



## Gender differences in the correlates of hazardous drinking among Iraq and Afghanistan veterans

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### ABSTRACT

**Background:** Despite increasing numbers of women veterans from the Iraq and Afghanistan conflicts, few studies have examined hazardous drinking in this group. The present study examined the prevalence of and risk and protective factors for hazardous drinking in a community-based sample of men and women veterans of Operations Enduring Freedom/Iraqi Freedom/New Dawn (OEF/OIF/OND).

**Methods:** Veterans completed a structured survey that assessed hazardous drinking using the Alcohol Use Disorders Identification Test (AUDIT), and a broad range of demographic, life history, and psychopathology variables. Correlations and multivariate logistic regression analyses were conducted to examine risk and protective factors associated with hazardous drinking.

**Results:** A total 30.2% of male veterans and 16.3% of female veterans screened positive for hazardous drinking. In a multivariate analysis in male veterans, younger age, lifetime exposure to assaultive trauma, and conflict in interpersonal relationships were independently associated with hazardous drinking ( $p < .05$ ). Among women veterans, younger age and posttraumatic stress disorder (PTSD) symptoms were independently associated with hazardous drinking in a multivariate analysis ( $p < .05$ ). Secondary analyses of PTSD symptom clusters revealed that emotional numbing symptoms were independently related to hazardous drinking in women veterans ( $p < .05$ ).

**Conclusions:** Results of this study suggest that hazardous drinking is prevalent in both men and women OEF/OIF/OND veterans and is more likely to occur at younger ages. In addition, results indicate gender differences in the association between hazardous drinking and lifetime trauma history, PTSD symptoms, and interpersonal conflict, which may have important implications for the treatment of alcohol problems in men and women veterans.

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### 1. Introduction

Military veterans returning from Operations Enduring Freedom, Iraqi Freedom, and New Dawn (OEF/OIF/OND) evidence high rates (12–40%) of hazardous drinking (Jacobson et al., 2008; Maguen et al., 2010; Milliken et al., 2007; Seal et al., 2007), with concomitant negative psychosocial, occupational, and legal consequences (Kehle et al., 2011; McDevitt-Murphy et al., 2010). Most studies of

alcohol-related problems in OEF/OIF/OND veterans, however, have focused on men. This is unfortunate, as approximately 15% of active duty and 17% of National Guard and Reserve personnel are women (Manning, 2008), and their presence in the military is expected to grow significantly over the next two decades (Department of Veterans Affairs, 2007). Although women are prohibited from serving in direct combat roles, men and women are exposed to similar levels of deployment-related stressors, albeit of slightly different types (e.g., interpersonal stressors; Mattocks et al., 2012; Street et al., 2009; Vogt et al., 2011).

While women generally have lower rates of alcohol use disorders compared to men (e.g., Grant et al., 2004; Maguen et al., 2010), estimates of these disorders in women veterans still remain high, ranging from approximately 5%, using VA healthcare

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administrative data from ICD-9 diagnoses (Maguen et al., 2010; Seal et al., 2007), to 20%, using survey screening instruments (Burnett-Zeigler et al., 2011; Nunnink et al., 2010). In women veterans who have experienced military sexual trauma (MST), including sexual assault and sexual harassment, or who have comorbid psychiatric diagnoses such as posttraumatic stress disorder (PTSD), these prevalence rates are even higher (Kimerling et al., 2010; Maguen et al., 2012a,b).

Currently, relatively little is known about risk and protective factors associated with hazardous drinking in female veterans. Previously identified risk factors for hazardous drinking in OEF/OIF/OND veterans (drawn from samples predominantly comprised of males) include sociodemographic factors, such as younger age and being unmarried (e.g., Jakupcak et al., 2010; Seal et al., 2007; Wilk et al., 2010), and military service characteristics, with National Guard and Army and Marine Corps veterans displaying higher levels of hazardous drinking (Bray and Hourani, 2007; Seal et al., 2007). Individuals may also develop hazardous drinking in response to traumatic experiences, and women are at particular risk after experiencing violent or assaultive traumas (Sartor et al., 2011). In OEF/OIF veterans, increasing evidence indicates that combat exposure is related to hazardous drinking independent of psychopathology (Browne et al., 2008; Maguen et al., 2012b; Wilk et al., 2010). Similarly, recent data from a nationally representative sample found strong associations between lifetime traumas and alcohol use disorders, independent of PTSD diagnosis (Fetzner et al., 2011).

Psychopathology is also known to increase the risk for hazardous drinking. Men and women with PTSD or depression have an increased risk of hazardous drinking and alcohol use disorders (Jacobsen et al., 2001; Kessler et al., 1997; Marshall et al., 2012; Seal et al., 2007). One hypothesis asserts that hazardous drinking behaviors develop in part as an attempt to self-medicate mental health symptoms such as PTSD (Bremner et al., 1996; Milliken et al., 2007), and recent longitudinal research supports this hypothesis in OEF/OIF veterans (Hooper et al., 2008; Jacobson et al., 2008; Kehle et al., 2012). However, PTSD is a heterogeneous disorder characterized by distinct symptom clusters that may be differentially associated with hazardous drinking. For example, Jakupcak et al. (2010), using a four-factor model of PTSD symptoms, found that only emotional numbing symptoms were significantly associated with hazardous drinking in OEF/OIF veterans. Recently, however, a novel five-factor model of PTSD symptomatology comprised of separate clusters of re-experiencing, avoidance, numbing, dysphoric arousal, and anxious arousal symptoms has been proposed and has been shown to provide the best representation of PTSD symptom structure in a number of studies (Elhai et al., 2011; Pietrzak et al., 2012; Wang et al., 2011a,b, 2012). To date, no studies have examined the association of these symptom clusters with hazardous drinking.

Gender differences in military-related risk factors for mental health disorders have also been identified. Most prominently, 10–30% of female veterans may experience MST compared to approximately 1% in male veterans (Kimerling et al., 2010; Maguen et al., 2012a). MST has been shown to increase the risk of a range of psychiatric disorders, including alcohol use disorders (Kimerling et al., 2010; Maguen et al., 2012a; Suris and Lind, 2008). Interestingly, Maguen et al. (2012b) found that while male OEF/OIF veterans with PTSD were more likely to have comorbid alcohol use disorders than women with PTSD, MST was significantly associated with alcohol use disorders in women but not in men. Models of hazardous drinking in civilians also show that men are more likely to drink as a way to avoid or escape distress and symptoms of affective disorders (Chilcoat and Breslau, 1998; Nolen-Hoeksema and Harrell, 2002), while women are more likely to engage in hazardous drinking in reaction to previous assaultive traumas (Nolen-Hoeksema,

2004; Sartor et al., 2011). These relationships have not yet been examined in OEF/OIF/OND veterans.

Research on factors that may protect against hazardous drinking is far more limited than research on risk factors, with the exception of social support. Social support may decrease the risk of hazardous drinking by promoting positive coping responses to stressful or traumatic experiences (Humphreys et al., 1999; Peirce et al., 1996) or reducing symptoms of anxiety and depression after exposure to stressors (Moak and Agrawal, 2010; Peirce et al., 1996). In fact, social support is among the most significant psychosocial factors predicting mental health outcomes and overall well-being (Berkman et al., 2000; Brewin et al., 2000). Specific to hazardous drinking, low social support is related to the establishment of alcohol use disorders (e.g., Schuckit and Smith, 2001), while positive social support improves treatment retention and recovery from alcohol problems (Broome et al., 2002; Litt et al., 2009; Zywiak et al., 2002).

The purpose of the present study was to characterize the prevalence of hazardous drinking and examine gender differences in the risk and protective factors for hazardous drinking in a community sample of male and female OEF/OIF/OND veterans. Understanding gender differences in risk factors for hazardous drinking is important, as it may improve our understanding of the development and maintenance of alcohol use disorders, and inform the development of effective clinical interventions for OEF/OIF/OND veterans. We hypothesized that: (1) hazardous drinking would be more prevalent among male veterans; (2) younger age and being unmarried would be associated with hazardous drinking in both male and female veterans; (3) PTSD would be associated with hazardous drinking in male veterans, while PTSD and traumatic events (e.g., MST) would be associated with hazardous drinking in female veterans; and (4) social support would be negatively associated with hazardous drinking in both male and female veterans.

## 2. Methods

### 2.1. Data source and participants

Participants were a sample of 634 veterans from a larger study, the Women Veterans Cohort Study (WVCS; Haskell et al., 2011). WVCS is a two-phase longitudinal study examining healthcare utilization, health outcomes, and costs of care among a cohort of OEF/OIF/OND men and women veterans in VA care (see Mattocks et al., 2012 for greater details). We report data collected during phase 2 of WVCS, a prospective cohort study of OEF/OIF/OND veterans enrolled for care in the VA New England region or Indiana. Letters were sent to all female veterans on the OEF/OIF roster who lived in VA New England or Indiana and an equal number of male Veterans ( $n = 8392$ ). Veterans expressing interest in the study either met with or called the research coordinator who provided a detailed description of the study and screened for eligibility criteria, including the ability to speak and read English and participation in OEF/OIF/OND. All participants provided written informed consent.

### 2.2. Measures

Hazardous drinking was assessed using the 10-item Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993b). Responses for each item are scored on a Likert scale ranging from 0 (*Never*) to 4 (*Daily or Almost Daily*) and are summed to create a total score ranging from 0 to 40. A cutoff score of 8 has good sensitivity and specificity as a screen for hazardous drinking (Barry and Fleming, 1993; Saunders et al., 1993a), while scores  $\geq 19$  are indicative of possible alcohol dependence.

PTSD symptoms were assessed using the PTSD Checklist-Military Version (PCL-M; Weathers et al., 1991). Total scores range from 17 to 85. Individuals were classified as screening positive for PTSD if they had a total PCL-M score  $\geq 50$  and endorsed each of three DSM-IV criteria for PTSD. PTSD symptom clusters were modeled according a novel five-factor model of PTSD symptoms (Pietrzak et al., 2012). The five-factor model consists of factors reflecting symptoms of re-experiencing (DSM-IV symptoms B1–B5), avoidance (symptoms C1 and C2), emotional numbing (symptoms C3–C7), dysphoric arousal (symptoms D1–D3), and anxious arousal (symptoms D4 and D5).

Depression was assessed using the Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001). Total scores range from 0 to 27. Participants were classified as having probable major depression if they responded to having a depressive symptom "More than half the days" (i.e., 2) on at least five items.

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