This measure consists of 10 items rated on a 4-point scale from 0 (*Never*) to 4 (*Daily or almost daily*). Items are summed to create a total score with an overall range from 0 – 40 (α_{men} = .76). Example items include, “Have you or someone else been injured because of your drinking?” and “How often during the last year have you had a feeling of guilt or remorse after drinking?”

Covariates—Covariates included current PTSD symptoms and age. PTSD symptoms were measured using the PTSD Checklist (PCL-5) which has been updated based upon DSM-5 criteria (Bovin et al., 2015). This is a 20-item self-report measure of PTSD symptoms over the past month. Each response is rated on a 5-point Likert-type scale ranging from 0 (*Not at all*) to 4 (*Extremely*), with an overall range of 0–80 and greater scores indicate greater severity of PTSD. It has demonstrated good psychometric properties in previous research (Bovin et al., 2015), and internal consistency in the present sample was high (α_{men} = .95). Soldier age was calculated in years by subtracting the participant’s date of birth from the assessment date.

Analytic Method

Descriptive statistics were used to characterize the variables. Analyses examined the extent to which the degree of MST exposure during soldiers’ most recent deployment was associated with two current alcohol use outcomes: frequent heavy drinking and alcohol problems. Frequent heavy drinking and alcohol problems were count variables; therefore, negative binomial regression models were used. These analyses return a Risk Ratio (RR), which measure the increased likelihood of frequent heavy drinking and experiencing alcohol problems for every one unit increase in MST exposure. A second set of models adjusted for the effects of PTSD symptoms and soldier age. PTSD is highly comorbid with both SUDs (Jacobsen et al., 2001, Kessler et al., 1996) and MST (Kimerling et al., 2007, Kimerling et al., 2010, Suris and Lind, 2008). We controlled for age because older soldiers have had more opportunity to be deployed and potentially experience MST.

RESULTS

Preliminary Analyses

Descriptive statistics—Frequent heavy drinking occurred, on average, about once per month in the past year (*M* = 2.56, *SD* = 1.42, range 1–9); however, 8.6% of participants reported heavy drinking weekly or more in the past year. The average AUDIT score was 5.07 (*SD* = 3.99), with 19.0% (N = 47) of participants meeting criteria (AUDIT ≥ 8) for experiencing clinically-significant alcohol problems. Two covariates were examined in the adjusted models: PTSD symptoms (*M* = 10.38, *SD* = 11.82) and soldier age (*M* = 33.39 years, *SD* = 6.18).

Focal Analyses

Prevalence of military sexual trauma—MST was common among the male soldiers in this sample; 17.3% (N = 43) reported at baseline having experienced some form of MST during their most recent deployment. Figure 2 illustrates the 8 different kinds of MST assessed. Of these, crude/offensive remarks were most common; 15.3% (N = 38) of soldiers experienced such remarks at least once or twice. Additionally, 1.6% (N = 4) of soldiers reported having been physically forced to have sex.

Frequent heavy drinking—In unadjusted models, greater MST exposure during the most recent deployment was associated with greater likelihood of frequent heavy drinking for male soldiers at baseline (RR: 1.03, 95% CI [1.01,1.05]; see Table 2). This relationship held in the adjusted models, with greater MST exposure once again being associated with greater likelihood of frequent heavy at baseline (aRR: 1.03, 95% CI [1.01, 1.05]), controlling for PTSD symptoms and solider age. Additionally, PTSD symptoms (aRR: 1.00, 95% CI [1.00, 1.01]) and soldier age (aRR: 0.99, 95% CI [0.98, 1.00]) were unrelated to frequent heavy drinking.

Alcohol problems—In unadjusted models, greater MST exposure was associated with a greater likelihood of experiencing alcohol-related problems among male soldiers at baseline (RR: 1.04, 95% CI [1.01, 1.07]; see Table 2). This relationship held in the adjusted models, with greater MST exposure once again being associated with greater likelihood of experiencing alcohol related problems at baseline (aRR: 1.03, 95% CI [1.01, 1.06]), controlling for the PTSD symptoms and soldier age. Higher PTSD symptoms (aRR: 1.01, 95% CI [1.01, 1.02]) were associated with greater likelihood of experiencing alcohol problems at baseline; however, soldier age (aRR: 0.99, 95% CI [0.97, 1.00]) was unrelated to likelihood of experiencing alcohol problems at baseline.

DISCUSSION

The present research examined the prevalence of MST among male Reserve and National Guard soldiers and examined the relations between the degree of MST exposure and later frequent heavy drinking and alcohol problems. Results revealed high rates of MST among male Reserve and National Guard soldiers during their most recent deployment. Further, the

degree of exposure to MST was associated with greater likelihood of engaging in frequent heavy drinking and experiencing alcohol problems at baseline.

The present findings provide valuable information about the prevalence of MST among male Reserve and National Guard soldiers, who remain understudied in the literature. Specifically, 17.3% of participants reported experiencing MST during their most recent deployment. Whereas this is higher than previous estimates of MST among male Reserve and National Guard service members (Walsh et al., 2014a, Walsh et al., 2014b), the lifetime prevalence of MST in this population is likely even higher. The present estimates are based on MST experienced during the most recent deployment; however, the participants had been deployed an average of 1.65 times, which in on par with the national average for post-9/11 deployments ($M = 1.72$; Institute of Medicine, 2013). Additionally, MST may occur in other non-deployment settings (e.g., weekend drills, training), which would further increase the lifetime MST burden.

The present research also makes an important contribution to the MST literature by focusing on male Reserve and National Guard soldiers. The Reserve and National Guard components make up a sizeable proportion of the military (38.3%; Defense Manpower Data Center, 2017). Further, there is evidence that these service members experience more problems than active duty military personnel post-deployment, including higher rates of substance use disorders (Cohen et al., 2015), new-onset heavy drinking (Jacobson et al., 2008), new-onset PTSD (Smith et al., 2008), need for mental health treatment (Milliken et al., 2007), and interpersonal problems (Milliken et al., 2007) including intimate partner violence (Heavey et al., 2017). However, large-scale studies of MST have disproportionately relied on samples of active duty service members or veterans utilizing VHA services, therefore failing to adequately capture the experiences of those in Reserve and National Guard components, who often lack access to VHA care.

This research contributes to the growing literature on the negative effects of military sexual trauma for service members. Elevated alcohol use and associated problems constitute the most common health problem among veterans of Iraq and Afghanistan, particularly for those in Reserve and National Guard components (Jacobson et al., 2008, Seal et al., 2011). Our findings suggest that MST may contribute to both frequent heavy drinking and alcohol problems post-deployment, and that these relations hold even after controlling for PTSD symptoms. Although speculative, this pattern of elevated alcohol problems may suggest that soldiers are attempting to self-medicate or drinking to cope with their MST experiences (Langdon et al., 2017). Drinking to cope is a particularly maladaptive behavior; prior research has shown that drinking to cope is associated with more alcohol problems than can be explained by the amount of alcohol consumed (Cooper et al., 2016). However, additional research is needed to confirm this suspicion with respect to victims of MST specifically.

Clinically, the present findings can serve to inform screening and intervention efforts for victims of MST across all components of the military, particularly among Reserve and National Guard service members. In particular, these findings underscore the need for better and more systematic screening of Reserve and National Guard service members for MST and related conditions. Currently, the vast majority of these efforts are organized through the

VHA, who implemented universal MST screening for any veteran seen for inpatient or outpatient care in 2002. For those who screen positive, treatment for all MST-related conditions is provided free of charge, regardless of eligibility or co-pay status. These efforts have proven effective in increasing subsequent mental health treatment among patients who screen positive for MST (Kimerling et al., 2008). However, Reserve and National Guard service members often lack access to VHA services given the healthcare eligibility requirements (e.g., length of combat active duty service; Veterans Benefits Administration, 2012). Further, Reserve and National Guard service members are not the only ones being missed by this approach; less than half of all eligible veterans are enrolled for VHA care (e.g., 42% in 2014), and only approximately 64% of those enrolled receive treatment in a given year (Bagalman, 2014). Thus, seeking treatment for MST and related conditions among Reserve and National Guard soldiers presents a considerable health care access issue. It is critical to discover new and effective methods for finding and treating this population. Given their limited access to VHA care, it may be more feasible to identify and treat MST victims from Reserve and National Guard components through civilian healthcare providers.

The present research revealed an association between MST and both frequent heavy drinking and alcohol problems commonly experienced by service members post-deployment. However, the potential negative effects of MST are unlikely to stop with alcohol problems or with service members themselves. Alcohol misuse, and substance use more generally, is commonly comorbid with a range of mental health disorders, including PTSD, anxiety, and depression (Jacobson et al., 2008, Stein et al., 2017, Tanielian and Jaycox, 2008). Additionally, the service members' alcohol problems are likely to negatively impact their spouses and families as well. Above and beyond the strain that deployment and military life can generally place on marriages (Gewirtz et al., 2010, Karney and Trail, 2016) hazardous drinking among National Guard service members post-deployment has been shown to be associated with greater marital distress post-deployment (Blow et al., 2013). Whereas there is limited research specifically examining the effects of service member drinking on children, the role of alcohol misuse in disrupting family functioning is well-established among civilian populations. Taken together, MST and associated alcohol problems are likely to have negative influences on the entire family system.

Strengths, Limitations, & Future Directions

The present research has several notable strengths. First, the results demonstrate that MST exposure is associated with problematic alcohol use years after the experience. The present research also makes an important contribution to our understanding of the correlates of MST among two important and understudied populations: National Guard and Reserve and male service members. Additionally, by collecting information about MST through confidential surveys, we were likely able to more accurately estimate the prevalence of deployment-related MST among male service members, who are particularly unlikely to formally report these incidents.

The present research also has some limitations that warrant discussion. This research examined MST in the context of the most recent deployment, which likely missed individuals who may have experienced MST in non-deployment military contexts and who

may still be experiencing consequences. Additionally, we did not have precise information regarding the amount of time since the MST occurred, which may be important given that the effects of trauma tend to attenuate over time, nor information on any alcohol misuse or related problems that may have existed prior to deployment or military service. Whereas, frequent heavy drinking and alcohol problems were measured after the deployment in which the MST occurred, the nature of the MST was retrospectively assessed at the same time as the alcohol use variables. Thus, it is possible that other factors may account for the associations between MST and frequent heavy drinking and alcohol problems. For example, there may be common factors that put an individual at greater risk for experiencing MST as well as heavy drinking and associated problems, or existing alcohol use/misuse may put service members at risk of experiencing MST. Prospective longitudinal research tracking soldiers across the deployment cycle is needed to tease apart the potential alternative explanations.

Additionally, female service members were excluded from the analyses. The number of women in the sample who had been deployed was quite small, but the overall proportion deployed is consistent with other work. More research examining MST simultaneously among men and women is needed so that direct comparisons of prevalence, sequelae, and risk/protective factors can be made (e.g.,Walsh et al., 2014a, Walsh et al., 2014b). Further, all participants were either married or living as married, which may limit generalizability; however, the majority (56.0%) of male U.S. service members are married (Office of the Deputy Assistant Secretary of Defense for Military Community and Family Policy, 2015). Finally, whereas the present research begins to provide valuable information about the prevalence and correlates of MST for male National Guard and Reserve soldiers, the sample size is small for establishing the prevalence of MST in this population. Therefore, these findings need to be replicated with larger samples of National Guard and Reserve service members. However, the present sample is representative of National Guard and Reserve service members nationally in terms of race/ethnicity, gender breakdown, and deployment history.

Conclusion

The present research demonstrates that deployment-related MST is highly prevalent among male Reserve and National Guard soldiers and greater MST exposure is associated with greater likelihood of both frequent heavy drinking and experiencing alcohol problems years after the event(s). Our findings suggest that MST may contribute to one of the most common health problems among recent veterans, particularly in the Reserve and National Guard. The high incidence of MST found in the current sample underscores the need for more systematic screening and interventions for MST and related problems aimed at Reserve and National Guard service members, as well as screening for problematic alcohol use among this population.

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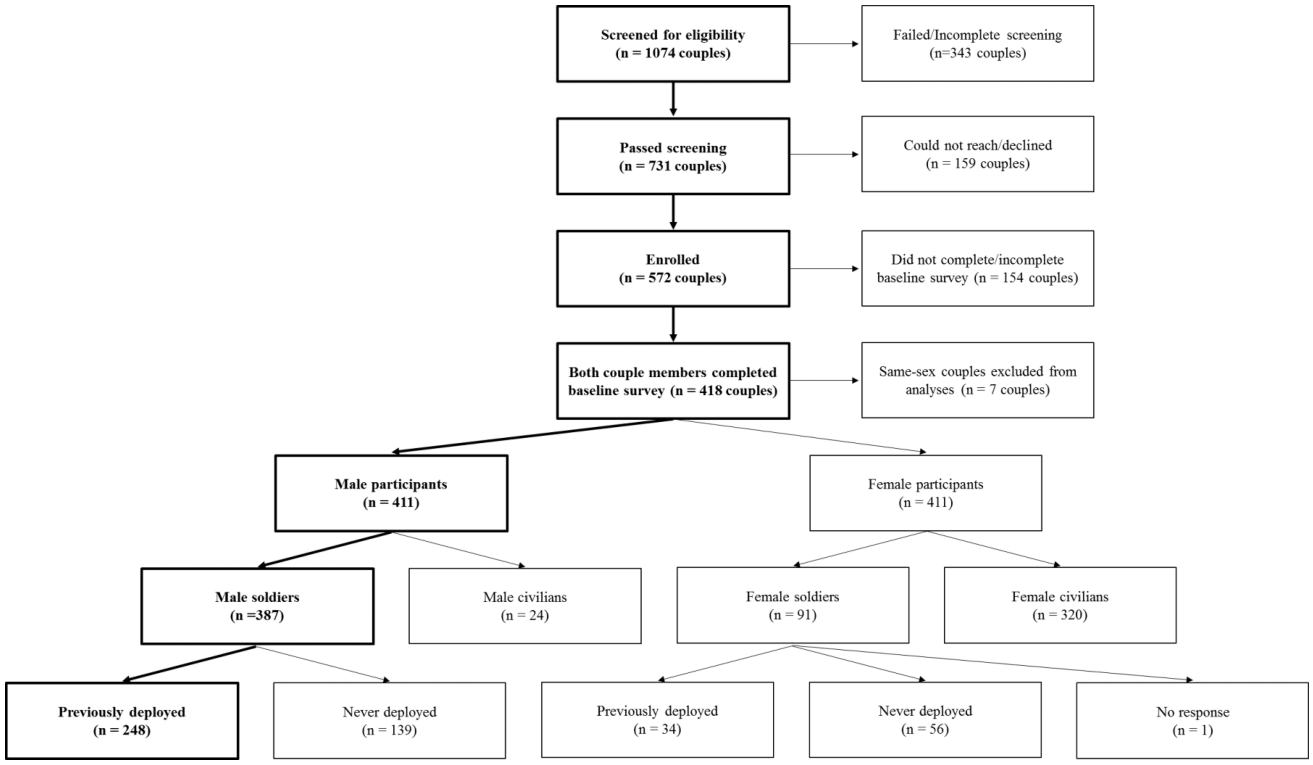

Figure 1.

Participant flow through for Operation: SAFETY, a study of health among U.S. Army Reserve and National Guard soldiers and their spouses. The sample for the present analyses was comprised of 248 male soldiers who had been previously deployed at the time of the baseline assessment. The sample of previously deployed female soldiers (n = 34) was too small to be included in analyses.

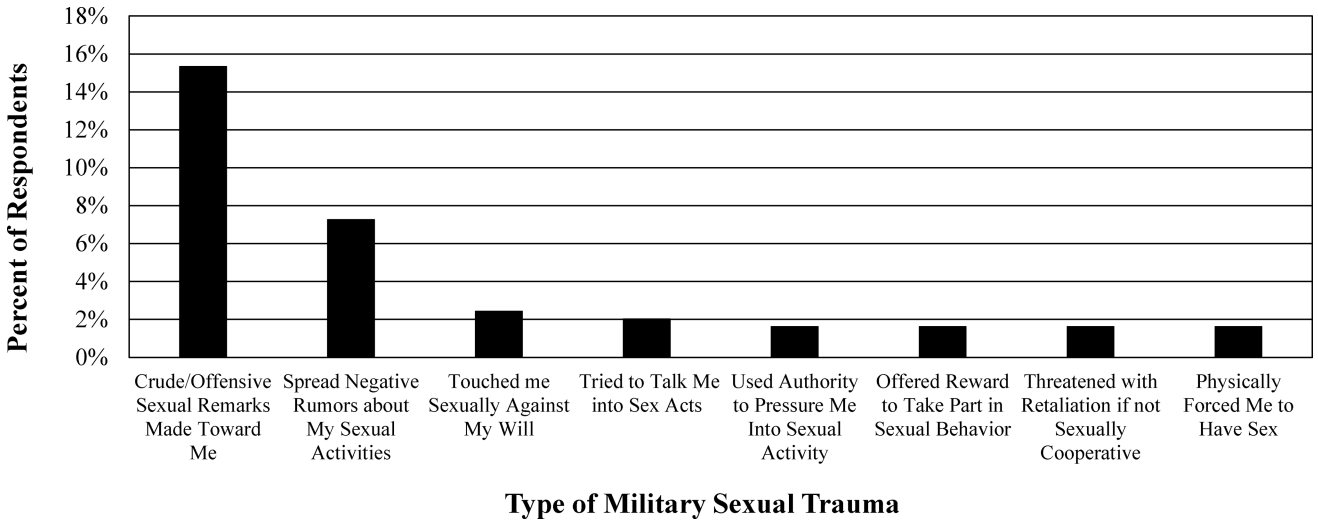

Figure 2.

Prevalence of types of military sexual trauma experienced by male U.S. Army Reserve and National Guard soldiers during their most recent deployment

Table 1

Demographic characteristics of male U.S. Army Reserve and National Guard soldiers (N = 248)

Variable	% (N) or *M*(SD)
Race\Ethnicity	
Non-Hispanic White	81.1% (201)
Non-Hispanic Black	4.4% (11)
Hispanic	9.7% (24)
Other	3.2% (8)
Education	
<HS-HS Grad	14.1% (35)
Some College	60.1% (149)
College +	25.8% (64)
Age	33.39 (6.18)
Relationship Status	
Married	75.4% (187)
Cohabitating	24.6% (61)
Income	$60,000 to $79,999
Years Served	11.93 (5.92)
# of Deployments	1.65 (0.92)
Years Since Last Deployment	4.72 (3.07)

Table 2

Negative binomial regression analyses examining military sexual trauma as a predictor of frequent heavy drinking and alcohol problems among male U.S. Army Reserve and National Guard soldiers

	Frequent Heavy Drinking RR [95% CI]		Alcohol Problems (AUDIT ≥ 8) OR [95% CI]	
	Unadjusted	**Adjusted**	**Unadjusted**	**Adjusted**
Military Sexual Trauma	1.03**	1.03*	1.04**	1.03*
	[1.01, 1.05]	[1.01, 1.05]	[1.01, 1.07]	[1.01, 1.06]
PTSD Symptoms		1.00		1.01***
		[1.00, 1.01]		[1.01, 1.02]
Soldier Age		0.99		0.99
		[0.98, 1.00]		[0.97, 1.00]

Negative binomial regression analyses were used to conduct focal analyses.

* $p < .05$.

** $p < .01$.

*** $p < .001$.