



Trajectories of alcohol use in the UK military and associations with mental health



L. Goodwin^{a,b,*}, S. Norton^c, N.T. Fear^b, M. Jones^b, L. Hull^b, S. Wessely^b, R.J. Rona^b

^a Department of Psychological Sciences, University of Liverpool, Liverpool, UK

^b King's Centre for Military Health Research, Department of Psychological Medicine, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, UK

^c Health Psychology Section, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, UK

HIGHLIGHTS

- Group trajectories of alcohol use were examined in a representative military population.
- A fifth of military personnel were in a heavy drinking class.
- Across four of five classes alcohol use did not decrease over an 8 year period.
- Mental health problems were more common in both heavy drinkers and abstainers.
- Effective alcohol interventions are required for this population.

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ABSTRACT

Introduction: There are higher levels of alcohol misuse in the military compared to the general population. Yet there is a dearth of research in military populations on the longitudinal patterns of alcohol use. This study aims to identify group trajectories of alcohol consumption in the UK military and to identify associations with childhood adversity, deployment history and mental disorder.

Methods: Data on weekly alcohol consumption across an eight year period and three phases of a UK military cohort study ($n = 667$) were examined using growth mixture modelling.

Results: Five alcohol trajectory classes were identified: mid-average drinkers (55%), abstainers (4%), low level drinkers (19%), decreasing drinkers (3%) and heavy drinkers (19%). Alcohol consumption remained stable over the three periods in all classes, other than in the small decreasing trajectory class. Individuals in the heavy drinking class were more likely to have deployed to Iraq. Abstainers and heavy drinkers were more likely to report post-traumatic stress disorders at baseline compared to average drinkers.

Conclusions: Heavy drinkers in the UK military did not change their drinking pattern over a period of eight years. This highlights the need to develop effective preventive programmes to lessen the physical and psychological consequences of long-term heavy alcohol use. Individuals with a mental health problem appeared more likely to either be drinking at a high level or to be abstaining from use.

1. Introduction

The use of alcohol in the UK Armed Forces remains at a problematic level, whilst general population use appears to be decreasing (Orchard, 2015). Alcohol misuse is one of the only outcomes that is worsened on return from deployment (Fear et al., 2010; Hooper et al., 2008). Hazardous drinking is higher in the UK Armed Forces than in civilians across all age groups, although the difference reduces with age (Fear et al., 2007).

UK military data has shown that individuals who have deployed, and specifically those who experienced combat related traumas, were most likely to evidence increases in consumption and heavy episodic drinking (Hooper et al., 2008). Individuals who deployed in a combat role were also more likely to meet the criteria for hazardous use (that is harmful to health) (Fear et al., 2010). US data are consistent with UK findings (Jacobson, Ryan, Hooper, & et al., 2008), whereas German military personnel do not appear to have an increase in alcohol use on return from deployment (Trautmann et al., 2014). There is also

* Corresponding author at: Department of Psychological Sciences, University of Liverpool, Liverpool L69 7ZA, UK.
E-mail addresses: laura.goodwin@liverpool.ac.uk, Laura.Goodwin@kcl.ac.uk (L. Goodwin).

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evidence that exposure to trauma in childhood is associated with later alcohol misuse (Clarke-Walper, Riviere, & Wilk, 2014). Similar to civilians, alcohol misuse is often comorbid with other mental disorders, such as Post-traumatic Stress Disorder (PTSD) (Debell et al., 2014; Head et al., 2016) and poor mental health is a risk factor for later alcohol misuse (Bell & Britton, 2014).

Cross sectional data from the Adult Psychiatric Morbidity Survey in England showed the prevalence of hazardous alcohol use decreased with age (McManus, Meltzer, Brugha, Bebbington, & Jenkins, 2009). A recent longitudinal population study of alcohol trajectories across the lifespan showed that in men there is a sharp increase in drinking from adolescence to around 25 years, drinking then decreases and plateaus around middle age and then decreases further from 60 years onwards (Britton, Ben-Shlomo, Benzeval, Kuh, & Bell, 2015). A similar pattern was shown in females, but at a lower level of consumption (Britton et al., 2015). No equivalent study has been conducted in the military.

Group based trajectory models, including growth mixture modelling, have been used across a range of research areas, classifying individuals into groups dependent on shared longitudinal patterns (Jung & Wickrama, 2008). In military populations, these techniques have tended to focus on PTSD (e.g. Berntsen et al., 2012; Bonanno et al., 2012). An advantage of studying individual trajectories is to identify those with a worsening or atypical trajectory and to determine what factors are associated with these patterns in a population. We are not aware of any trajectory studies of alcohol use in a military population, in contrast to the general population (e.g. Chassin, Fora, & King, 2004; Cheadle & Whitbeck, 2011).

The current study aims to 1) investigate trajectories of alcohol consumption in a young to mid-adulthood UK military population. It will 2) identify associations between the trajectories with exposure to childhood adversity, deployment history and combat exposure, and mental disorder, and then will 3) determine the associations with general health and mental health outcomes at follow-up.

2. Methods

2.1. Sample

In 2002 a random sample of 4500 serving personnel from the Royal Navy, Army and Royal Air Force were allocated to receive either a full questionnaire or an abridged questionnaire (Rona, Jones, French, Hooper, & Wessely, 2004) (Supplemental Fig. 1). The current study is restricted to those individuals who completed the full baseline questionnaire ($n = 1392$), which included assessment of alcohol use. From June 2004 to March 2006 all responders from the baseline phase, (for whom contact details were available ($n = 1359$)) were re-contacted and asked to complete a follow-up questionnaire (follow-up 1) (Hotopf et al., 2006), 941 participants completed this. Follow-up 2 was conducted from November 2007 to September 2009 (Fear et al., 2010). Six hundred and sixty seven responded at follow-up 2, which is the sample for the current study.

2.2. Assessment of alcohol consumption at all phases

The 3-item Alcohol Use Disorders Identification Test – Consumption subscale (AUDIT-C) (Bush, et al., 1998) includes the following items: “How often do you have a drink of alcohol?”; “How many drinks/units do you have on a typical day of drinking?”; “How often do you have 6 drinks or more on one occasion?”. In this study the AUDIT-C was used to calculate average units of alcohol consumed per week by multiplying average units per drinking session (using the mid-point of the response scale) with frequency per week. A definition of alcohol units was provided: “E.g. A pint of standard beer/lager = 2 units. A single measure of spirit/small glass of wine = 1 unit.”

2.3. Demographic and military characteristics

The demographic information available at baseline was sex, age, rank, Service and smoking status. Data on level of education (categorised as O Levels/GCSE or below and A Levels or higher) and marital status were collected at follow-up 1.

2.4. Risk factors

2.4.1. Deployment history

At baseline, self-reports were gained on whether participants had deployed in the 3 years before the start of the Iraq war. At follow-up 1 (2004 to 2006), data were available on whether or not participants had deployed to Iraq and at follow-up 2 (2007–2009) if they had deployed on an Iraq or Afghanistan operation. At both follow-up phases, information was available for those who had reported a deployment on whether they had deployed in a combat role as opposed to other roles.

2.4.2. Childhood adversity

Childhood adversity was assessed by two measures (Iversen et al., 2007), adapted from the Adverse Childhood Exposure study scale (Felitti et al., 1998). The first assessed family relationship adversity: comprising 4 positive items which were reverse scored (e.g. “I came from a close family”) and 4 negative items (e.g. “I used to be hit/hurt by a parent or caregiver regularly”) (Iversen et al., 2007). These 8 items were summed to form a cumulative measure and analysed as 0, 1 and 2+ adversities. The second measure assessed childhood antisocial behaviour, scored positively if participants answered true to “I used to get into physical fights at school” plus one of the following; “I often used to play truant at school” or “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).

2.4.3. General and mental health at all phases

General health status was assessed using one item from the SF-36 (Ware & Sherbourne, 1992), comparing individuals rating their current health as ‘poor’ or ‘fair’, to ‘good’, ‘very good’ or ‘excellent’.

Probable common mental disorder (CMD) was assessed using the General Health Questionnaire (GHQ-12). This is a 12-item questionnaire widely used to screen for symptoms of depression and anxiety, otherwise known as CMD (Goldberg et al., 1997). Examples of items include: “Felt constantly under strain” and “Been feeling unhappy and depressed”. The questionnaire is not a diagnostic interview, but validation studies indicate acceptable criterion validity with the CIS-R (Hardy, Shapiro, Haynes, & Rick, 1999). Each of the symptoms was rated on a four-point scale. For this study the bi-modal scoring method of 0-0-1-1 was used, with those endorsing a negative symptom as ‘rather’ or ‘much more than usual’, or a positive symptom as ‘less’ or ‘much less than usual’, were classified as reporting a symptom. Possible scores for the full scale ranged from 0 to 12 and a 3/4 cut-off was used to represent caseness for probable CMD.

Symptoms of PTSD were assessed using DSM-IV criteria by the National Centre for PTSD Checklist – Civilian version (PCL-C; Weathers, Litz, Herman, Huska, & Keane, 1994) a 17-item questionnaire assessing five re-experiencing, seven avoidance and five hyperarousal symptoms. Cases were defined as individuals with a score of 50 or above, referred to as probable PTSD.

2.5. Ethical approval

All phases of data collection for this study received ethical approval from the UK Ministry of Defence Research Ethics Committee.

2.6. Data analysis

1. Group based trajectory modelling in MPlus 6 (Muthén & Muthén,

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