



Full length article

Potentially modifiable deployment characteristics and new-onset alcohol abuse or dependence in the US National Guard



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ABSTRACT

Background: There is a limited amount of data examining the relation between the onset of alcohol abuse/dependence and the experiences of soldiers prior to (pre), during (peri) and after (post) military deployment. Some deployment characteristics, e.g., military unit cohesion, are potentially modifiable in the context of reducing alcohol abuse/dependence peri-/post deployment. We investigated the associations between potentially modifiable deployment characteristics and peri-/post (incident) alcohol abuse/dependence among deployed Ohio Army National Guard (OHARNG) soldiers.

Methods: Using a sample of OHARNG (June, 2008 to February, 2009), eligible participants were ever been deployed and did not report alcohol abuse/dependence prior to deployment (final sample size = 963). Interviews assessed soldiers' alcohol abuse/dependence, depression, PTSD, deployment related factors (e.g., exposure to warzone stressors) and three deployment characteristics (pre-deployment preparedness, unit support during deployment, and post-deployment social support). Associations between the three deployment characteristics and incident alcohol abuse/dependence (defined as abuse or dependence at any point during or after deployment) were estimated using logistic regression.

Results: Only pre-deployment preparedness was associated with incident alcohol abuse/dependence (a non-linear inverted-u shaped relation) when controlling for demographics, deployment related factors (e.g., exposure to warzone stressors), and the presence of psychopathology that exhibited peri-/post-deployment. We present these results graphically, plotting incident alcohol abuse/dependence over the levels of pre-deployment preparedness.

Conclusions: The association between pre-deployment preparedness and alcohol abuse/dependence may be characterized as an inverted-U shaped function. Suggestions for how and whether to modify pre-deployment preparedness in an effort to reduce peri-/post-deployment alcohol abuse or dependence should await further research.

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1. Introduction

Alcohol abuse and dependence are serious health concerns in the military as indicated by its relatively high prevalence (Fear et al., 2010; Jacobson et al., 2008), potential comorbidity with psychopathology (Marshall et al., 2012), associations with negative

life consequences (e.g., loss of productivity; Fisher et al., 2000); involvement in the criminal justice system (Stahre et al., 2009), and a higher prevalence in military populations compared to civilian populations (Ames and Cunradi, 2004/2005; Hooper et al., 2008).

A common explanation for alcohol abuse and dependence in military populations is that alcohol provides relief from the psychological and physiological reactions to trauma, a supposition that falls in line with the positive association between the degree of exposure to stressful war-like situations and the prevalence of alcohol abuse and dependence, e.g., comparing military personnel

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vs. civilians (Hooper et al., 2008), deployed vs. non-deployed military personnel (Wilk et al., 2010), and combat versus non-combat deployed soldiers (Fear et al., 2010; Jacobson et al., 2008). An extensive review on trauma and alcohol abuse and dependence (Stewart, 1996) further supports this explanation, suggesting that alcohol is used to relieve a range of trauma-related symptoms including those that are physiological, behavioral, affective, and cognitive both within military populations and in the general population.

Another explanation related to but distinct from the relief of symptoms of trauma, is the historical tradition of alcohol use in the military. Alcohol has served and currently serves several functions in military life (whether tacitly endorsed or not) including: relief from stress and combat fatigue; as a stimulant to invigorate soldiers during combat; engendering social bonding; and, maintaining or increasing morale of troops (Jones and Fear, 2011).

From a health promotion perspective, these two explanatory mechanisms might serve as the basis for revealing potentially modifiable deployment characteristics that could be leveraged to reduce alcohol abuse and dependence in military populations. For example, a low-level of unit leadership and having soldiers' work in theater not matching their training, have both been associated with the risk of post-deployment alcohol abuse and dependence (Browne et al., 2008), potentially suggesting a link between stress experienced in theater (e.g., higher stress given low-levels of leadership) and alcohol use. Furthermore, a higher level of comradeship and being deployed with a parent unit (a unit with which the soldier was familiar) have been positively associated with alcohol abuse and dependence (Browne et al., 2008). This may implicate the use of alcohol in situations where social bonding is relatively high and/or well established.

The effects of potentially modifiable characteristics of deployment on improving soldiers' welfare has been studied more systematically for Post-traumatic Stress Disorder (PTSD) compared to alcohol use (Goldmann et al., 2012). In this work, the modifiable characteristics are delineated in time relative to deployment. Pre-deployment characteristics refer to the degree of preparedness prior to deployment, e.g., having the supplies needed or receiving accurate information about deployment life. Peri-deployment characteristics refer to the degree of support within a soldier's military unit during deployment, e.g., trust among comrades and quality of leadership. Post-deployment characteristics capture the perceived social environment upon returning home from deployment, e.g., feeling at home when returning from deployment and having someone available with whom to discuss deployment-related experiences. Pre-, peri-, and post-deployment characteristics are all positively associated with lower deployment-related PTSD (Goldmann et al., 2012).

Distinguishing among the pre-, peri-, and post-deployment characteristics related to alcohol abuse and dependence in the military may be useful not only because it suggests several potential pathways, but also because it prescribes more specific preventive and intervention approaches. For example, it may be possible to decrease alcohol abuse and dependence by increasing the efficacy of pre-deployment training (highly prepared soldiers more accurately appraise the level of threat across combat situations (Renshaw, 2011)). To date, however, extant research has not yet enumerated the detailed deployment characteristics and the respective associations with deployment-related alcohol abuse and dependence.

In this paper, we attempt to provide a further basis for developing intervention and prevention efforts that use the pre-, peri-, post-deployment distinction. Specifically, we test the associations between pre-, peri- and post-deployment characteristics and alcohol abuse or dependence in a sample of deployed US National Guard who did not have a history of alcohol abuse or dependence prior to deployment. Reserve and National Guard populations

have shown stronger associations with deployment experience and alcohol abuse (Jacobson et al., 2008; Santiago et al., 2010) and this population is understudied compared to active-duty personnel.

2. Methods

2.1. Study population and data collection

The source population was Ohio Army National Guard (OHARNG) soldiers who were enlisted between June 2008 and February 2009. We recruited participants for this study from November 2008–November 2009 through a 2-stage process. First, we notified all soldiers with accurate addresses on file with the OHARNG ($N=12,225$) about the study through an opt-out card; 11,212 soldiers did not return an opt-out card. Of these, we contacted the 6514 (64.6%) who had correct telephone numbers. The final number of survey participants was 2616 (1364 did not wish to participate; 2316 were never reached before the cohort was closed; 187 were retired; 31 were ineligible, e.g., hard of hearing or couldn't speak English). The participation rate was 43.2% (consented/[all correct numbers – ineligible]). The final sample was not representative of the Ohio National Guard 2008 Profile on the following characteristics (see Table 1 of Calabrese et al. (2011) for original data): age, race, marital status, and military rank. These discrepancies were most pronounced for marital status (e.g., our final sample of 2616 was 47% married (Calabrese et al., 2011) compared to 39% for the Ohio National Guard 2008 Profile).

For the current study, we included only respondents who reported ever been deployed ($N=1668$) minus those who had a history of alcohol abuse or dependence before deployment ($N=613$). Because our outcome was alcohol abuse or dependence we excluded those for whom we could not determine the timing of their alcohol abuse or dependence ($N=92$); the final sample size totaled 963. In sum, the study sample were those OHARNG soldiers who participated in the Ohio Army National Guard Mental Health Initiative (OHARNG MHI), had deployment experience, and had no history of alcohol abuse or dependence prior to this deployment.

Study participants were interviewed over the telephone in 60-min interviews (computer-assisted interviewing). We collected data concerning sociodemographics, current living situation, military history, deployment and combat experiences, current and past psychopathology, and alcohol abuse and dependence. All participants were compensated for their time and had access to an on-call clinician in case the participants became distressed at any time during or after the interview. The Institutional Review Boards of University Hospitals Case Medical Center University of Toledo and Columbia University approved the study protocol. The National Institutes of Health provided the study with a certificate of confidentiality. The study was approved by the US Department of Defense (Human Research Protection Office, Office of Research Protections and the US Army Medical Research and Materiel Command).

2.2. Measures

Our main outcome of interest was whether a soldier developed alcohol abuse or dependence at any point in time from the beginning of his/her most recent deployment to participation in the survey (Yes/No). We operationalized alcohol abuse or dependence using the Mini International Neuropsychiatric Interview and DSM-IV criteria (Sheehan et al., 1998); i.e., the soldier reported at least 1 maladaptive pattern of alcohol use that lead to clinically significant impairment or distress. The temporal context for the items used to measure alcohol abuse or dependence was soldier's

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