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Predicting Utilization of Healthcare Services in the Veterans Health Administration by Returning Women Veterans: The Role of Trauma Exposure and Symptoms of Posttraumatic Stress

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Abstract

Combat exposure and military sexual trauma (MST) are prevalent among returning women Veterans and associated with increased alcohol use and psychological distress. However, it remains unclear the extent to which combat exposure and MST are associated with utilization of healthcare in the Veterans Health Administration (VHA). The current study explored the relationships among alcohol use and distress in women who deployed in support of Operations Enduring Freedom, Iraqi Freedom, and New Dawn (OEF/OIF/OND). It was hypothesized that increased PTSD and depression symptomatology and trauma exposure would be related greater VHA utilization, whereas alcohol misuse would predict lower VHA use. Participants (N = 133) completed an internet-based survey of deployment experiences, substance use, mental health, and utilization of VHA services. In this sample, 33% endorsed MST exposure, 64% endorsed combat exposure, and 78% indicated exposure to the aftermath of battle. Multiple regression models found combat exposure – but not MST or aftermath – to be significantly associated with alcohol use and symptoms of PTSD and depression. Only 37% of participants reported use of VHA services, and logistic regression models indicated that PTSD symptomatology was the only unique predictor of VHA use. Findings suggest potential barriers for women who endured sexually based trauma in a military setting in seeking treatment at the VHA.

Keywords

women Veterans; alcohol; military sexual trauma; PTSD; deployment

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Introduction

Psychological Service Needs of Women Veterans

Veterans deployed to hostile environments and exposed to military-related trauma are at increased risk to develop substance use and mental health problems (Seal, Metzler, Gima, Bertenthal, et al., 2009). As the percentage of women in the military continues to grow, the psychological effects of deployment and military trauma on women Veterans has become a high priority among researchers and clinicians (Batuman, Bean-Mayberry, Goldzweig, Huang, et al., 2011). Specifically, women now comprise 8% of all U.S. Veterans and are projected to increase to 35% of all Veterans in 2035 and, over the span of 2000–2009, women enrolling in VA healthcare have increased 83% (National Center for Veterans Analysis and Statistics, 2011). The evolving role of women in military service highlights a need for the traditionally male-dominated VHA healthcare system to competently adapt to the diverse and distinct needs and concerns of this rapidly growing minority population.

Women in Combat Support Roles

Historically, female military personnel were shielded from combat situations. However, as women's role in the military evolves, women deployed as part of Operations Enduring Freedom, Iraqi Freedom, and New Dawn (OEF/OIF/OND) experienced greater direct combat exposure (e.g., receiving incoming fire, driving convoy vehicles), elevated levels of perceived threat in a hostile environment, and contact with the aftermath of battle (i.e., witnessing combat-related injuries and death) than women in prior eras (La Bash, Vogt, King & King, 2008). Combat-related trauma exposure has been associated with greater risk for posttraumatic stress disorder (PTSD), depression (Vogt, Vaughn, Glickman, Schultz, et al., 2011), and problematic alcohol use (Nunnink, Goldwaser, Heppner, Pittman, et al., 2010) among women Veterans. Continued research on the impact of women's combat exposure on post-deployment outcomes takes on considerable importance given that women may be exposed to greater levels of combat due to the rescinding of the 1994 Direct Ground Combat Definition and Assignment Rule that prohibited women from serving in combat or combat roles (Dempsey & Panetta, 2013).

Military Sexual Trauma among Service Women

Another concern among women Veterans is military sexual trauma (MST), currently defined as the experience of sexual harassment or assault while in military service (Department of Vetarans Affairs, 2010). Women Veterans are particularly vulnerable to MST, as it is reported by 10–30% of women OEF/OIF/OND Veterans (Kimerling, Street, Pavao, Smith, et al., 2010; Suris & Lind, 2008) compared to reports made by approximately 1% of male Veterans (Kimerling, et al., 2010; Maguen, Cohen, Ren, Bosch, et al., 2012). Coping with MST is associated with increased mental health problems, including elevated risk of PTSD, depression, and substance abuse disorders (Kimerling, et al., 2010; Gradus, Street, Kelley & Stafford, 2008; Suris & Lind, 2008) as well as increased physical symptoms, cardiovascular risk factors, and chronic health problems (Suris & Lind, 2008). MST has also been linked to maladaptive behaviors such as heavy and hazardous alcohol use (Creech & Borsari, 2013; Hankin, Skinner, Sullivan, Miller, et al., 1999). Furthermore, the emotional numbing and avoidance coping associated with experiencing MST, as well as PTSD, appear to facilitate

the link between MST and alcohol use (Cobb Scott, Pietrzak, Mattocks, Southwick, et al., 2013; Creech & Borsari, 2013).

Combat trauma and MST

Research has begun to examine the relative impact of combat-related trauma versus MST on psychosocial functioning among women Veterans. One recent study in a sample of women OEF/OIF/OND Veterans seeking VHA treatment in a postdeployment specialty clinic suggested combat trauma predicts alcohol misuse, PTSD, and depression over and above interpersonal traumas, including MST (Hassija, Jakupcak, Maguen & Shipherd, 2012). Another recent study with OEF/OIF/OND women Veterans found a synergistic effect: women Veterans who reported MST and also experienced greater exposure to combat were significantly more likely to be diagnosed with PTSD than women with less combat exposure (Cobb Scott, Pietrzak, Southwick, Jordan, et al., 2014). This research indicates the need for an improved understanding about the impact of both combat exposure and MST on the mental health of women Veterans. In this way, the VHA will be able to systematically target treatment and outreach efforts with OEF/OIF/OND women Veterans.

Women's Reported Use of Healthcare Services

Another vital area of research examines factors influencing women Veterans' use of VHA healthcare as compared to men. It has been suggested that many women may feel less comfortable in the VHA because it is dominated by a larger proportion of male Veterans and VHA workers may be less sensitive or knowledgeable about female patients (Vogt, Barry, & King, 2008). Several factors have been identified as predictors of VHA utilization for both men and women. For example, in a national sample of male and female OEF/OIF/OND Veterans with at least one VHA healthcare visit, triple comorbidity of PTSD, depression, and alcohol use disorder predicted higher VHA utilization for both genders (Maguen, Cohen, Cohen, Madden, et al., 2012). Another study sampled male and female OEF/OIF/OND Veterans who were not necessarily enrolled in the VHA system, but had probable need for mental health care (based on self-report inventories); several factors were significant, including elevated PTSD symptomatology and positive perception of VHA healthcare (Di Leone, Vogt, Gradus, Street, et al., 2013). Exposure to MST while on deployment was found to be a unique predictor of increased VHA utilization for OEF/OIF/OND women Veterans as compared to men, even after controlling for other mental health symptoms (Di Leone, et al., 2013). However, women Veterans also expressed low satisfaction in care and had lower perceptions of VHA, especially among those who had also had combat exposure (Batuman, Bean-Mayberry, Goldzweig, Huang, et al., 2011). Taken together, this work suggests that men and women who had deployed to OEF/OIF/OND may utilize VHA at similar rates when mental health symptoms are the primary predictors of use; however, utilization rates may diverge when MST is present.

Underutilization of Substance Abuse Services

Women's utilization of substance abuse services is of particular concern because women Veterans are less likely than men to seek substance use services, including intensive outpatient programs (Davis, Bush, Kivlahan, Dobie, et al., 2003; Ross, Fortney, Lancaster, et al., 1998; Stecker, Han, Curran, et al., 2007). This trend is problematic as women

Veterans exposed to trauma tend to misuse alcohol more frequently (Hassija, Jakupcak, Maguen & Shipherd, 2012), are more likely to experience comorbid depression with anxiety and substance use disorders (Curry, Aubuchon-Endsley, Brancu, Runnals, et al., 2014), and a strong link has also been found between substance abuse and completed suicide in women Veterans (Chapman & Wu, 2014). Reduced use of substance use services is important given data linking engagement in treatment for substance abuse to reduced likelihood of making a suicide attempt (Ilgen, Harris, Moos, & Tiet, 2007). Further research examining alcohol misuse among women Veterans who choose not to utilize VHA services is needed to better understand the potential impact of trauma and/or mental health issues on decisions whether or not to pursue treatment in the VHA system.

In the current study, we examined the relationships between MST, combat exposure, and exposure to the aftermath of battle with self-reported alcohol misuse and psychological distress in a sample of recently deployed women Veterans. To place these relationships in the context of service utilization, we also examined the association between these variables and use of VHA healthcare. As substance use in women Veterans may exacerbate current psychological distress and problems (Chapman & Wu, 2014), we hypothesized that increased PTSD and depression symptomatology and trauma exposure would be related to greater VHA utilization, whereas alcohol misuse by itself would predict lower VHA use. To our knowledge, this study is the first to examine the combination of MST exposure with combat exposure on women Veterans' VHA utilization.

Methods

Recruitment

Procedures were approved by the VA Institutional Review Board. Potential participants were obtained through the OEF/OIF/OND Roster, maintained by the VHA Office of Public Health. Eligible women were deployed in OEF/OIF/OND and resided in Veterans Integrated Service Network 1 (VISN 1; New England). All 600 eligible participants received by mail a letter containing information about the study, a document describing the informed consent, and five dollars. Each invitation contained a link to a website hosted by the secure survey provider PsychData. Interested participants went to the website, indicated their informed consent, and continued to the 30-minute survey. No identifiable information was collected. Reminders were sent 2 and 4 weeks later; of the 600 invitations, 109 survey invitations returned as incorrect addresses. Of the remaining 491 women Veterans, 133 women logged on to the survey website, for a 27% response rate. While this response rate was smaller than other surveys of returning Veterans (32.5% – 39.1%; Di Leone, et al., 2013; Smith, Smith, Gray & Ryan, 2007; Vogt, et al., 2011), the levels of combat exposure and PTSD symptomatology were comparable to previous research (e.g. M = 20.89, 22.57, 30.16 for combat exposure, aftermath, and PTSD, respectively; (Vogt, et al., 2011). It is also worth noting that many previous large-scale surveys mailed participants a paper-based survey, a strategy which potentially enhanced their response rate (Di Leone, et al., 2013; Smith, et al., 2007; Vogt, et al., 2011).

Measures

Demographics—Participants provided demographic information including age, race, education, and military service history.

VHA Service Utilization—Participants completed two questions assessing VHA use: 1) Do you currently receive any aspect of your health care at a VA Hospital? 2) What types of care do you receive? (primary care, mental health care, dental, eye, physical therapy, other). All Veterans who indicated use of nonmedical services (e.g., dental) also reported utilizing additional medical and/or mental health services.

Trauma Exposure—Three scales from the Deployment Risk and Resilience Inventory-2 (Vogt, Smith, King, King, et al., 2013) were used to assess for exposure to combat experiences, the aftermath of battle, and MST during each participant's recent deployment. The Combat Experiences scale contains 17 items reflecting exposure to combat-related circumstances (e.g., exposure to hostile fire) on a 6-point Likert scale (*1=never, 6=daily/almost daily*). The Aftermath of Battle scale contains 13 items reflecting exposure to the consequences of combat (e.g., observing/handling human remains) on the same 6-point Likert scale. The Sexual Harassment scale contains 8 items assessing MST, defined as exposure to unwanted physical/verbal sexual contact while in military service (e.g., forced sexual contact, offensive sexual remarks), on a 4-point Likert scale (*0=never, 3=many times*). It should be noted that definitions for MST vary widely in the literature and the measure used in this study assesses exposure to MST as a continuous variable including both verbal and physical sexual harassment and sexual assault experiences. Only three women endorsed experiencing an overt sexual assault (e.g., forced sexual contact), thus we were unable to compare the potential differences between harassment and assault.

For all three of the DRRI-2 trauma exposure scales, items are summed such that higher scores are indicative of greater levels of exposure to the associated trauma type. Psychometric data for the DRRI-2 provides good evidence of criterion-related and discriminant validity as well as internal consistency reliability (Vogt, et al., 2013). Cronbach's alphas for the Combat Experiences, Aftermath of Battle, and Sexual Harassment scales were .85, .92, and .82, respectively.

Alcohol Use—The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item questionnaire that was used to assess problematic drinking behavior in the past 30 days (Saunders, Aasland, Babor, De La Fuente, et al., 1993). Items record the amount/frequency of drinking, symptoms of alcohol dependence, and problems caused by alcohol. Higher scores on the AUDIT are indicative of greater problematic alcohol use, with a score of 8 or higher representing more harmful drinking patterns (Conigrave, Hall & Saunders, 1995); thereafter we refer to "alcohol misuse" for the total AUDIT scores. The measure has a reported median reliability coefficient of .83, and adequate construct and criterion related validity. (Reinert & Allen, 2007). In this sample, Cronbach's alpha was 0.85.

Mental Health—The PTSD Checklist (Weathers, Litz, Herman, Huska, et al., 1993; PCL) was used to measure symptoms of PTSD in the past month. The PCL contains 17 items rated

on a 5-point Likert scale (*1=not at all, 5=extremely*). The civilian version was used to capture symptoms in response to both military and civilian traumas. As such, an index trauma was not specifically referenced when completing the questionnaire, which was intended to capture an overall measure of distress related to post-trauma symptoms as opposed to serving as a diagnostic assessment of PTSD. Items are summed with higher scores reflecting greater symptomatology and the suggested cut-off range for PTSD screening in VA primary care clinics is between 36 and 44. The PCL possesses acceptable test re-test reliability and internal consistency (Wilkins, Lang & Norman 2011). Cronbach's alpha in this sample was 0.92.

Participants also completed the 10-item Centers for Epidemiological Studies-Depression scale (Andresen, Malmgren, Carter & Patrick, 1994; CES-D). The CES-D is a commonly used self-report measure of symptoms of depression experienced in the past week (e.g. I felt depressed) on a 4-point scale (*0=rarely/none of the time/less than 1 day, 3=most or all the time/5–7 days*). Items are summed with higher scores indicating greater symptoms in the past week and a score of 11 or higher is commonly used to identify an individual at risk for clinical depression. The measure has adequate psychometric properties (Andresen, et al., 1994); in this sample, Crobach's alpha was 0.97.

Data Analysis

Descriptive statistics were summarized for measures of trauma experience, alcohol misuse, and mental health. The distributions of the AUDIT and PCL did exhibit significant skew and kurtosis; therefore, we conducted analyses with raw scores as there were no transformations would have resulted in a normal distribution. First, we compared distributions of demographic, trauma type, alcohol misuse, and psychological distress between Veterans using and not using VHA services. Second, we conducted a series of bivariate correlations between scores on the AUDIT, CES-D, PCL and trauma measures. Third, individual and combined linear regression models assessed the unique relationships between the three trauma measures and the AUDIT, CES-D, and PCL. Finally, a hierarchical binary logistic regression model was computed to determine which constructs were most associated with current VHA use. Post hoc power analysis (G*Power; Faul, Erdfelder, Lang, & Buchner, 2007) indicated the current sample (N = 133) provided more than adequate power (0.99) to detect medium to large effect sizes (f^2 = .33; see Cohen, 1977) in the overall regression models predicting VHA utilization.

Results

Demographic information

Demographics and study variables are presented in Table 1. The total sample (N = 133) was largely Caucasian (80.9%), which is representative of the region (VISN 1, New England) in which participants were recruited (New England Board of Higher Education, 2012). The average age was 37 years, and participants described an average of 16 years of education and 6.68 years since their last deployment. Nearly 65% (n = 79/122) reported some exposure to combat, and over 75% (n = 94/121) indicated they had experienced exposure to the aftermath of battle. Additionally, one-third (n = 40/120) endorsed MST while deployed. The

mean score on the PCL was 31.98 (*SD* = 16.72), with 22.1% (*n* = 27/122) reporting scores greater than 45, a common cut-off for potential PTSD diagnosis in the VHA (Weathers et al., 1993). The mean on the CESD was 7.48 (*SD* = 6.36), where a score of 11 is indicative of mild depressive symptomatology (Andresen, et al., 1994). Finally, 16.4% (*n* = 18/110) reported scores of 8 or higher on the AUDIT, which is a positive screen for harmful alcohol use (Reinert & Allen, 2007).

Comparisons of women Veterans who reported use of VHA services (*n* = 49) and those who did not (*n* = 82) revealed no significant differences on demographic variables, MST or depression symptoms. However, women reporting VHA use endorsed higher levels of combat trauma, exposure to aftermath, alcohol misuse, and PTSD symptoms.

Correlations between alcohol misuse and mental health

Correlational analyses were conducted on the full sample. Alcohol misuse was significantly and positively correlated with symptoms of PTSD ($r = 0.40$, $p<0.01$) and depression ($r = 0.42$, $p<0.01$). The association between symptoms of PTSD and depression was also significant ($r = 0.72$, $p<0.01$).

The association of trauma type with alcohol misuse and mental health

Separate linear regressions (refer to Table 2) supported the association between MST and combat exposure with alcohol misuse, depression symptoms, and PTSD symptoms (all *p*s<0.01); exposure to the aftermath of battle was only a significant predictor of PCL scores ($p<0.01$). However, when all trauma-types were included in the model, the relationship with the symptom measures diverged: MST and combat – but not aftermath – remained predictive of alcohol misuse scores. Conversely, combat exposure – but not MST or aftermath – was significantly associated with depression and PTSD scores.

Predictors of VHA healthcare utilization

Results of the hierarchical logistic regression predicting use of VHA services (a dichotomous factor) are shown in Table 3. In the first step of the model, we added the three military-related trauma exposure types; there were no significant predictors. In the second step we added the mental health measures; symptoms of PTSD were the only significant predictor of VHA use. Time since deployment was not associated with VHA use ($p > .05$).

Discussion

The current study reveals a number of important findings regarding exposure to deployment stressors, mental and behavioral health symptoms, and utilization of VHA medical or mental health services among women OEF/OIF/OND Veterans. The sample selection is important in that it was not obtained within a VHA clinic, but instead is comprised of women Veterans who may or may not utilize VHA healthcare, allowing for the possibility of identifying distinguishing characteristics related to treatment utilization. One-third of our sample of 133 women OEF/OIF/OND Veterans reported exposure to MST during deployment, which is comparable to percentages reported in other studies (Kimerling, et al., 2010; Suris & Lind, 2008). Additionally, 64% reported combat exposure and 78% reported exposure to the

aftermath of battle, consistent with the changing roles of women in the military and indicating returning OEF/OIF/OND Veterans experienced combat-related exposure at higher rates than women service members of previous U.S. conflicts (La Bash, et al., 2008). With regard to mental and behavioral health after deployment, the positive correlations among alcohol misuse, PTSD symptoms, and depression symptoms were consistent with previous research (e.g., Gradus, Street, Kelley & Stafford, 2008). However, in a combined model, the finding that combat exposure – but not MST or aftermath – significantly predicted depression and PTSD scores contrasts with past research linking MST exposure to PTSD and depression (e.g., Kimerling, et al., 2010).

Despite the link between exposure to traumatic events and a variety of medical and mental health problems (Kimerling, et al., 2010; Vogt, et al., 2011), only 37% of the sample reported current utilization of VHA healthcare. Only PTSD symptoms predicted VHA use when considered in the context of mental health, behavioral health, and deployment trauma exposure, including MST. It is possible that higher PTSD symptoms may facilitate use of VHA care due to the emphasis on PTSD detection in the post-deployment context as well as media and public attention toward the disorder. In other studies, factors found to predict VHA mental health care for women have also included elevated deployment sexual harassment (Di Leone, et al., 2013) and comorbidity of PTSD, depression, and alcohol use disorders (Maguen et al., 2012). All of these issues are frequently identified in the mandated screens and subsequent mental health referral process as part of standard VHA care and may not necessarily be performed by community providers who are less familiar with the common mental health symptoms experienced by women Veterans with exposure to MST and combat trauma. Thus the lack of a unique association between MST and treatment utilization was unexpected, as treatment for conditions secondary to MST are covered by VHA services and MST is typically associated with greater VHA service use in multi-generational samples of women Veterans (Kelly, Vogt, Scheiderer, Ouimette, et al., 2008). One explanation for this finding is that MST is often perpetrated by men in uniform, and this may produce reluctance to pursue healthcare in a military environment. Another explanation may be that while the percent of women who experienced any MST was high, the mean score for MST exposure in this sample was low in comparison to national samples using the same measure (e.g. Vogt et al., 2011). Therefore our sample may have experienced, on average, a lower amount of exposure to MST during deployment.

Also of concern was that alcohol misuse was not related to self-reported VHA medical or mental healthcare use. It is possible that the alcohol misuse reported in this sample was not severe enough to cause functional or psychological impairment for the Veterans, therefore not deemed as a significant problem in need of intervention. However, this lack of treatment utilization, consistent with other research (Davis et al., 2003), is particularly troubling because substance abuse has been found to increase the odds of suicide completion among women Veterans treated in the VHA (Ilgen, Conner, Valenstein, Austin, & Blow, 2010). Identifying strategies that encourage women Veterans to seek treatment for alcohol use problems has potential to reduce risk for suicide and other negative outcomes in this emerging population. Thus, further research is needed in larger samples of VHA users and non-users to determine whether there is a need to improve access to care for women Veterans reporting psychological symptoms other than PTSD.

Limitations to the current study should be noted. The lack of a comparison group of male Veterans, the cross-sectional nature of the study, and the use of a primarily Caucasian sample of women Veterans (who are more likely to screen positive for MST than women of other racial categories; Maguen, et al., 2012) are all factors that limit the extent to which these findings can be generalized to other women Veterans. The use of an internet-based survey decreases access to Veterans with little to no access to the internet and may have contributed to the homogeneous, and possibly lower-risk, nature of our sample.

Second, the VHA use measure is a dichotomous variable, which may have missed important information about the frequency, intensity, or duration of services used, and it is possible that Veterans were no longer eligible for services as the 5 year post-deployment window for automatic enrollment may have elapsed. However, when time since deployment was tested as a predictor of VHA use, it was not significant, indicating that controlling for all other variables, time did not significantly predict VHA use. We also do not account for utilization of non-VHA healthcare, precluding any conclusions about treatment utilization in the private sector. In addition we did not assess for past use of VHA healthcare as women may have utilized VHA services and subsequently were no longer in need of them. The nature of our survey also does not allow us to account for women whose symptoms were not severe enough to warrant service utilization in the first place, both in VHA and non-VHA healthcare.

Third, we did not assess for MST outside of deployment times specifically, although the PCL assessed post-traumatic distress to any traumatic incident, regardless of whether it happened while deployed. Finally, the overall survey response rate was only 27%, which may suggest the presence of a sampling bias that limits the generalizability of these findings to other women Veterans. Although the sample was comparable to other survey studies with returning Veterans in key characteristics, such as PTSD symptoms and combat exposure, women Veterans experiencing more severe symptomatology may not have responded to the survey. It should also be mentioned that the non-response rate is a conservative estimate based on returned mail and does not account for non-returned mail that failed to reach the intended eligible participant. As non-responders were not assessed, this raises the possibility that respondents differ in a meaningful way from those who chose not to respond.

Clinical Application

The current study provides important information on the needs of returning women Veterans, despite noted limitations. Though alcohol misuse was significantly associated with exposure to combat and MST, it was not related to VHA use, suggesting an opportunity to further improve access to and engagement with substance abuse services for women Veterans. There was also no association between symptoms of depression with VHA service use. In contrast, PTSD symptoms were associated with current VHA use, perhaps highlighting the success of current VHA screening programs and publicity around PTSD. In individual models, the strongest predictor of PTSD symptoms in this sample was exposure to combat during deployment. This finding suggests that returning women Veterans' service use may be driven more by PTSD symptoms and combat exposure than by other symptoms or types of trauma. Alternatively, this finding underscores the need for further development

of strategic outreach and targeted mental health screening to best meet the needs of women Veterans with other mental health disorders such as depression or alcohol misuse. The lack of association between MST and VHA utilization in this sample may highlight the need for enhanced outreach to women Veterans reporting MST. In particular, additional efforts may be needed to educate Veterans about psychological and physical health issues beyond PTSD that may also be related to exposure to MST and provide information regarding personal eligibility and access for VHA services.

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Table 1

Demographic information and descriptive statistics for study variables

	Total N = 133	**VHA Users N = 49**	**Non-VHA Users N = 82**		
	M (SD)	**M (SD)**	**M (SD)**	**t**	**p**
Demographics					
Age	37.11 (8.74)	36.27(8.79)	37.40(8.76)		
Years of Education	16.10(2.87)	15.55(3.14)	16.44(2.73)		
Months since deployment	80.25 (39.96)	81.71(36.61)	79.39(42.02)		
	N (%)	N (%)	N (%)	χ^2	p
Hispanic or Latino	10(7.6)	4(8.2)	6(7.3)		
White	106 (80.9)	43(87.8)	63(76.8)		
Black	12(9.2)	4(8.2)	8(9.8)		
Native American	3(2.3)	1(2.0)	2(2.4)		
Other	6(4.6)	1(2.0)	5(6.1)		
Multiracial	2(1.5)	2(2.4)	0(0)		
Employed	106(80.9)	37(75.5)	69(84.1)		
Deployment Post-2006	73(55.7)	30(61.2)	43(52.4)		
	M (SD)	M (SD)	M (SD)	t	p
Trauma Type					
Military Sexual Trauma	1.28(2.71)	1.98(3.72)	0.84(1.70)		
Combat Trauma	22.27(8.94)	24.77(12.13)*	20.76(5.88)	−2.09	0.04*
Exposure to Aftermath	23.60(14.16)	27.09(16.61)**	21.53(12.14)	3.56	>0.001**
Substance Use					
AUDIT	4.78(5.50)	6.63(7.53)*	3.68(3.45)	−2.36	0.02*
Depression Symptoms					
CESD	7.48(6.36)	8.89(7.16)	6.66(5.74)		
PTSD Symptoms					
PCL	31.98(16.72)	38.00(20.22)**	28.33(13.03)	−2.90	0.005**

Note: Only significant test statistics were reported; 2 participants did not report their race or use of VA services;

Significantly difference between VA users and Non-VA users,

* $p < 0.05$;

** $p < 0.01$

Table 2

Regression Models predicting relationships among trauma types and alcohol use, depression and PTSD symptoms.

	AUDIT			CESD			PCL		
	β	*t*	*p*	β	*t*	*p*	β	*t*	*p*
Individual Models									
Military Sexual Trauma	0.40	4.49	<0.001**	0.24	2.71	0.008**	0.31	3.55	0.001**
Combat Exposure	0.37	4.13	<0.001**	0.28	3.20	0.002**	0.45	5.59	<0.001**
Exposure to Aftermath	0.12	1.29	0.20	0.07	0.73	0.46	0.30	3.47	0.001**
Combined Model									
Military Sexual Trauma	0.25	2.23	0.03*	0.10	0.93	0.35	0.08	0.78	0.44
Combat Exposure	0.30	2.21	0.03*	0.33	2.41	0.02*	0.40	3.14	0.002**
Exposure to Aftermath	−0.14	−1.26	0.21	−0.17	−1.45	0.15	0.03	0.26	0.80

Note: AUDIT = Alcohol use disorders identification test; CESD = Center for Epidemiologic Studies of Depression Scale; PCL = PTSD Check List;

Significant difference

* p <0.05;

** p <0.01

Table 3

Logistic Regression Models predicting utilization of VHA services

							95% C.I. for Exp(B)	
	χ^2	B	SE	Wald	*p*	Exp(B)	Lower	Upper
Step 1	10.48*							
Military Sexual Trauma		0.17	0.11	2.41	0.12	1.18	0.96	1.47
Combat Exposure		0.03	0.04	0.48	0.49	1.03	0.96	1.10
Exposure to Aftermath		0.02	0.02	0.93	0.33	1.02	0.98	1.05
Step 2	19.36**							
Military Sexual Trauma		0.13	0.11	1.31	0.25	1.13	0.91	1.41
Combat Exposure		0.01	0.04	0.06	0.80	0.99	0.92	1.07
Exposure to Aftermath		0.02	0.02	0.84	0.36	1.02	0.98	1.06
Alcohol Misuse		0.06	0.06	1.00	0.32	1.06	0.95	1.18
Depression Symptoms		0.05	0.06	0.92	0.34	0.95	0.85	1.06
PTSD Symptoms		0.05	0.02	5.01	0.03*	1.05	1.01	1.10

χ^2 = goodness of fit chi-squared test; SE = Standard Error; Exp(B) = odds ratio

* $p < 0.05$;

** $p < 0.01$