Contents lists available at ScienceDirect

Drug and Alcohol Dependence

Alcohol misuse in the United Kingdom Armed Forces: A longitudinal study

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ARTICLE INFO

ABSTRACT

Objectives: We assessed changes in Alcohol Use Disorders Identification Test (AUDIT) scores over time. We investigated the impact of life events and changes in mental health status on AUDIT scores over time in UK military personnel.

Methods: A random representative sample of regular UK military personnel who had been serving in 2003 were surveyed in 2004–2006 (phase 1) and again in 2007–2009 (phase 2). The impact of changes in symptoms of psychological distress, probable post-traumatic stress disorder (PTSD), marital status, serving status, rank, deployment to Iraq/Afghanistan and smoking was assessed between phases.

Results: We found a statistically significant but small decrease in AUDIT scores between phases 1 and 2 (mean change = −1.01, 95% confidence interval = −1.14, −0.88). Participants reported a decrease in AUDIT scores if they experienced remission in psychological distress (adjusted mean −2.21, 95% CI −2.58, −1.84) and probable PTSD (adjusted mean −3.59, 95% CI −4.41, −2.78), if they stopped smoking (adjusted mean −1.41, 95% CI −1.83, −0.98) and were in a new relationship (adjusted mean −2.77, 95% CI −3.15, −2.38). On the other hand, reporting new onset or persistent symptoms of probable PTSD (adjusted mean 1.34, 95% CI 0.71, 1.98) or a relationship breakdown (adjusted mean 0.53, 95% CI 0.07, 0.99) at phase 2 were associated with an increase in AUDIT scores.

Conclusions: The overall level of hazardous alcohol consumption remains high in the UK military. Changes in AUDIT scores were linked to mental health and life events but not with deployment to Iraq or Afghanistan.

1. Introduction

Recent studies from the US and UK have shown that high levels of alcohol misuse, alcohol related problems and binge drinking are common among military personnel (Fear et al., 2007; Jacobson et al., 2008; Pinder et al., 2012; Rona et al., 2010). Research investigating alcohol misuse and the associated risk factors in the military has largely been cross-sectional (Fear et al., 2007; Wilk et al., 2010) and longitudinal data examining the risk and protective factors associated with changes in alcohol misuse are limited (Schultz et al., 2014; Trautmann et al., 2015). Studies from the general population show that the psychological effects of negative life events include alcohol misuse whereas, positive life events, such as marriage, are associated with a decrease in alcohol misuse (Leonard and Rothbard, 1999; Perreira and Sloan, 2001; San José et al., 2000; Veenstra et al., 2006).

This longitudinal study aims to examine the effect of military factors such as operational deployment, life events and changes in mental health status on Alcohol Use Disorders Identification Test (AUDIT) scores over time among a large sample of UK military personnel.

2. Materials and methods

2.1. Study design and sample

The data used in this study were collected as part of a longitudinal cohort study of UK Armed Forces personnel who were in service in March 2003 (Hotopf et al., 2006). A random sample was selected from personnel deployed to the first phase of the Iraq war in 2003 (the TELIC sample) and those who were in service but who did not deploy to Iraq at that time (the Era sample; Hotopf et al., 2006). This sample was stratified by: Service (Royal Navy [RN], Army/Royal Marines [Army/RM], Royal

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Air Force [RAF]) and enlistment type (regular or reserve). The phase 1 respondents consisted of 4722 personnel deployed during the war-fighting phase (TELIC 1) and 5550 personnel from the Era population. Of the 10,272 personnel who responded at phase 1, 9395 (7884 regulars and 1511 reservists) were eligible for follow-up at phase 2. This includes 37 personnel who returned their phase 1 questionnaire after phase 1 data collection had ended and excludes 914 personnel who were not eligible to participate at phase 2, the majority of which ($n = 670$) did not consent to follow-up, 25 had died, and the rest could not be contacted due to insufficient contact information. There was no statistically significant association between being followed-up or not followed-up and being a case on the AUDIT ($X^2(1) = 0.2949, p > 0.05$). An independent samples t-test was conducted to examine any differences by mean scores for those followed-up ($M = 9.97$, SD = 5.65) and those who were not ($M = 9.71$, SD = 5.81) and found no statistically significant difference; $t(10151) = 1.3090$, $p = 0.0953$. The response rates were 59% at phase 1 and 68% (6429 of 9395) at phase 2. There was no evidence of response bias by health status or alcohol misuse, but there was for age, sex and rank (Hotopf et al., 2006; Rona et al., 2010; Tate et al., 2007).

At both phases, respondents completed a self-report questionnaire covering socio-demographics, service history, physical and mental health and alcohol use. At phase 1, participants were asked about their deployment experiences on TELIC 1 or TELIC 2 (March–October 2003) and at phase 2 they were asked to complete sections for their most recent deployment to Iraq and/or Afghanistan. Data were collected between June 2004 and March 2006 (phase 1) and between November 2007 and September 2009 (phase 2). The study received ethical approval from the Ministry of Defence's research ethics committee and the King's College Hospital local research ethics committee.

Reported analyses are restricted to regular personnel who completed phase 1 and phase 2 ($n = 5239$). Reservists were excluded ($n = 1094$) from the analyses due to the difference in their service contracts, lifestyle and because they often have different patterns and levels of alcohol consumption to regular personnel (Browne et al., 2008). Ninety-four regular personnel did not provide information on the measure of alcohol use and were excluded.

2.2. Measuring alcohol use

Alcohol use was assessed using the Alcohol Use Disorders Identification Test (AUDIT). The AUDIT is a 10-item questionnaire which assesses alcohol consumption, alcohol dependence and the consequences of alcohol abuse in the last 12 months. The AUDIT gives a total score that ranges between 0 and 40, scores of 8 or more are defined as hazardous use and scores of 16 or more are defined as use of alcohol that is likely to be harmful to health (Babor, 1995). A change score was generated from the difference between the total AUDIT score at phase 1 and phase 2 of this study. The resulting change in scores, from phase 1 to phase 2, ranged between −28 and 24.

2.3. Main independent variables

Six new variables were created to investigate the effect of change in a number of factors between phases 1 and 2. These variables measured change in:

- Symptoms of psychological distress (no change: non-case; positive change: remitted case; and negative change: new case and persistent case),
- Symptoms of probable PTSD (no change: non-case; positive change: remitted case; and negative change: new case and persistent case),
- Marital status (no change: in a relationship or single; positive change: in a new relationship; negative change: no longer in a relationship),
- Service status (no change: still serving; change: left service),
- Deployment status since phase 1 (none, Iraq/Afghanistan or both),
- Rank (promotion: if personnel moved up in the ranks; no change/demotion: no change in rank or a demotion in rank)
- Smoking status (never smoked: non-smokers at both phases 1 and 2; ex-smoker: smoked at phase 1 but not at phase 2; current smoker: new and continuing smokers at phase 2).

2.4. Covariates

Participants provided information on their sex, date of birth, rank, service (RN, Army/RM, RAF), occupational role (combat or non-combat), educational qualifications, serving status (still employed in the UK Armed Forces or had left service), deployments to Iraq or Afghanistan, relationship status, if they had children living at home, childhood family relationship adversity, history of parental drink or drug problems, pre-enlistment childhood antisocial behaviour, symptoms of psychological distress, symptoms of probable PTSD and smoking status.

Symptoms of psychological distress were measured with the 12-item General Health Questionnaire (GHQ-12; Goldberg et al., 1997) and probable PTSD with the 17-item National Centre for PTSD Checklist-Civilian Version (PCL-C; Weathers et al., 1994). Validated cut-offs were used to define caseness on these variables: four or more symptoms out of a total of 12 for the GHQ-12 and a score of 50 or more for the PCL-C. Symptoms of probable PTSD were assessed with the PTSD Checklist-Civilian Version because it has previously been used in US and UK military studies and it

is less restrictive in populations where traumatic events are unrelated to military activities.

Two measures were used to assess childhood adversity (Iversen et al., 2007), which were adapted from the Adverse Childhood Exposure study scale (Felitti et al., 1998). The first assessed childhood family relationship adversity with four positively phrased items that were negatively scored (e.g., "I came from a close family"), and four negatively phrased items (e.g., "I used to be hit/hurt by a parent or caregiver regularly"). The scores for these eight items were summed to form a cumulative measure, and analysed as 0/1, 2/3 or 4+ adversities. The second assessed childhood antisocial behaviour, and was defined as present if the participant (a) answered 'true' to "I used to get into physical fights at school", and (b) answered true to one of the following: "I often used to play truant at school"; "I was suspended or expelled from school"; or "I did things that should have got me (or did get me) into trouble with the police" (MacManus et al., 2012). The mean interval between phase 1 and phase 2 follow-up was 3.3 years, the days between phase 1 and phase 2 data collection were used as a covariate in the analyses.

2.5. Statistical analyses

The mean AUDIT scores at phase 1 and phase 2 for all socio-demographic and military variables were calculated. Changes in AUDIT scores were explored in relation to changes to mental health status, marital status, and smoking, serving status, rank and deployment. Linear regression was conducted with the AUDIT score change and each of the phase 1 covariates. A variable for change in age from phase 1 to phase 2 was created, and used in the analyses. Adjustments were made for the phase 1 covariates that showed statistically significant associations with the AUDIT score change when calculating the adjusted means for the change in AUDIT scores from phase 1 to phase 2 (data not shown but available from authors).

Sample weights were generated to account for sampling strategies. Response weights were also generated to account for non-response (Hotopf et al., 2006). The sample and response weights were multiplied together to generate one combined weight. The weighted analyses provide valid results under the assumption that the data are missing at random. All analyses were performed using the statistical software package STATA (version 11.2) and took account of the response weights using survey commands (except the analyses for adjusted means shown in Table 2). Weighted statistics (percentages 95% CIs) are presented, together with unweighted cell counts.

3. Results

3.1. Change in alcohol use

The overall mean AUDIT score at phase 1 was 10.15 and at phase 2 the mean AUDIT score was 9.14. There was a statistically significant decrease of around one point (Mean change = −1.01, 95% Confidence Interval −1.14, −0.88) in the mean AUDIT scores from phase 1 to phase 2 and this decrease was observed in all age groups, but was greater in young age groups (Table 1). At phase 1, 64.3% men and 49.4% women reported AUDIT scores greater than 8, i.e. hazardous use. The number of personnel reporting alcohol dependence decreased from phase 1 (5.3%) to phase 2 (4.9%); men reported slightly higher prevalence of alcohol dependence compared to women at phase 1 (5.3% vs. 5.1%) and at phase 2 (4.9% vs. 4.1%). Those aged less than 25 years were more likely to report hazardous drinking (79.4%) compared to those aged 40 years and above (46.2%). Four hundred and thirty two (8.3%) personnel were no longer a case on the AUDIT at phase 2. Nevertheless; 260 (5.0%) personnel reported becoming a new case at phase 2 (AUDIT score of ≥16) and 312 (6.0%) maintained a score of ≥16 from phase 1 to phase 2.

3.2. Changes between phase 1 and phase 2

Participants experienced an increase in AUDIT scores, from phase 1 to phase 2, if they reported new or persistent symptoms of probable PTSD (adjusted mean change 1.34, 95% CI 0.71, 1.98) compared to those who reported an improvement in symptoms of probable PTSD (adjusted mean −3.59, 95% CI −4.41, −2.78) and those who reported no change in symptoms of probable PTSD (adjusted mean −0.99, 95% CI −1.12, −0.86) from phase 1 to phase 2. Similarly, those who reported a relationship breakdown experienced an increase in AUDIT scores (adjusted mean 0.53, 95% CI