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The association of alcohol consumption patterns with self-rated physical health and psychiatric distress among Afghanistan- and Iraq-era U.S. veterans

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ABSTRACT

Alcohol misuse is associated with negative mental and physical health outcomes, which presents a public health concern in veterans. However, less is known regarding outcomes among veterans with low to moderate alcohol consumption. This study included veterans with military service in Iraq and/or Afghanistan (N = 1083) who resided in the VA Mid-Atlantic region catchment area (North Carolina, Virginia, and parts of West Virginia). Participants completed a mailed survey that inquired about demographics, past-year alcohol consumption, self-rated physical health, and psychiatric symptoms. Logistic regression was used to evaluate associations between alcohol consumption and posttraumatic stress disorder (PTSD), depression, and self-rated physical health. In both bivariate results and adjusted models, non-drinkers and hazardous drinkers were more likely to endorse clinically significant PTSD and depression symptoms than moderate drinkers. Moderate drinkers were also less likely to report fair/poor health, after adjusting for demographics and psychiatric symptoms. Results overall showed a U-shaped curve, such that moderate alcohol use was associated with lower rates of mental health problems and fair/poor health. While the VA routinely screens for alcohol misuse, current results suggest that non-drinkers are also at risk for poor mental and physical health.

1. Introduction

Given that U.S. veterans are more likely to report poor health status and serious psychological distress than non-veterans, the mental and physical health of veterans returning from deployment is a significant public health concern (Kramarow and Pastor, 2012; Smith and Team, 2009). Recently, much attention has been given to high rates of alcohol misuse among veterans who served in Iraq and Afghanistan (Burnett-Zeigler et al., 2011; Calhoun et al., 2008; Calhoun et al., 2016a; Eisen et al., 2012; Grossbard et al., 2016; Hawkins et al., 2010). This population endorses high rates of comorbidity between alcohol misuse and psychiatric disorders such as posttraumatic stress disorder (PTSD) and depression (Calhoun et al., 2016a; Seal et al., 2011; Thomas et al., 2010). Unhealthy alcohol use has well-known adverse effects including increased risk for hypertension, stroke, liver disease, and unintentional injuries and death (Rehm et al., 2010; Shield et al., 2013). In fact, the use of alcohol is the third most common preventable cause of death in the United States (Mokdad et al., 2004). Given the prevalence of alcohol misuse among veterans who served in Iraq and Afghanistan, it is essential in this population to characterize mental/physical health concerns that are associated with varying levels of drinking.

The majority of studies examining risks associated with alcohol consumption and mental and physical health outcomes in veterans who served during military operations in Iraq and Afghanistan have dichotomized alcohol consumption and examined outcomes for those drinking at risky or hazardous levels (Burnett-Zeigler et al., 2011;

Abbreviations: OEF, Operation Enduring Freedom; OIF, Operation Iraqi Freedom; PTSD, Posttraumatic Stress Disorder

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Calhoun et al., 2008, 2016a; Eisen et al., 2012). Thus, less is known regarding the association between health outcomes and other patterns of drinking in returning veterans. Among civilians, moderate or low-level drinking is associated with reduced distress compared to hazardous drinkers and abstainers (Rodgers et al., 2000a, 2000b). A similar relationship has been consistently observed between moderate or low-risk alcohol consumption and health benefits including lower levels of diabetes, cardiovascular disease, and mortality when compared to hazardous drinkers and abstainers (Costanzo et al., 2010; Rehm et al., 2010; Roerecke and Rehm, 2012; Ronksley et al., 2011). While controversy remains over the causes for the observed association, multiple studies have indicated that people consuming one to two standard drinks appear to have a cardiovascular event rate that is lower than people who do not drink at all (Costanzo et al., 2010; Rehm et al., 2010; Roerecke and Rehm, 2012; Ronksley et al., 2011). This relationship has often been described as a J-shaped or U-shaped curve (Kloner and Rezkalla, 2007; Marmot et al., 1981; Thompson, 2013). The presence of such a curve has strong implications for alcohol consumption recommendations.

The objective of the current study was to examine the association between alcohol consumption and both mental and physical health in U.S. veterans who served during the wars in Iraq and Afghanistan. Subjective or self-rated physical health is a simple, global evaluation of how a person perceives his/her health. Self-rated health is strongly correlated with other direct measures of health and functioning and has been shown to predict mortality beyond other indicators of mortality risk such as blood pressure, body mass index, serum cholesterol levels, and chronic conditions in multiple studies (DeSalvo et al., 2006; Idler and Benyamini, 1997). A number of studies in civilian populations have suggested that moderate alcohol consumption is associated with a self-perception of good health (Poikolainen and Vartiainen, 1999; Poikolainen et al., 1996; San Jose et al., 1999; Van Dijk et al., 2004). The majority of this work, however, has not adjusted for the presence of mental health problems. Distress associated with mental health problems could impact perceptions of global health (Beckham et al., 2002a; Calhoun et al., 2009; Schry et al., 2016). The current investigation examined the association between past-year alcohol consumption, self-rated health, and psychiatric distress in a large cohort of U.S. veterans with service in Iraq and/or Afghanistan.

2. Methods

2.1. Participants and procedure

The sample in the current study (N = 1083) were respondents to an anonymous mail survey conducted as part of the OEF/OIF Veterans Health and Needs Study (Calhoun et al., 2016a, 2016b; Crawford et al., 2015; Schry et al., 2015) who had adequate data on the measures described below. The OEF/OIF Veterans Health and Needs Study was sponsored by the VA Mid-Atlantic Mental Illness Research Education, and Clinical Center, which serves the Mid-Atlantic catchment area. The study identified a random sample of Afghanistan/Iraq-era veterans with a last known address in the VA Mid-Atlantic Region catchment area through a data use agreement with the VA Environmental Epidemiology Service. To be study eligible, veterans had to be eligible for VA healthcare with a valid address in the U.S. A modified Dillman procedure (Dillman, 2000) was utilized in which all participants received a pre-alert letter, the survey, and if needed, a follow-up letter and duplicate survey. The survey package included a cover letter, a 60-question survey, and a postage-paid business reply return envelope.

Of 5000 veterans identified, 72 (1.4%) were determined to be ineligible (e.g., deceased, deployed) and 924 (18.5%) surveys were undeliverable (returned to sender). Of the 4004 surveys that were delivered, 1161 were completed and returned, resulting in a response rate of 29%, which is consistent with other published mail surveys involving Afghanistan/Iraq-era veteran samples (e.g., 22–33%; Calhoun et al., 2008; Vogt et al., 2011). Rates of binge drinking (Calhoun et al., 2016b) and the association between PTSD and health (Schry et al., 2015) have previously been reported on this sample.

As previously reported (Calhoun et al., 2016a, 2016b; Schry et al., 2015), demographic characteristics of this sample have been compared between early responders (i.e., responders to the first survey wave; n = 978) and later responders (second wave; n = 183) in order to assess possible non-response bias following the continuum of resistance model (Lin and Schaeffer, 1995). These analyses revealed little difference between early and late responders (Calhoun et al., 2016b). Respondents to the first wave were slightly older (M = 39) than later respondents (M = 38) and were more likely to be married (73% vs. 63%), but there were no differences in the proportion of women, minorities, enlisted soldiers, veterans who served in the Reserves/National Guard, veterans who screened positive for PTSD or depression, the proportion that used VA healthcare, or in the proportion of participants who suffered a service-connected injury (Calhoun et al., 2016b). Importantly, late responders did not differ from early responders in the proportion of veterans who drank alcohol (83.1% vs. 82.6%, OR = 1.04; 95% CI [0.68–1.60]), engaged in hazardous drinking (19.0% vs. 20.9%; OR = 0.89, 95% CI [0.59–1.33]), or reported fair/poor health (21.8% vs. 23.8%; OR = 0.89, 95% CI [0.61–1.31]).

2.2. Measures

2.2.1. Alcohol consumption

A modified version of the consumption items of the World Health Organization's Alcohol Use Disorders Identification Test (AUDIT-C; Babor et al., 2001) was used to assess alcohol consumption in the past year. Following procedures used for quantity-frequency assessment (Rodgers et al., 2000a), a measure of consumption was constructed from the two AUDIT-C questions: 1) How often did you have a drink containing alcohol in the past year, and 2) How many drinks did you have on a typical day when you were drinking in the past year? Based on overall consumption Individuals were categorized into four groups largely based on National Institute on Alcohol Abuse and Alcoholism (NIAAA) recommended healthy limits for men and women. Groups included (1) non-drinkers (reported no alcohol use in the past year), (2) occasional drinkers (reported drinking monthly or less and had no drinking days of 5 or more drinks), (3) moderate drinkers (up to 7 drinks per week for women, up to 14 drinks per week for men, and with no drinking days of 5 or more drinks), (4) hazardous drinkers (8 or more drinks per week for women, 15 or more drinks per week for men, or any drinking days of 5 or more drinks)

2.2.2. Self-rated health

A single item from the Medical Outcomes Study 12-item short-form (SF-12; Ware et al., 1996) was used to assess veterans' self-rated health. Participants were asked to rate their general health by answering the following question: "In general, would you say your health is:" Response options were excellent, very good, good, fair, or poor. Using this single item is a validated method for assessing self-rated health (DeSalvo et al., 2006). Responses were dichotomized such that ratings of excellent, very good, and good were combined in one category and ratings of fair and poor were combined to comprise the other category.

2.2.3. PTSD and depression

The PTSD Checklist (PCL; Weathers et al., 1993) was administered to assess PTSD symptoms. The PCL is a well validated self-report measure consisting of 17 items that correspond to the DSM-IV diagnostic symptoms of PTSD (McDonald and Calhoun, 2010). For the current study, a cut score of 50 was used to determine probable PTSD. The Patient Health Questionnaire – 2 (PHQ-2; Spitzer et al., 1999) was used to screen for the presence of depression. Participants with total scores of three or higher were considered to have screened positive for depression. Criterion and construct validity of scores from the PHQ-2