



# HELP-SEEKING FOR ALCOHOL PROBLEMS IN SERVING AND EX-SERVING UK MILITARY PERSONNEL

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## FOREWORD



The drinking traditions of Britain's armed forces go back to the days of Waterloo and Trafalgar, and probably Agincourt. The reasons are obvious and understandable. The pressures and dangers of military life, and the overriding importance of teamwork, have made sharing a drink an important way to build bonds and boost morale. As in any other setting, this is not necessarily a bad thing. But alcohol is a tricky molecule to manage. Used in moderation, it can be a fairly harmless social lubricant. The difficulty is knowing how to draw the line between moderation and excess.

As this report highlights, excessive alcohol use is more common in the armed forces and amongst veterans than in the civilian population. The fact that heavier drinking patterns established whilst serving often continue after leaving the forces is, perhaps, a particular worry. If military-style drinking is happening amongst veterans, without the camaraderie and structures of support that military life also provides, the potential pitfalls are clear. The report also indicates that recognition of alcohol problems and help-seeking for those problems is low amongst both serving personnel and veterans. Stoic persistence in the face of adversity, and a reluctance to let the side down may well be military virtues, but not when they mean alcohol problems go untreated and suffering is left unalleviated.

However, this report is not just a list of problems. The research team have made a number of clear and practical recommendations – such as increasing brief alcohol interventions (BAIs) and improving the support for military families – that deserve immediate consideration by the Ministry of Defence and others. As a country, we expect a lot from our armed forces. Men and women from a whole range of backgrounds volunteer to set aside some of their own freedoms and undertake difficult and dangerous tasks on our behalf. There is a clear duty on the rest of us to ensure that they are well supported that their needs are met in ways that are relevant and accessible to them. That has to include alcohol support that recognises the military experience and the particular factors that may make both serving personnel and veterans more likely to drink and less likely to seek help.

The researchers' recommendations also include one "big ask" that will be far from simple to achieve: to change the conversation about alcohol in the military context. That kind of change is never quick or easy – in military or civilian life – but being able to talk honestly about the reasons we drink is essential. In British society, we often see alcohol as a great "includer" – something that brings us together. But there's often a price to pay, not just in terms of a sore head and a sick stomach the next morning, but also in terms of relationships strained by thoughtless words and behaviour we later regret. And when alcohol becomes a precondition of social and professional acceptance, it becomes an excluder, ensuring that only those who join in with the drinking get on in life. Changing that is a challenge for all of us, not just for our armed forces.

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## ABBREVIATIONS

<b>AUDIT</b>	Alcohol Use Disorder Identification Test
<b>BAI</b>	Brief alcohol intervention
<b>CMD</b>	Common mental health disorders
<b>GP</b>	General Practitioner
<b>KCMHR</b>	King's Centre for Military Health Research
<b>MO</b>	Medical Officer
<b>PTSD</b>	Post-traumatic stress disorder

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# 1. EXECUTIVE SUMMARY

## 1.1 Introduction

Alcohol has a long tradition in the military. Research has shown that alcohol misuse among serving and ex-serving military personnel in the US and UK is increased compared to general population estimates, and that patterns of high consumption continue once personnel leave Service. Despite high levels of alcohol use, help-seeking for alcohol problems among UK and US military and ex-military populations is routinely lower than for other mental health, emotional or general medical problems. This may be due to low recognition of alcohol problems among serving and ex-serving personnel.

To date, there have been few UK studies looking at recognition of, and help-seeking for, alcohol problems among serving and ex-serving military populations. The aims of this project were to:

- review the prior literature on recognition of alcohol misuse problems among civilian and serving and ex-serving military populations to understand how common recognition is
- identify what proportion of serving and ex-serving personnel recognise they have an alcohol misuse problem and what are the characteristics of those more likely to recognise and therefore self-report an alcohol problem, including mental health comorbidity
- identify what proportion of personnel who self-report an alcohol problem seek help and determine which factors, including having a comorbid mental health problem, are associated with help-seeking
- understand help-seeking, adherence to treatment, and perceptions of treatment for self-reported mental health problems among personnel who are also misusing alcohol

## 1.2 Methods

Four inter-related studies were conducted to address these aims. Following a review of the literature, the remaining three studies used data from the third phase (Oct 2014-Dec 2016) of the King's Centre for Military Health (KCMHR) Health and Well-being Cohort study (n=8,093) and a linked interview study (Feb 2015-Dec 2016) (n=1450) of help-seeking in serving and ex-serving personnel. The KCMHR cohort is a multi-phase study of UK military personnel originally established to examine the health and well-being of personnel deployed to Iraq (Op TELIC) and Afghanistan (Op Herrick) and includes serving and ex-serving personnel from all three Service branches, regulars and reserves, and men and women. The majority of participants were male and ex-serving.

## 1.3 Findings

### Study 1 - How common is recognition of alcohol misuse in military and non-military samples?

A review of the prior research in military and non-military populations indicated that fewer than half of those meeting criteria for alcohol misuse recognised their alcohol problem. In military populations 38% recognised an alcohol problem and in non-military populations 48% recognised an alcohol problem. The majority of prior research was conducted in non-military populations in the USA, revealing a lack of information from studies conducted in military populations or in the UK.

### Study 2 – Recognition of alcohol misuse among UK serving and ex-serving personnel – a cohort study

Findings from data analyses of the KCMHR Cohort showed that approximately half of UK serving and ex-serving personnel who met criteria for alcohol misuse recognised their alcohol problem, with no difference between serving and ex-serving personnel after accounting for age and gender.

Overall, recognition of alcohol misuse problems was significantly higher among those experiencing greater mental and physical health problems and greater alcohol misuse severity. Recognition was typically higher among those experiencing adverse life events, although only among serving personnel or those with comorbid alcohol and mental health problems.

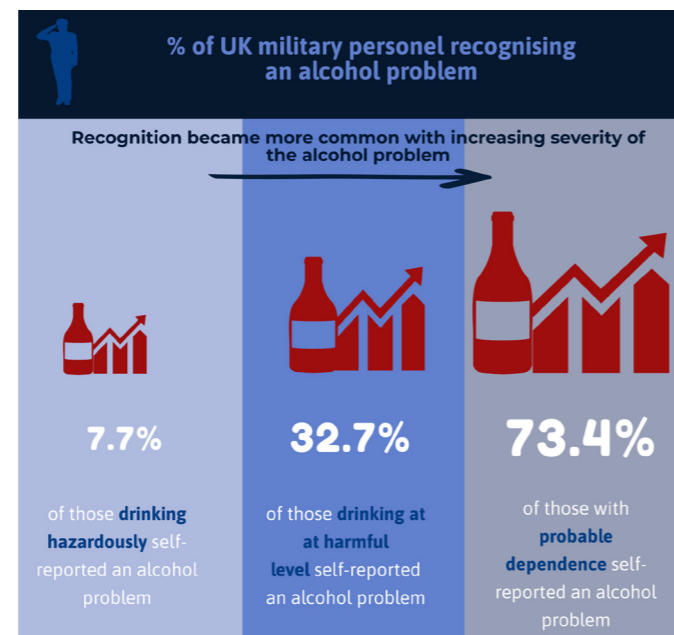


Figure 1: Recognition of alcohol problems stratified by severity of alcohol misuse



Figure 2: Associations of drinking behaviours with alcohol problem recognition

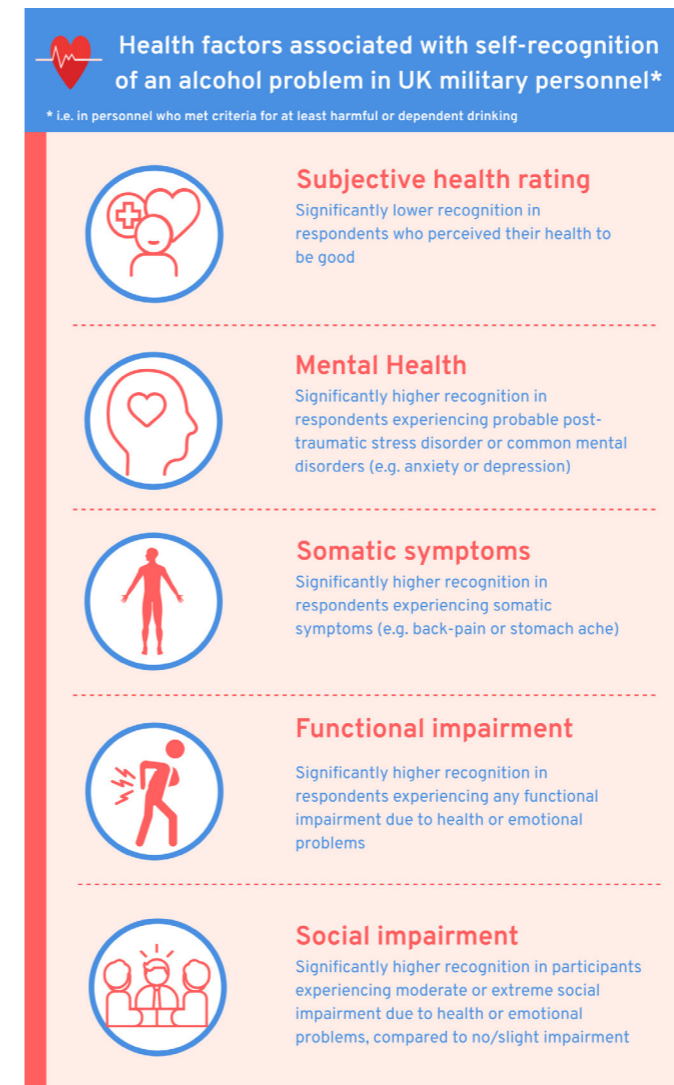


Figure 3: Association of health factors with alcohol problem recognition

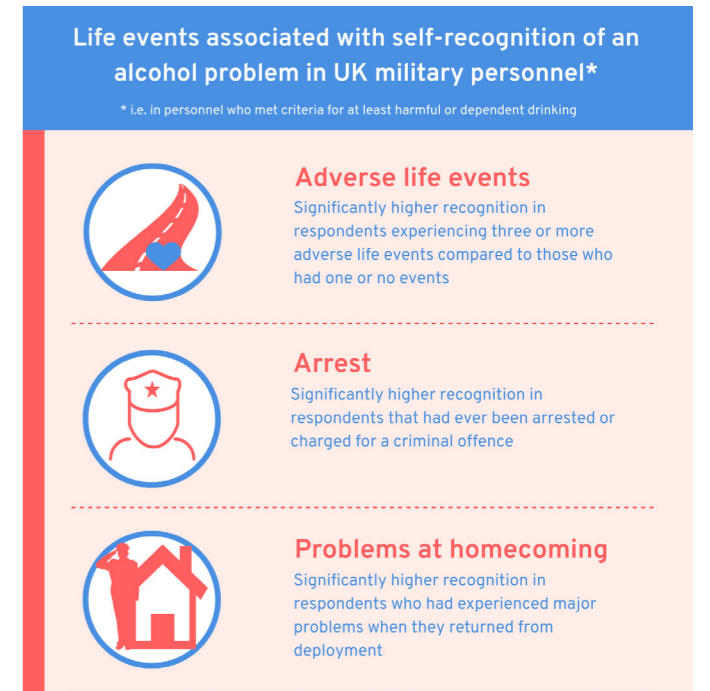


Figure 4: Association of life events with alcohol problem recognition

### Study 3 – Help-seeking for self-reported alcohol problems

Of those who self-reported a current or prior alcohol problem in the last three years, approximately one-third had sought help. This did not differ by serving status. Help-seeking for self-reported alcohol problems from formal medical services was less likely in those of older age and with greater severity of alcohol but was more likely among those not in a relationship and current smokers. Help-seeking from 'other' sources/helplines was higher among both serving and ex-serving personnel who reported an increasing number of adverse life events such as divorce, bereavement, financial problems or being the victim of crime. While not defined, 'other' forms of support may include non-medical support such as friends, family, military charities, or charities providing treatment for alcohol/substance use.



Figure 5: Proportion and type of help seeking for alcohol problems



Figure 6: Associations with help seeking for alcohol problems

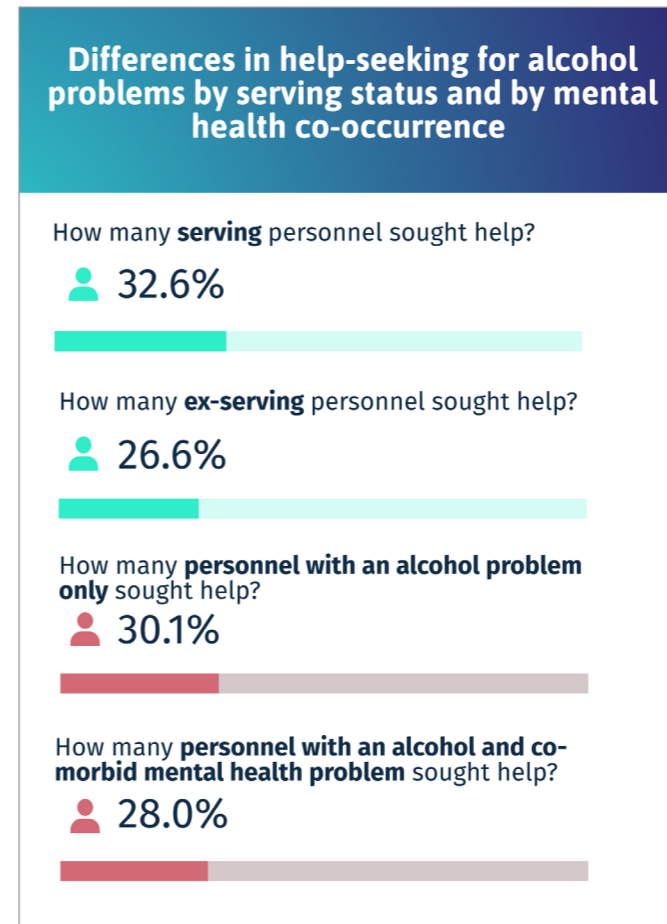


Figure 7: Alcohol help seeking associations with serving and mental health status

### Study 4 – How does help-seeking and perceptions of treatment for mental health problems differ in serving and ex-serving personnel who are also misusing alcohol?

Help-seeking for self-reported mental health problems was not any more or less common among those with co-occurring alcohol problems, compared to those without a problem. There was no difference in help-seeking between serving and ex-serving personnel, but serving personnel were more likely to report using telephone or online services if they had mental health and alcohol problems while ex-serving personnel were more likely to access 'other' forms of support. Among serving and ex-serving personnel with self-reported mental health problems and comorbid alcohol misuse, help-seeking for mental health problems was higher for those reporting childhood antisocial behaviour. Help-seeking for self-reported mental health problems was higher among women and serving and ex-serving personnel not in a relationship, regardless of alcohol comorbidity.

Perceptions of the helpfulness and completeness of therapy for any issue were significantly lower among those self-reporting a mental health problem who were also experiencing an alcohol misuse

problem. Further investigation found that this was due to poorer attitudes towards therapy among those who reported a resolved mental health problem, suggesting that some psychological therapies may not be meeting the needs of military and ex-serving personnel with more complex problems despite them showing improvement in their condition.

### 1.4 Conclusions

The findings of this study show that recognition of alcohol misuse problems and help-seeking for self-reported alcohol problems among serving and ex-serving personnel in the UK military remains low. There was no difference in problem recognition or help-seeking by serving status. Recognition of alcohol misuse problems and help-seeking for self-reported alcohol problems were both higher among those experiencing additional stressors such as poor health or stressful and adverse life events. Perceptions of the helpfulness and completeness of therapy were significantly lower among those self-reporting a mental health problem who were also experiencing an alcohol misuse problem. This was due to poorer attitudes towards therapy among those reporting a resolved mental health problem.

### 1.5 Recommendations

Recognition of alcohol misuse problems and help-seeking for self-reported alcohol problems among serving and ex-serving UK military remains low. The following recommendations could be implemented to improve recognition and increase awareness of help-seeking for both serving personnel and ex-serving personnel:

1. Change the conversation about alcohol in the military context
2. Increase brief alcohol intervention (BAIs) programmes to target all, not just those perceived to have the greatest need
3. Support for families and wider support networks in supporting and advising serving and ex-serving personnel on alcohol problems
4. Ensure that there is better publicity of the available treatment services for alcohol problems
5. Need for improved and wider access to treatment for alcohol problems
6. Need to align alcohol and mental health treatments
7. Future research to explore the links between recognition of alcohol misuse, mental health and stressful and adverse life events and to explore pathways to, and experiences of, treatment for alcohol problems

## 2. INTRODUCTION

### 2.1 Background

Alcohol use has a long tradition in the military, where it was historically used to boost morale, increase unit cohesion and facilitate adjustment following return from deployment [1]. However, research has shown that alcohol misuse (alcohol use causing harmful health consequences) among US and UK military personnel remains high compared to general population estimates [2-5], and that these patterns of excessive drinking continue once personnel leave Service [6, 7]. The consequences of excessive drinking are well known, with impacts on mental and physical health [8], problems with the law, loss of productivity at work, and functional impairment all reported [9, 10].

Current estimates suggest 10% of UK regular personnel meet criteria for alcohol misuse (defined as scoring 16 or more on the Alcohol Use Disorders Identification Test (AUDIT)) [7]. While the proportion meeting this criteria appears to be decreasing over time, it remains significantly higher than the 3% among the UK general population who were identified as misusing alcohol to the same extent [11]. Despite high levels of alcohol use, military serving and ex-serving personnel often do not recognise their alcohol misuse problems and fail to seek help. Only 14% of UK military personnel who drink harmfully (AUDIT score 16–19) and 41% who meet criteria for probable dependence (AUDIT≥20) report that they have an alcohol problem [12]. Accessing support for alcohol problems is routinely lower than help-seeking for other mental health, emotional or general medical problems among military and ex-military populations [12-17]. Studies suggest 24-45% of US serving and ex-serving personnel access services for alcohol problems [13, 18], in line with UK findings suggesting that a third seek help for alcohol problems [12]. This gap between rates of alcohol misuse and accessing support for this problem has been attributed to poorer recognition of alcohol misuse problems due to a strong in-service drinking culture normalising heavy drinking, as well as a lack of awareness of services and potential stigma [19, 20].

Understanding who recognises an alcohol misuse problem, and who does not, may help identify those who would benefit from brief alcohol interventions (BAIs). BAIs provide feedback on current drinking so may aid recognition and should encourage a reduction in alcohol use for those drinking higher quantities [21]. Problem recognition has been shown to be a strong predictor of help-seeking [22], with individuals not recognising a problem unlikely to seek help. Psychological theories such as the Transtheoretical model for behaviour change suggest that recognition of a problem is a fundamental stage in the process of taking action to change [23] and recognition of alcohol misuse problems precedes help-seeking in 90% of cases [24]. Understanding patterns of help-seeking will also determine where serving and ex-serving personnel are going to for support once a problem is recognised and

how this may differ among particular groups. Research has shown that serving and ex-serving personnel who do seek help for alcohol problems opt for different sources of support depending on whether they are in Service or have left - informal support may be preferred over help from medical or other professionals among ex-serving personnel [25] while those still in Service may opt to use civilian services [26], avoiding military services and the perceived implications to their career. Help-seeking can also differ according to the presence or absence of mental health comorbidities [27-29]. Help-seeking for mental health problems may be less likely in those misusing alcohol as a maladaptive coping mechanism to manage mental health issues, in particular PTSD [30-32]. Subsequent delays in help-seeking can result in problems worsening and therefore increased treatment needs and greater burden on NHS services [33]. Compliance with treatment may also be affected, with high rates of dropout among ex-serving personnel and civilians with post-traumatic stress disorder (PTSD) and substance misuse disorders [34, 35].

### 2.2 Overall aims

The overarching aim of this project was to understand how common recognition of, and help-seeking for, alcohol problems is among current and former UK military personnel and which groups are more likely to both recognise and seek help. This study also sought to understand how alcohol misuse influences help-seeking for self-reported mental health problems and perceptions of treatment received. A key focus of this study was to examine the impact of having a comorbid mental health problem on recognition and help-seeking.

Four studies were conducted to address the following sub-aims – a meta-analysis of the previous literature and three data studies:

<b>Study 1</b>	What does the literature tell us about how many people recognise their alcohol misuse problems, and how does problem recognition differ between military and civilian populations?
<b>Study 2</b>	What proportion of serving and ex-serving personnel recognise they have an alcohol misuse problem and what are the characteristics of those more likely to recognise a problem, including mental health comorbidities?
<b>Study 3</b>	What proportion of serving and ex-serving personnel who self-report an alcohol problem seek help, and which factors, including having a comorbid mental health problem, are associated with help-seeking?
<b>Study 4</b>	How does help-seeking and adherence to treatment for mental health problems (post-traumatic stress disorder (PTSD) or common mental disorder (CMD)) differ in serving and ex-serving personnel who are also misusing alcohol?

## 3. STUDY 1

### HOW COMMON IS RECOGNITION OF ALCOHOL MISUSE IN MILITARY AND NON-MILITARY SAMPLES? A LITERATURE REVIEW AND META-ANALYSIS.

Alcohol misuse can be harmful for individuals due to adverse health consequences to themselves [36], as well as to others [37]. Despite these harmful effects, less than half of people in the UK general population [38] as well as the military [12] who are identified as harmful or dependent drinkers perceive their drinking patterns as problematic.

Lower recognition of an alcohol misuse problem may have implications on the extent to which people seek help for this issue. Psychological behavioural change theories such as the Transtheoretical Model [23] suggest that recognition of a problem is a fundamental stage in the process of taking action to change health behaviours. Research has shown that recognition of alcohol misuse problems preceded help-seeking in 90% of cases in general population samples [24] and that a failure to recognise a mental health problem (including but not exclusive to alcohol misuse) is an important barrier for seeking help for ex-serving personnel [20, 39].

#### Transtheoretical model for behaviour change

The Transtheoretical model for behaviour change [23] is a psychological theory which identifies key steps people undergo to change their behaviour, especially those related to health such as drinking and smoking. The first step is the *pre-contemplation stage* where people do not realise that they have a problem and therefore do not think about change. This is followed by the *contemplation stage*, where people start to recognise problems and think about changing behaviours. The initial stages of change are called *preparation*, *action* (where change has begun) and *maintenance* (when change has been established and people attempt to maintain their new behaviour).

No prior reviews on recognition of alcohol misuse problems were identified when this project began. Therefore, a new review was conducted to explore how many people recognise their alcohol misuse problems, and how does problem recognition differ between military and civilian populations, as well as to inform analyses in Study 2.

### 3.1 Meta-analysis methods

Systematic reviews are a common method used by researchers to identify and summarise the available information on a certain topic of interest, to find similarities and differences in previous studies, highlight key factors in outcomes of interest, and identify gaps in the

evidence base. This method was used to find studies on alcohol misuse recognition among military and non-military samples.

Electronic databases of published scientific articles (MedLine, PsycINFO, Web of Science and Scopus) were searched to identify articles that examined the proportion of respondents who recognised alcohol misuse. The search looked for articles with the term “alcohol” plus combinations of terms relating to recognition, perceive, perception, or self-identification in article titles, abstracts, or keywords. Due to the lack of UK or military specific studies, the review was comprised of international literature referring to alcohol misuse recognition in either military or non-military samples. Articles published in peer reviewed journals between 2000 and January 2019<sup>1</sup> were included if published in English.

For articles to be considered for inclusion in the review, alcohol misuse had to be determined via diagnostic criteria used by clinicians, validated measures, or self-reported alcohol behaviours. Studies also had to report the proportion of participants meeting criteria for alcohol misuse who recognised an alcohol misuse problem. Recognition of alcohol misuse was defined as:

- Self-identifying alcohol misuse problems (e.g. Positive responses to questions like “did you ever have problems with alcohol” or “do you perceive yourself as a problem drinker”)
- Reporting help-seeking for alcohol problems or considering help-seeking (self-perceived need for care)
- Evaluation of the readiness of participants to change their drinking behaviour had been conducted and they were found to be beyond the pre-contemplation stage of the Transtheoretical model [23]

Articles were excluded from the review if any of the following criteria applied:

- Exclusively samples of adolescents or university students as they may be below the legal drinking age and heavy drinking within student culture may change as people mature
- Mixed samples of adolescents and adults where the average age was below the legal drinking age for that country
- Exclusively users of illegal substances as this may facilitate recognition of alcohol misuse
- All participants were receiving treatment for alcohol misuse
- Studies were included only if they examined both help-seeking

<sup>1</sup> Time frame was selected to cover almost the last two decades of research.

behaviour (e.g. “have you ever sought help for alcohol problems?”) as well as consideration of seeking help (e.g. “have you ever considered seeking help for alcohol problems?”). Studies examining either of the two alone were not included

- Not published in English
- Published prior to 2000

The process for identifying included articles is presented in Figure 1 (p11). The initial search across all databases returned 8,984 articles, in addition to nine identified by colleagues with expertise in the area. After removal of duplicates, the titles and abstracts of 4,544 articles were examined to identify those relevant to the aims of the review. The researchers read the full text of 291 articles most relevant to the aims and identified 23 which met the inclusion criteria above. One article reported on two studies, therefore the total number of individual studies included in the meta-analysis is 24.

Findings from the 24 studies were extracted and summarised statistically using *random effects meta-analysis*. This approach relies on the use of samples to represent the true proportion of an outcome in a population. For example, if we could measure alcohol misuse and recognition among every person in the UK, we would be able to know the true proportion of alcohol misuse recognition. However, this is not feasible due to time and budget constraints, so researchers use smaller groups of people (samples) to estimate the true proportion of alcohol misuse recognition. A random effects meta-analysis assumes that there is not a single true proportion of alcohol misuse recognition but several different ones, depending on the group that people belong to – for example, military or non-military. Using this approach means that researchers can estimate the *pooled prevalence* of alcohol misuse recognition across different groups of people to account for social or cultural differences by including all findings together to give an overall estimate. When the results provided by a given study are believed to be more precise compared to another (e.g. because the first study used a larger sample compared to the latter), then the results of that first study will have greater influence on the calculated pooled prevalence compared to the latter (a process called study weighting).

The main finding of interest extracted from all included studies was the percentage of people who met criteria for alcohol misuse and recognised an alcohol problem. The amount of people who recognised an alcohol misuse problem was divided by the total number of people who met criteria for alcohol misuse. This value was calculated for each study separately and then used to generate the pooled prevalence of alcohol misuse recognition among all studies as well as among military and non-military samples respectively.

### What is a pooled prevalence?

The pooled prevalence helps synthesise the information provided by individual studies included in the review. If it is assumed that there are several different true proportions of alcohol misuse recognition (depending on the population that people belong to), then the pooled prevalence would be the mean of these true proportions, accounting for issues such as the different sample size of studies included in the analysis.

Overall, the results of the meta-analysis provided the following information:

- A list of all included studies and the prevalence of alcohol misuse recognition reported by each.
- An estimate of the true proportion of alcohol misuse recognition (pooled prevalence).
- An indication of how confident we can be about the precision of the pooled prevalence. This information is provided by what is called a 95% confidence interval. More narrow intervals indicate greater precision.

### 3.2 Description of included studies

Of the 24 studies included in the meta-analysis, 83% (20) used data from non-military populations and 17% (4) used data from serving and ex-serving military personnel (Figure 2).

Most non-military studies were based in the US, with two Canadian, one UK and one Thai study. A range of different study populations were used (Figure 2), including:

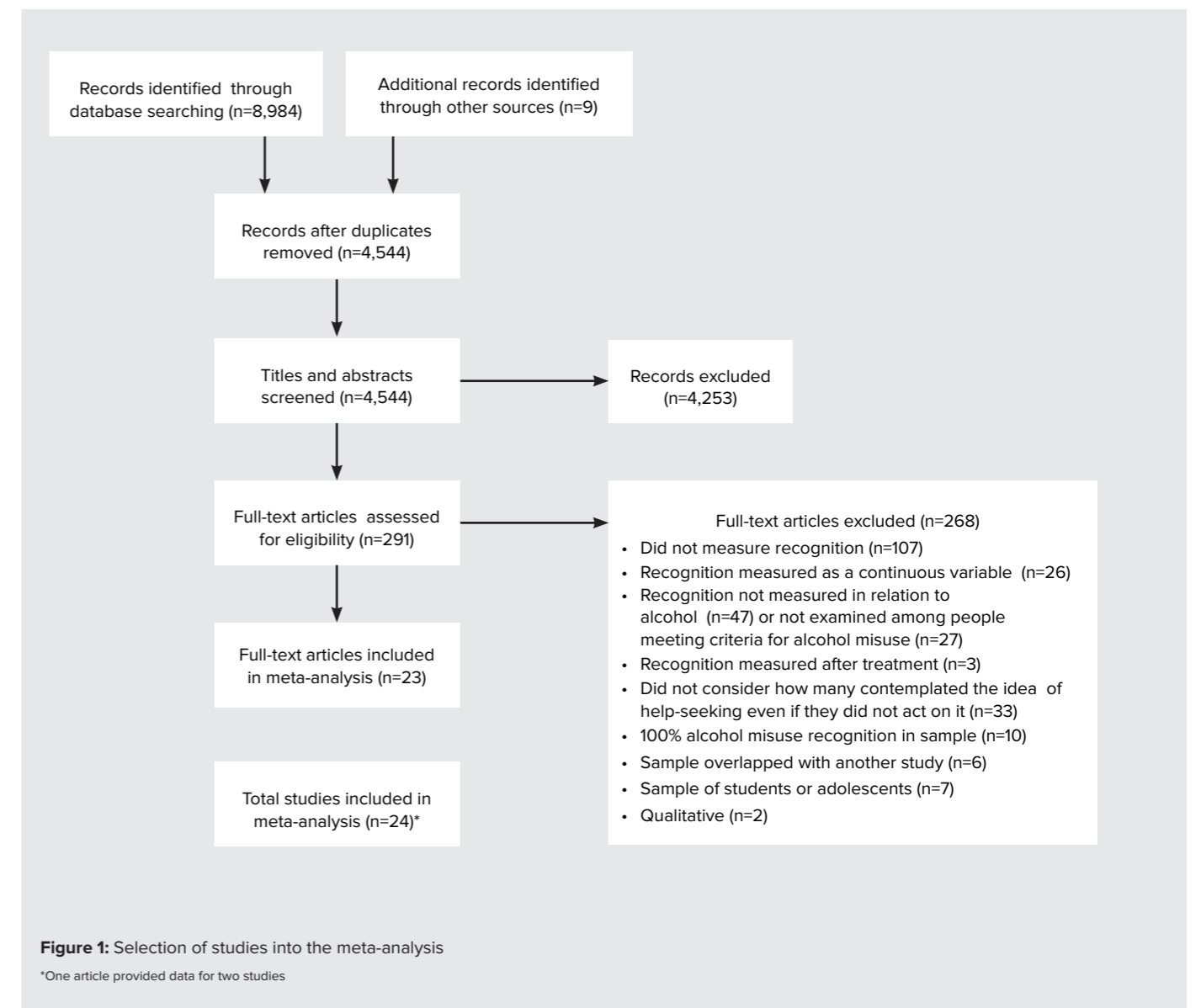
- Members of the general public (45% (9) – studies 2, 5, 8, 9, 11-14, 20 / numbers refer to study ID in Figure 2)
- Primary care settings (20% (4) – 6, 16, 18, 19)
- Non-medical settings (e.g. people convicted of driving under intoxication, the adult children of twin fathers, pre-trial male prisoners and people with major depression) (20% (4) – 4, 7, 10, 15).
- Other medical settings (e.g. people attending emergency departments, patients in trauma centres, women receiving outpatient treatment for diabetes, hypertension, osteoporosis or infertility) (15% (3) – 1, 3, 17)

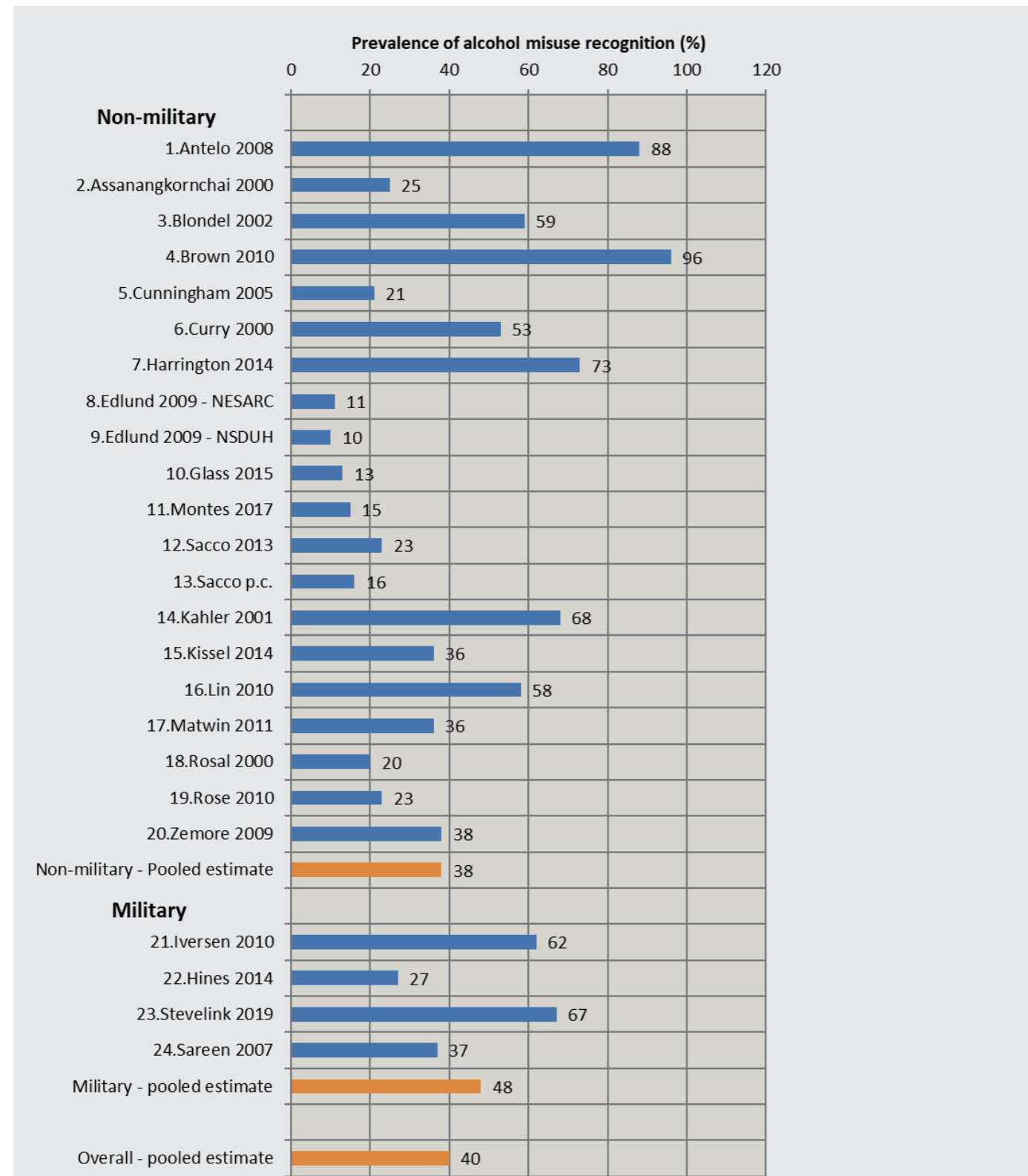
Of the four military articles, three were based on different phases of a large cohort study based at King’s College London (21-23). The remaining study was Canadian (24). Two of the four studies examined alcohol misuse recognition among both serving and ex-serving personnel (21, 23), with the remaining two were based on serving personnel (24) and serving personnel returning from deployment to Iraq or Afghanistan (22).

Various measures were used to assess alcohol misuse and recognition across the included studies. Recognition was measured via participant self-reported problems with alcohol (41.7% (10) – 2, 10, 11, 15, 16, 18, 19, 22, 21, 23), progression past the pre-contemplation stage of the Transtheoretical model (33.3% (8) – 1, 3-7, 14, 17) or self-perceived need for care for alcohol misuse (25% (6) – 8, 9, 12, 13, 20, 24).

Measures of alcohol misuse included:

- Standardised questionnaires (e.g. AUDIT, CAGE) (33.3% (8) – 1, 4, 11, 15, 16, 21-23)
- Clinical diagnostic criteria (e.g. Diagnostic and Statistical Manual of Mental Disorders (DSM-IV/DSM-5), International Classification of Diseases (ICD-10)) (37.5% (9) – 2, 3, 8-10, 12, 13, 24, 20)
- Self-reported alcohol use (e.g. weekly alcohol consumption) (20.8% (5) – 5-7, 14, 19)
- Both standardised questionnaires and self-reported alcohol use (8.3% (2) – 17, 18)





**Figure 2:** Pooled prevalence of alcohol problems recognition among people meeting criteria for alcohol misuse in non-military and military populations - meta-analysis findings

\* NESARC = National Epidemiologic Survey on Alcohol and Related Conditions NSDUH = National Survey on Drug Use and Health p.c. = personal communication

### 3.3 Estimated pooled prevalence of alcohol misuse recognition among military and non-military samples

The overall pooled prevalence of alcohol misuse recognition among people meeting criteria for alcohol misuse across all articles was 40% (95% CI 32-48%) (Figure 2), suggesting that well over half of people with alcohol misuse problems do not recognise their misuse as an issue. The lowest reported proportion of recognition of alcohol misuse was 10% [40], while the highest was 96% [41], possibly as the latter included people who had repeated issues with driving whilst intoxicated (DUI). Prior research has indicated that experiencing recurrent legal problems due to excessive drinking may facilitate recognition of problems [42] and some participants may have received interventions in the past, which may have increased their awareness of alcohol problems.

Comparing alcohol misuse recognition between military and non-military populations found a pooled prevalence of 38% (95% CI 30-47%) among non-military populations, and 48% (95% CI 28-68%) among military populations (Figure 2). As the confidence interval of these estimates overlap, this suggests no statistically significant difference in alcohol misuse recognition between military and non-military populations according to the prior literature. Among non-military populations, the highest and lowest proportions of alcohol misuse recognition were 96% [41] and 10% [40]. For the studies of military populations, the highest and lowest proportions of alcohol misuse recognition were 67% [17] and 24% [12] respectively. It should be noted that the article with the highest proportion of alcohol misuse recognition among military populations was conducted in a sub-sample of military personnel who reported experiencing a stress, emotional or mental health problem in the last three years.

### 3.4 Summary

- Recognition of alcohol misuse among military and non-military populations who meet the criteria for misuse is low, with less than half recognising a problem.
- Alcohol misuse recognition prevalence was similar across military and non-military populations.
- Much of the previous literature is based on US studies of non-military samples.

### 3.5 Discussion

Low levels of recognition of alcohol misuse problems, as found in this meta-analysis, have been reported elsewhere among the UK general population. Data from the Adult Psychiatric Morbidity Survey 2014 showed that 4 in 10 people with probable alcohol dependence report alcohol problems, compared with 8 in 10 people with a common mental health problem, such as depression or anxiety, reporting a mental health problem [38].

Although speculative, there are a number of reasons why people might not recognise alcohol misuse. Alcohol problems are highly stigmatised [43] and people might avoid identifying themselves with such a label

[44]. People may also hold binary perceptions of alcohol misuse with someone seen as either a non-problematic drinker or an alcoholic [45], failing to see alcohol misuse on a continuum of severity [46]. Normalisation of heavy drinking, might also prevent recognition of alcohol misuse as heavy drinkers tend to underestimate their drinking behaviour [47]. Such perceptions are common to the military [1]. The fact that alcohol consumption is often associated with notions of masculinity [48, 49] might contribute to this process of normalisation in military contexts. Finally, poor recognition may arise from a lack of consequences from heavy alcohol use, and from scepticism against alcohol-harm related public health guidelines [49] if individuals misusing alcohol are able to function in their every-day lives [44].

There are some limitations to the pooled prevalence estimate, given the considerable differences in sample type and the measures of alcohol misuse and recognition used in the included studies. Such differences are likely to affect the representativeness of the pooled estimate. Non-military studies from the US were over-represented and there was a dearth of research around alcohol misuse recognition in both non-military and military UK samples.

These findings indicate that further research is needed to determine how common alcohol misuse recognition is among current and former members of the UK military. Study 2 uses data from a large cohort of UK serving and ex-serving military personnel to examine alcohol misuse recognition to address this gap.



## 4. STUDY 2

### RECOGNITION OF ALCOHOL MISUSE AMONG UK SERVING AND EX-SERVING PERSONNEL – A COHORT STUDY.

Findings from the meta-analysis (see Study 1) show that recognition of alcohol misuse is low, both in the general population and in the military. The review also highlights the lack of research on recognition of alcohol misuse among serving and ex-serving military personnel, both internationally and in the UK.

Although the characteristics of those more likely to recognise alcohol misuse has not been thoroughly examined in military populations, studies of civilians can provide useful information on who may be more or less likely to recognise a problem. Studies have shown that those who drink more (e.g. a greater quantity or frequency of alcohol consumption [50, 51]) and those who experience more symptoms of harmful or dependent drinking (e.g. failure to fulfil obligations or experiencing withdrawal symptoms [40, 42, 52]) are more likely to recognise their alcohol problem. Recognition is also more likely among those who perceived themselves to be less healthy [42, 50], those who have experienced greater mental health problems [42, 52], and those who experienced recurrent legal problems [42] due to alcohol misuse.

The aim of the present study was to address gaps in the literature by examining how many serving and ex-serving military personnel who meet criteria for alcohol misuse (AUDIT≥16) recognise they have an alcohol problem and identifying the characteristics associated with recognition. The objectives were to understand:

- How many military personnel recognise alcohol misuse?
- How does recognition of alcohol misuse differ between serving and ex-serving personnel, and between those who do and do not have comorbid mental health problems?
- What are the characteristics (sociodemographic, military, health, stressful and adverse life events, and current alcohol behaviours) of those recognising their alcohol misuse?
- Do these characteristics differ among serving and ex-serving personnel and those who do and do not have a comorbid mental health problem?

The findings of this study can help understand the extent to which military personnel recognise alcohol misuse and which groups are more or less likely to recognise an issue, which may allow targeted interventions to encourage awareness and help-seeking.

#### 4.1 Study methods

Data from the King's Centre for Military Health Research (KCMHR) Health and Well-being cohort study was used to examine prevalence of alcohol misuse recognition among serving and ex-serving UK military personnel [7].

The KCMHR Health and Well-being cohort study
The KCMHR cohort is a multi-phase study of UK military personnel originally established to examine the health and well-being of personnel deployed to Iraq (Op TELIC) and Afghanistan (Op Herrick) [7]. The cohort includes serving and ex-serving personnel from all three Service branches, regulars and reserves, and men and women. Data on a range of outcomes, such as mental and physical health, experiences during and after Service, and family and relationships was collected via surveys. Data collection for phase three took place from October 2014 until December 2016, with a total of 8,093 serving and ex-serving regular and reservist personnel participating.

The sample used in this study comprised of regular serving personnel, fulltime reservists, and ex-serving personnel (N=6,400). Voluntary reservists (civilian volunteers working part-time as soldiers) were excluded from all analyses as their exposures to alcohol and health behaviours may differ from fulltime personnel. Analyses referring to individuals meeting criteria for alcohol misuse was restricted to those scoring 16 or above on the AUDIT (N=602; 10.4% of study sample). The following questions and measures regarding alcohol consumption were used:

Alcohol misuse caseness
Respondents were considered to have alcohol misuse (alcohol consumption that might have harmful consequences to health or cause dependence) if they scored ≥16 on the Alcohol Use Disorder Identification Test (AUDIT) [53].
Alcohol misuse severity
Increasing scores on the Alcohol Use Disorder Identification Test (AUDIT) [53] were used to indicate increasing alcohol misuse severity.
Recognition of alcohol misuse
Respondents self-reported whether they had experienced any alcohol problems in the last three years. Among those meeting criteria for alcohol misuse (AUDIT≥16), self-reporting alcohol problems in the last three years was considered as recognition.

Socio-demographics, military, mental and physical health, alcohol use and stressful and adverse life events were examined to identify which serving and ex-serving personnel were more or less likely to recognise alcohol misuse if they met criteria for alcohol misuse (Table 1). *Sociodemographic* variables included age, gender, relationship status

(currently in relationship or single), whether respondents had children under 18 years of age, and educational attainment (A level or higher).

*Military* variables included Service (Army, RAF or Naval services), rank (commissioned officer, non-commissioned officer, or other), whether respondents had left the military and if so, how long ago, deployment to Iraq and/or Afghanistan, and serving in a combat role versus serving in combat support roles. For ex-serving personnel, this information was based on their data provided when they were still in Service.

*Health* variables included validated measures of common mental disorders (CMD) (score ≥4 General Health Questionnaire-12 (GHQ-12) [54]) and probable post-traumatic stress disorder (PTSD) (score ≥38 PTSD Checklist for DSM-5 (PCL-5) [55]). Perceptions of health were also collected, including physical/somatic symptoms (score≥10 Patient Health Questionnaire (PHQ) [56]), assessments of overall health (subjective health) and restrictions to day-to-day activities or social life due to health or emotional problems (functional and social impairment). Current smoking (yes/no) was also examined.

**Table 1:** Characteristics examined for their role in alcohol misuse recognition

Socio-demographic	Military	Mental & physical health	Patterns of alcohol use	Stressful or adverse life events
Age (years)	Service	CMD	Alcohol drinking patterns	Childhood family relationship adversities
Marital status	Rank	Probable PTSD	Past alcohol problems/past help-seeking <sup>b</sup>	Childhood antisocial behaviour
Gender	Serving status	Physical/somatic symptoms		Adverse life events
Having children <18 years	Main role in unit	Subjective general health		Combat experiences <sup>c</sup>
Education	Years since leaving the military <sup>a</sup>	Functional and social impairment		Major problems following deployment <sup>c</sup>
		Current smoker		

CMD = Common mental disorders, PTSD = Post-traumatic stress disorder  
<sup>a</sup> Ex-serving personnel only <sup>b</sup> Participated in prior phase of the cohort study only <sup>c</sup> Deployed to Iraq and/or Afghanistan only

The influence of *patterns of drinking* on recognition were measured using two methods for understanding alcohol use. In the first, AUDIT overall scores were categorised by severity: currently not drinking (AUDIT=0), low risk drinking (1≤AUDIT<8), hazardous drinking

(8≤AUDIT<16), harmful drinking (16≤AUDIT<20), and probable dependence (AUDIT≥20). *AUDIT domains* were derived from specific questions about: hazardous drinking (e.g. having 6 or more units of alcohol on one occasion) (score 10 or above in first domain [57]); harmful drinking (e.g. being unable to remember what happened the night before because of drinking); or, probable dependence (e.g. unable to stop drinking once started) (score 4 or above in second/third domain [58]).

Finally, the impact of *stressful or adverse life events* was examined. This included the extent to which respondents had reported experiencing family relationship adversities in childhood (e.g. get shouted at a lot at home), antisocial behaviour as a child (e.g. often getting into physical fights in school), and experiencing recent adverse events in life (e.g. divorce, accidents, financial problems) (Table 2). The frequency of combat experiences during respondents' most recent deployment and whether they had experienced any major problems when returning home from Iraq or Afghanistan deployments were also examined (both assessing traumatic or stressful experiences specific to a military context).

**Table 2:** Stressful or adverse life events

Family relationship adversities <i>When I was growing up...</i>	<ul style="list-style-type: none"> <li>• I did not come from a close family.</li> <li>• I used to get shouted a lot at home.</li> <li>• I did not feel valued by my family.</li> <li>• I regularly used to see or hear physical fighting or verbal abuse between my parents.</li> <li>• In my family there was not at least one member I could talk to about things that were important to me.</li> <li>• I used to be hit/hurt by a parent or caregiver regularly.</li> <li>• One (or more) of my parents had problems with alcohol or drugs.</li> <li>• My family did not use to do things together.</li> </ul>
Antisocial behaviours in childhood* <i>When I was growing up...</i>	<ul style="list-style-type: none"> <li>• I often used to play truant from school.</li> <li>• I often used to get into physical fights at school.</li> <li>• I was suspended /expelled from school.</li> <li>• I did things that should have got me (or did get me) into trouble with the police.</li> </ul>
Adverse life events <i>During the past three years I have experienced...</i>	<ul style="list-style-type: none"> <li>• A divorce or a broken relationship.</li> <li>• An accident.</li> <li>• An assault.</li> <li>• An accident, assault, or sever illness of someone close to me.</li> <li>• The death of someone close to me.</li> <li>• Burglary, robbery or other serious crime.</li> <li>• Financial problems.</li> <li>• Unexpectedly losing my job or being fired.</li> </ul>

\*Anti-social behaviour= getting into physical fights at school plus at least one additional behaviour

### 4.2 Analyses

A range of statistical methods were used in this study. Descriptive statistics were used to examine the proportion of military personnel reporting different drinking patterns, including alcohol misuse, and recognising an alcohol problem. Statistical significance of the differences among these proportions were tested with the chi-square test which tests whether two variables are related or not.

**What is a 'statistically significant' association?**

A statistically significant association refers to the relationship between an outcome of interest (e.g. depression) and factors of interest (e.g. gender). When statistical tests are run, researchers will examine the probability (*p*) value, which refers to the probability of the results being down to chance. If this value is <0.05, the relationship between the variables being tested will be deemed to be statistically significant and unlikely to be due to chance. For example, if the *p*-value from a test on the association between depression and gender was <0.05, depression would be described as being statistically significantly associated with gender.

Binary logistic regressions were used to identify which factors were associated with recognising alcohol misuse problems and to identify which factors to take account of in more detailed models. Analyses were conducted using the following multi-step approach:

1. Sociodemographic and military factors were examined in univariate logistic regressions to see if they were significantly associated with recognition of alcohol misuse problems
2. Sociodemographic and military factors were combined into multivariate logistic regressions to identify those that were significantly associated with recognition of alcohol misuse problems, after taking into account age and gender
3. In the final step, health, alcohol and life factors were combined into multivariate logistic regressions to identify factors significantly associated with recognition of alcohol misuse problems, after accounting for age, gender, sociodemographic and military factors significant at step 1, and CMD

**What are logistic regressions, odds ratios and confidence intervals?**

Binary logistic regressions are used to identify factors associated with an outcome. They are binary because the outcome of interest has only two possible responses (e.g. yes vs. no). For this study, respondents either report an alcohol problem in the last three years or they do not. Univariate logistic regressions test the association between one variable (e.g. age) and the outcome of interest (e.g. recognition). Multivariate logistic regressions involve adding more than one variable into one equation or model to account for all known factors relevant to the outcome of interest (e.g. age, rank, and gender). The outcomes from logistic regressions are called odds ratios (OR). Odds ratios test the strength of the relationship between a variable and an outcome. Adjusted odds ratios (adj. OR) are calculated from multivariate models because we have 'adjusted' the estimate for other key factors to account for the influence of each factor on the outcome. Confidence intervals are also calculated for each odds ratio. The 95% confidence interval of an odds ratio tells us how precise the estimate is and the likely range in which a true estimate will fall. Large confidence intervals suggest more uncertainty, mostly due to small sample size.

**Weights**

Weights are numerical scores used to indicate how representative a respondent is of the population they come from according to characteristics known to affect likelihood of being sampled. Data obtained from participants with greater weights contribute more to the final statistical results. All analyses in Studies 2-4 were weighted to account for respondents' likelihood of being sampled, as well as for their likelihood of completing the questionnaires once sampled [7]. Cell counts are based on the number of respondents and were not weighted.

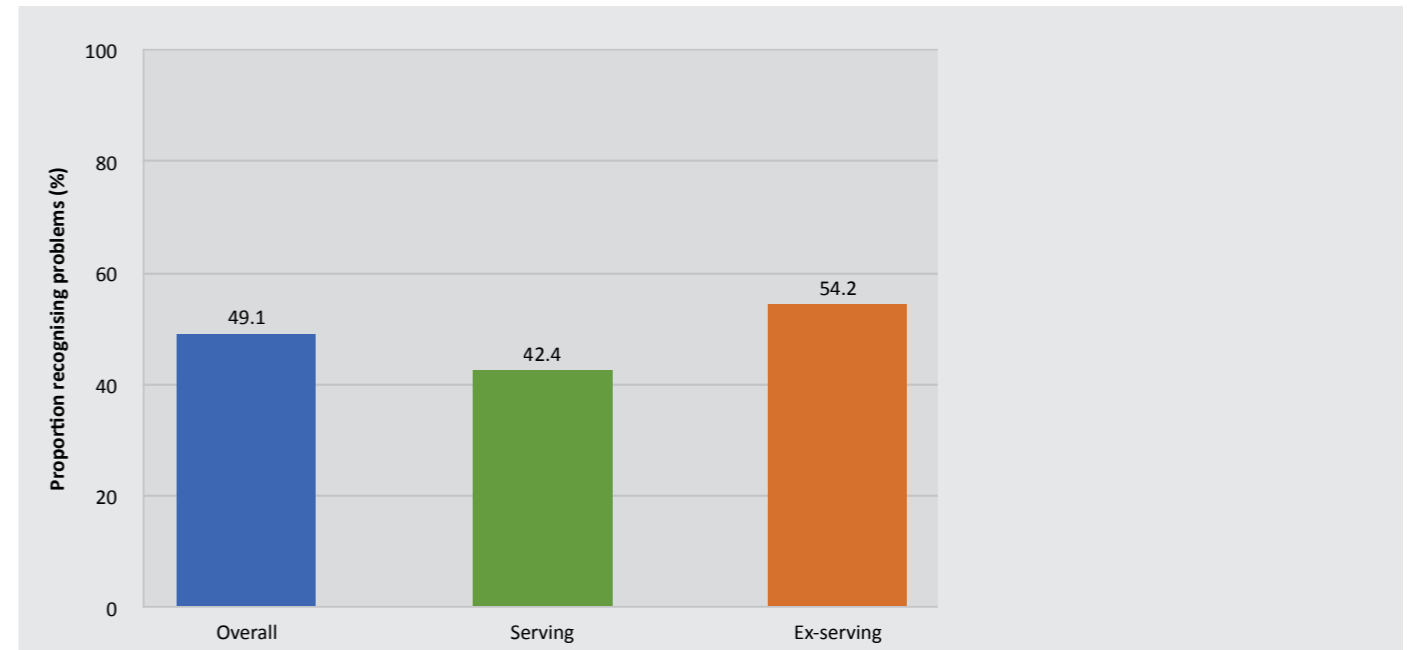
### 4.3 Recognition of alcohol misuse according to alcohol misuse and alcohol behaviours

In the cohort, 10.4% of respondents were considered to have alcohol misuse, drinking at harmful levels or endorsing probable dependence (AUDIT≥16) (Table 3). Approximately half of respondents had drinking patterns indicating hazardous or harmful consumption or probable dependence (AUDIT≥8). While significantly more serving than ex-serving personnel had an AUDIT score of 8 or above (p=0.002), there was no significant difference between the two groups in terms of more severe forms of alcohol misuse (AUDIT≥16) (p=0.97).

**Table 3:** Drinking patterns in the overall sample and according to serving status

Drinking patterns (AUDIT score)	Overall sample (N = 6,400) % (N)	Serving (N = 3,712) % (N)	Ex-serving (N = 2,688) % (N)
Not drinking (0)	3.7 (250)	4.0 (160)	3.5 (90)
Low risk (<8)	47.4 (2961)	44.5 (1632)	49.5 (1329)
Hazardous drinking (≥8-<16)	38.6 (2440)	41.3 (1478)	36.6 (962)
Harmful drinking (≥16-<20)	6.2 (374)	6.5 (224)	6.0 (150)
Probable dependence (≥20)	4.2 (228)	3.8 (127)	4.4 (101)

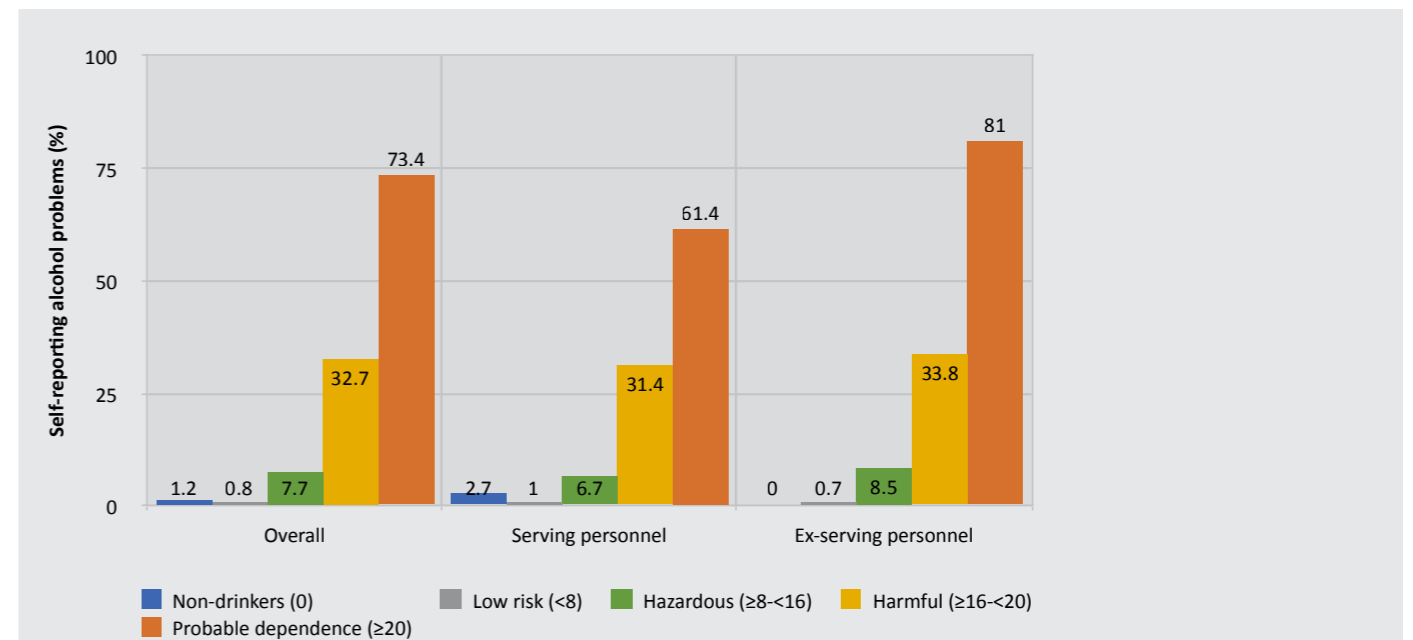
Approximately half of respondents in the overall sample who met criteria for alcohol misuse (AUDIT≥16) reported having an alcohol problem in the last three years (Figure 3). Ex-serving personnel meeting criteria for alcohol misuse (AUDIT≥16) were significantly more likely to recognise having an alcohol problem than serving personnel meeting the same criteria for alcohol misuse (AUDIT≥16) (54.2% vs 42.4%, p=0.017). However, when this was tested in adjusted models taking into account someone's age and gender, no significant difference was found (adj. OR 1.43, 95% CI (0.93-2.20)).



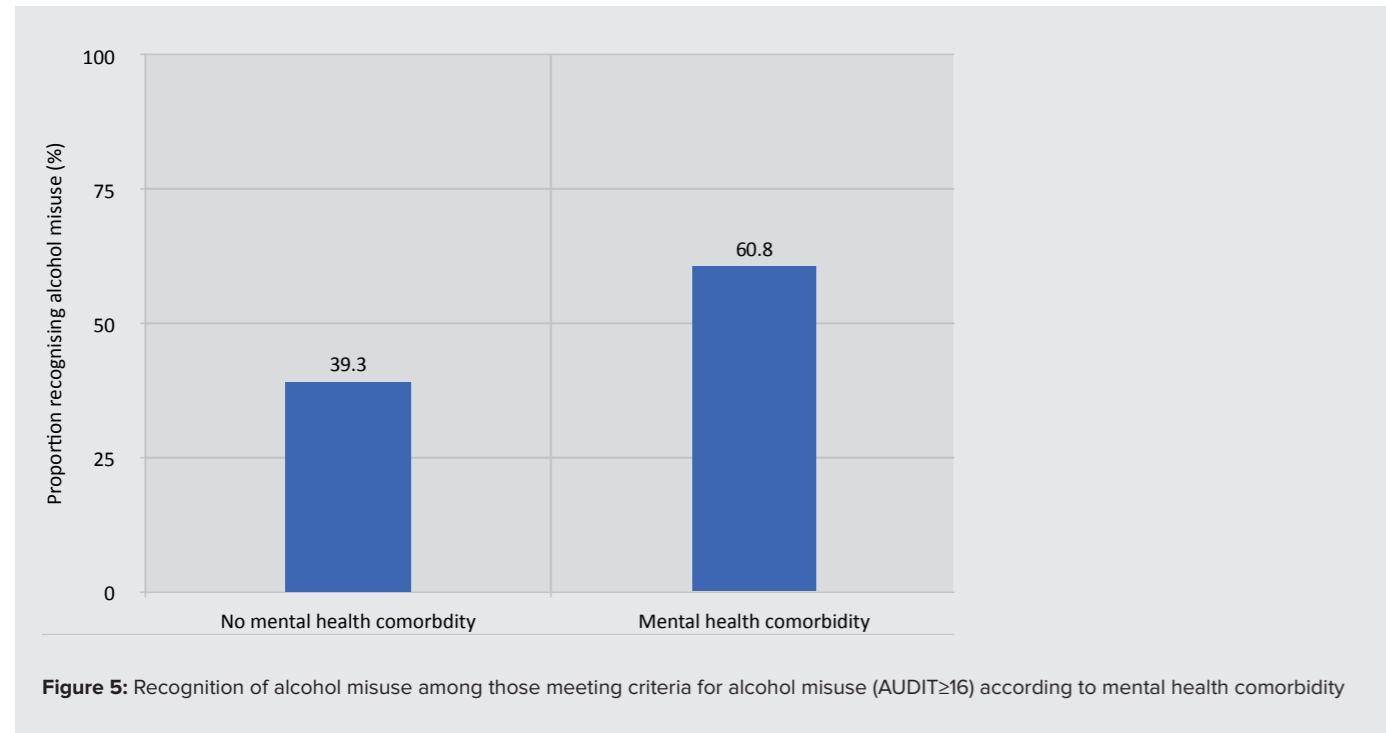
**Figure 3:** Recognition of alcohol misuse within those meeting criteria for alcohol misuse (AUDIT≥16) for the overall sample and according to serving status

Prior research has shown that recognition of alcohol problems may also vary according to patterns of alcohol use [22, 59]. In all three samples, recognition increased significantly between hazardous drinkers, harmful drinkers and those who met criteria for probable dependence (all p<0.001) (Figure 4). A small number of non-drinkers reported

experiencing problems with alcohol. This may be due to the fact that drinking patterns were examined over the past year, while self-reports of alcohol problems referred to the last three years. Therefore, these respondents may be those who have previously experienced alcohol problems and do not currently drink as a result.



**Figure 4:** Self-reported alcohol problems according to drinking pattern and serving status



**Figure 5:** Recognition of alcohol misuse among those meeting criteria for alcohol misuse (AUDIT $\geq$ 16) according to mental health comorbidity

#### 4.4 Recognition of alcohol misuse according to mental health comorbidity

Recognition of alcohol misuse among respondents meeting criteria for alcohol misuse (AUDIT $\geq$ 16) also differed according to the presence or absence of mental health problems. Among those meeting criteria for a mental health problem (CMD or probable PTSD), 60.8% recognised an alcohol problem in the last three years compared to 39.3% of those with no mental health problem ( $p < 0.001$ ) (Figure 5).

#### 4.5 Who was more likely to recognise that they were misusing alcohol?

More in-depth analyses using binary logistic regressions were conducted to understand the characteristics of respondents who recognised their alcohol misuse. The role of sociodemographic, military, mental & physical health, patterns of alcohol use, and stressful and adverse life events in recognition of alcohol misuse problems was examined in:

- the overall sample (Table 4, Table 5, Table 6)
- between serving and ex-serving personnel (Table 7, Table 8, Table 9)
- among those with and without comorbid mental health problems (Table 10, Table 11, Table 12)

##### 4.5.1 Overall sample

Factors associated with alcohol misuse recognition were first examined among all respondents in the sample who met criteria for alcohol misuse (AUDIT $\geq$ 16) (Table 4 and Table 5). Compared to those with educational qualifications lower than A level, recognition of alcohol

misuse problems was nearly twice as low among those holding qualifications higher than A level (adj. OR 0.55, 95% CI (0.36-0.54)) (Table 4). Recognition was nearly twice as low among responders who were in a relationship compared to those who were not (adj. OR 0.58, 95% CI (0.35-0.96)).

**Table 4:** Sociodemographic and military factors associated with recognition of alcohol misuse among respondents meeting criteria for alcohol misuse (AUDIT $\geq$ 16) – overall sample

Sociodemographic and military factors
<b>Education</b>
Recognition of alcohol misuse problems was significantly lower among those with educational qualifications higher than A level compared to those with lower educational qualifications (adj. OR 0.55, 95% CI (0.36-0.54))
<b>Marital status</b>
Recognition of alcohol misuse problems was significantly lower if respondents were currently in a relationship compared to those who were not (adj. OR 0.58, 95% CI (0.35-0.96))

\*Adjusted for age and gender

Recognition of alcohol misuse problems varied according to perceived physical health, social or functional impairment and mental health caseness. Recognition was almost twice as low among respondents who perceived their overall health to be better than poor/fair.

Recognition was twice as high if respondents reported functional impairment, met criteria for CMD, or reported experiencing physical/somatic symptoms (Table 5). Recognition was three times higher if respondents experienced any moderate or quite/extreme social impairment due to health/emotional problems (compared to no impairment) or if they had probable PTSD compared to those who did not. Taken together this suggests that greater physical health problems and mental health problems were associated with greater recognition of alcohol misuse problems.

Patterns of alcohol consumption were also associated with recognition. Respondents were more likely to recognise their alcohol misuse problems if they had more severe alcohol misuse (increasing AUDIT scores) (adj. OR 1.36, 95% CI (1.25-1.47)). Recognition was also twice as likely if respondents endorsed symptoms of hazardous drinking (hazardous drinking AUDIT domain), and four times more likely if they endorsed symptoms of probable dependence (probable dependence AUDIT domain) (Table 5), indicating a greater likelihood of recognition when problems were more severe. This may be due to the consequences of more extreme alcohol problems on employment or relationships, or adverse legal consequences (e.g. for driving under intoxication).

Recognition of alcohol misuse problems was nearly three times more likely if respondents had experienced three or more adverse life events, or reported ever being arrested compared to those who reported zero/one event or had not been arrested respectively (Table 6). Recognition was two times more likely among respondents who reported experiencing major problems when returning from deployment to Iraq or Afghanistan. This indicates that recognition was more likely when respondents experienced more stressors in life, possibly due to having sought help or support for such stressors.

**Table 5:** Health factors and drinking behaviours associated with recognition of alcohol misuse among respondents meeting criteria for alcohol misuse (AUDIT $\geq$ 16) – overall sample

Health factors <sup>a</sup>
<b>Subjective health rating</b>
Compared to those reporting poor/fair health, serving and ex-serving personnel perceiving their general health as good, very good or excellent were significantly less likely to recognise alcohol misuse problems (adj. OR 0.44, 95% CI (0.27-0.73)).
<b>PTSD<sup>b</sup></b>
Recognition of alcohol misuse problems was significantly more likely among respondents meeting criteria for probable PTSD compared to those who did not (adj. OR 2.86, 95% CI (1.64-5.07)).
<b>CMD</b>
Recognition of alcohol misuse problems was significantly more likely among respondents meeting criteria for probable CMD compared to those who did not (adj. OR 2.16, 95% CI (1.42-3.27)).
<b>Physical/somatic symptoms</b>
Recognition of alcohol misuse problems was significantly higher among respondents who reported physical or somatic symptoms compared to those who did not (adj. OR 2.40, 95% CI (1.53-3.78)).
<b>Functional impairment</b>
Serving and ex-serving personnel were significantly more likely to recognise alcohol misuse problems if they reported functional impairment compared to those who did not (adj. OR 2.30, 95% CI (1.45-3.65)).
<b>Social impairment</b>
Compared to those reporting no/slight social impairment, respondents were significantly more likely to recognise alcohol misuse problems if they reported experiencing moderate (adj. OR 2.69, 95% CI (1.51-4.79)) or quite some/extreme social impairment (adj. OR 2.56, 95% CI (1.41-4.64)).
<b>Current drinking behaviours<sup>a</sup></b>
<b>Alcohol misuse severity (AUDIT scores)</b>
Serving and ex-serving personnel were significantly more likely to recognise alcohol misuse problems as their AUDIT scores increased (adj. OR 1.36, 95% CI (1.25-1.47)).
<b>AUDIT domains</b>
Serving and ex-serving personnel were significantly more likely to recognise alcohol misuse if they met criteria for hazardous drinking (adj. OR = 1.95, CI = 1.24-3.08) or probable dependence (adj. OR 3.68, 95% CI (2.33-5.82)) AUDIT domains compared to those who did not.

<sup>a</sup> Adjusted for age, gender, education, serving status, CMD; <sup>b</sup> Association between probable PTSD and alcohol misuse recognition not adjusted for CMD due to high comorbidity between PTSD and CMD.

**Table 6:** Stressful and adverse life events associated with recognition of alcohol misuse among respondents meeting criteria for alcohol misuse (AUDIT $\geq$ 16) – overall sample

Stressful and adverse life events <sup>a</sup>
<b>Adverse life events</b>
Respondents were significantly more likely to recognise alcohol misuse problems if they reported three or more adverse life events compared to those reporting one or no such events (adj. OR 2.84, 95% CI (1.70-4.75)).
<b>Ever been arrested</b>
Recognition of alcohol misuse problems was significantly higher among respondents who reported ever being arrested compared to those who did not (adj. OR 2.99, 95% CI (1.43-6.25)).
<b>Problems at homecoming<sup>b</sup></b>
Recognition of alcohol misuse problems was significantly higher among those reporting major problems when returning from their most recent Iraq or Afghanistan deployment compared to those who did not (adj. OR 1.97, 95% CI (1.18-3.29)).

<sup>a</sup> Adjusted for age, gender, education, serving status, CMD <sup>b</sup> Respondents who deployed to Iraq or Afghanistan only

#### 4.5.2 Does recognition differ between serving and ex-serving personnel?

While serving status was not found to play a role in likelihood of alcohol misuse problems recognition, there may be differences in the characteristics of those who recognise misuse between groups of serving and ex-serving personnel. Table 7 presents the military and sociodemographic characteristics of serving and ex-serving personnel who met criteria for alcohol misuse and recognised an alcohol misuse problem.

Compared to serving personnel aged 30-39 years, those serving personnel who were 40 years or older were twice as likely to recognise alcohol misuse; no difference was found in recognition for those younger than 30 years. Recognition of alcohol misuse problems was also twice as likely among serving personnel deployed to Iraq/Afghanistan compared to those who did not. These characteristics were not significant among ex-serving personnel. Recognition was approximately twice as low among ex-serving personnel if their educational attainment was higher than A level and approximately six times lower if they were women compared to men.

Table 8 and Table 9 below present health factors, patterns of alcohol use, and stressful and adverse life events significantly associated with recognition of alcohol misuse according to serving status. Serving and ex-serving personnel were both two times less likely to recognise alcohol misuse if they perceived their overall health as better than poor/fair (Table 8). Serving personnel reporting any form of functional impairment due to their health or emotional problems were nearly twice as likely to recognise alcohol misuse problems compared to those who

did not, while ex-serving personnel were more than three times as likely.

**Table 7:** Sociodemographic and military factors associated with alcohol misuse recognition among those meeting criteria for alcohol misuse (AUDIT $\geq$ 16) according to serving status

Sociodemographic and military factors	
Serving personnel <sup>a</sup>	Ex-serving <sup>b</sup>
<b>Age</b>	
Recognition of alcohol misuse significantly higher among those aged 40 years or older compared to those aged 30-39 years (adj. OR 2.08, 95% CI (1.06-4.08)).	Did not play a role.
<b>Gender</b>	
Did not play a role.	Recognition of alcohol misuse less likely among women compared to men (adj. OR 0.16, 95% CI (0.03-0.90)).
<b>Education</b>	
Did not play a role.	Less likely to recognise alcohol misuse if held A level education or higher compared to those with lower educational attainment (adj. OR 0.44, 95% CI (0.23-0.85)).
<b>Deployment</b>	
More likely to recognise alcohol misuse if deployed to Iraq/Afghanistan compared to those who did not deploy (adj. OR 2.12, 95% CI (1.03-4.38)).	Did not play a role.

<sup>a</sup> Adjusted for age, gender <sup>b</sup> Adjusted for age only due to low number of women in ex-serving personnel (n < 20)

Among ex-serving personnel, social impairment also played a role, with those reporting moderate or quite/extreme social impairment almost four times more likely to recognise alcohol misuse problems compared to those reporting no social impairment (Table 8). Ex-serving personnel reporting physical/somatic symptoms were three times more likely to recognise alcohol misuse compared to those who did not. These factors were not significant among serving personnel. Taken together, in serving and ex-serving personnel alike, health problems and interference of these problems with aspects of daily life were associated with greater alcohol misuse problems recognition.

Mental health criteria were also associated with recognition. Serving personnel meeting criteria for CMD were two and a half times more likely to recognise a problem compared to those who did not, while for ex-serving personnel, those meeting probable PTSD caseness were more than three times more likely to recognise alcohol misuse problems (Table 8). This indicates that experiencing a mental health problem was associated with greater alcohol misuse recognition in both samples.

Alcohol behaviours were important for both serving and ex-serving personnel, with significantly higher recognition among those with more severe alcohol misuse (increasing AUDIT scores) or those endorsing symptoms of hazardous drinking (hazardous AUDIT domain) or probable dependence (probable dependence AUDIT domain) (Table 8), indicating a greater likelihood of recognition when problems were more severe. Recognition of alcohol misuse was twice as low among serving personnel who currently did not smoke compared to those who did but there was no association for ex-serving personnel.

More difficult life experiences were associated with increased recognition of alcohol misuse problems for serving personnel only. Serving personnel who experienced three or more adverse life events were nearly four times more likely to recognise alcohol misuse problems compared to those reporting one or no such events (Table 9). Serving personnel were also three times more likely to recognise their alcohol misuse if they had ever been arrested by the police/charged with a criminal offence although caution should be used as this association may be explained by other factors not accounted for. This suggests that experiencing more life stressors was associated with greater recognition of alcohol misuse problems in serving but not in ex-serving personnel.

**Table 8:** Health factors and drinking behaviours associated with alcohol misuse recognition among those meeting criteria for alcohol misuse (AUDIT $\geq$ 16) according to serving status

Health factors	
Serving personnel <sup>a</sup>	Ex-serving <sup>b</sup>
<b>Subjective health rating</b>	
Less likely to recognise alcohol misuse if perceived general health as good/very good/excellent compared to perceived poor/fair health (adj. OR 0.42, 95% CI (0.20-0.92))	Less likely to recognise alcohol misuse if perceived general health as good/very good/excellent compared to perceived poor/fair health (adj. OR 0.44, 95% CI (0.23-0.86))
<b>Probable PTSD</b>	
Did not play a role	More likely to recognise alcohol misuse if met criteria for probable PTSD compared to those who did not (adj. OR 3.38, 95% CI (1.48-7.71))
<b>Probable CMD</b>	
More likely to recognise alcohol misuse if met criteria for probable CMD compared to those who did not (adj. OR 2.51, 95% CI (1.45-4.33))	Did not play a role
<b>Physical/somatic symptoms</b>	
Did not play a role.	More likely to recognise alcohol misuse if reported physical/somatic symptoms compared to those who did not (adj. OR 3.04, 95% CI (1.60-5.79))
<b>Functional impairment</b>	
More likely to recognise alcohol misuse if reported any functional impairment compared to no functional impairment (adj. OR 1.92, 95% CI (1.07-3.47))	More likely to recognise alcohol misuse if reported any functional impairment compared to no functional impairment (adj. OR 2.88, 95% CI (1.43-5.81))
<b>Social impairment</b>	
Did not play a role	More likely to recognise alcohol misuse if reported quite/extreme social impairment compared to no/slight impairment (adj. OR 3.61, 95% CI (1.46-8.96))
<b>Tobacco use</b>	
Less likely to recognise alcohol misuse if currently not using tobacco (adj. OR 0.47, 95% CI (0.25-0.89))	Did not play a role.
<b>Current drinking behaviours</b>	
Serving personnel <sup>a</sup>	Ex-serving <sup>b</sup>
<b>Alcohol misuse severity (AUDIT scores)</b>	
More likely to recognise alcohol misuse if had more severe alcohol misuse (higher AUDIT scores) (adj. OR 1.32, 95% CI (1.19-1.46))	More likely to recognise alcohol misuse if had more severe alcohol misuse (adj. OR 1.43, 95% CI (1.24-1.66))
<b>AUDIT domains</b>	
More likely to recognise alcohol misuse if endorsed hazardous drinking (adj. OR 1.80, 95% CI (1.03-3.13)) or probable dependence (adj. OR 2.53, 95% CI (1.38-4.63))	More likely to recognise alcohol misuse if endorsed hazardous drinking (adj. OR 3.33, 95% CI (1.61-6.89)) or probable dependence (adj. OR 4.92, 95% CI (2.41-10.04))

<sup>a</sup> Adjusted for age, gender, having children, deployed to Iraq/Afghanistan, CMD <sup>b</sup> Adjusted for age (but not gender due to low number of women in ex-serving personnel, n < 20), educational attainment, role in unit, CMD

**Table 9:** Stressful and adverse life events associated with alcohol misuse recognition among those meeting criteria for alcohol misuse (AUDIT $\geq$ 16) according to serving status

Stressful and adverse life events	
Serving personnel <sup>a</sup>	Ex-serving <sup>b</sup>
<b>Adverse life events</b>	
More likely to recognise alcohol misuse if reported three or more adverse life events compared to those reporting one or no such events (adj. OR 3.69, 95% CI (1.87-7.25))	Did not play a role
<b>Ever been arrested</b>	
More likely to recognise alcohol misuse if reported ever being arrested compared to those who did not (adj. OR 3.29, 95% CI (1.50-7.23))	Did not play a role

<sup>a</sup> Adjusted for age, gender, having children, deployed to Iraq/Afghanistan, CMD  
<sup>b</sup> Adjusted for age (but not gender due to low number of women in ex-serving personnel, n < 20), educational attainment, role in unit, CMD

#### 4.5.3 What is the role of mental health comorbidity in recognition of alcohol misuse problems?

In Table 5 and Table 8, analyses demonstrated that mental health may play a role in increased alcohol misuse recognition. To examine this further, we looked at how recognition may differ among groups of serving and ex-serving personnel who met criteria for alcohol misuse (AUDIT $\geq$ 16) and a mental health problem (CMD and/or probable PTSD).

Among respondents with alcohol and mental health problems, recognition of alcohol misuse was more than three times lower among women than men, and more than twice as low among those currently in a relationship than those not in a relationship (Table 10), after accounting for age (years) and gender. Gender and marital status did not play a role among respondents meeting criteria for alcohol misuse only.

Among respondents meeting criteria for alcohol misuse only, recognition of alcohol misuse was nearly twice as low among those with an education higher than A level compared to those with lower educational attainment. Educational attainment did not play a role among respondents with alcohol and mental health problems.

**Table 10:** Sociodemographic and military factors significantly associated with alcohol misuse recognition among serving and ex-serving personnel meeting criteria for alcohol misuse (AUDIT $\geq$ 16) according to mental health comorbidity

Sociodemographic and military factors <sup>a</sup>	
Comorbid mental health and alcohol problem	Alcohol problem only
<b>Gender</b>	
Recognition of alcohol misuse less likely among women compared to men (adj. OR 0.29, 95% CI (0.11-0.82)).	Did not play a role.
<b>Marital status</b>	
Less likely to recognise alcohol misuse if currently in a relationship compared to those who were not (adj. OR 0.44, 95% CI (0.21-0.92)).	Did not play a role.
<b>Education</b>	
Did not play a role.	Less likely to recognise alcohol misuse if held A level education or higher compared to those with lower attainment (adj. OR 0.53, 95% CI (0.29-0.94)).

<sup>a</sup> Adjusted for age, gender

Table 11 and Table 12 present the health, patterns of alcohol use and life event variables significantly associated with alcohol misuse recognition in those meeting criteria for alcohol misuse (AUDIT $\geq$ 16), distinguishing findings between those who did and did not meet criteria for mental health problems (CMD and/or probable PTSD).

In both groups (i.e. those with and without a mental health problem), recognition of alcohol misuse was twice as low among respondents who perceived their general health as better than poor/fair. Complementing this, recognition was twice as likely among respondents who reported significant physical/somatic symptoms compared to respondents reporting no significant physical/somatic symptoms (Table 11). Serving and ex-serving personnel with alcohol and mental health problems were more than twice as likely to recognise alcohol misuse if they experienced any functional or social impairment compared to those reporting no or only minor problems with function and social impairment. However, for those meeting criteria for alcohol misuse only, only moderate social impairment was associated with increased recognition. Taken together, these findings indicate that in both groups, greater health problems and greater interference of these problems with daily life were associated with increased likelihood of recognition.

Among both groups, increased alcohol severity or endorsing probable dependence (probable dependence AUDIT domain) were all linked to significantly higher recognition of alcohol misuse problems (Table 11), indicating greater likelihood of recognition among respondents with more severe alcohol misuse problems. Hazardous drinking (hazardous

drinking AUDIT domain) or tobacco use were significantly associated with recognition among respondents with alcohol and mental health problems, but not for those only meeting criteria for alcohol misuse (AUDIT $\geq$ 16).

As in prior analyses, stressful and adverse life events were also a pertinent factor for respondents with alcohol and mental health problems, with three or more adverse life events or being arrested

associated with significantly higher recognition of alcohol misuse problems compared to one or no such events or no reported arrests, respectively (Table 12). These factors were not significantly associated with recognition for respondents who met criteria for alcohol misuse only. This suggests that life stressors were significantly associated with alcohol misuse problem recognition in those with alcohol and mental health problems but not in those with alcohol problems only.

**Table 11:** Health factors and drinking behaviours associated with alcohol misuse recognition among serving and ex-serving personnel meeting criteria for alcohol misuse (AUDIT $\geq$ 16) according to mental health comorbidity

Health factors	
Comorbid mental health and alcohol problem <sup>a</sup>	Alcohol problem only <sup>b</sup>
<b>Subjective health rating</b>	
Less likely to recognise alcohol misuse if perceived general health as good/very good/excellent compared to poor/fair (adj. OR 0.43, 95% CI (0.22-0.83)).	Less likely to recognise alcohol misuse if perceived general health as good/very good/excellent compared to poor/fair (adj. OR 0.43, 95% CI (0.20-0.95)).
<b>Physical/somatic symptoms</b>	
More likely to recognise alcohol misuse if reported physical/somatic symptoms compared to those who did not (adj. OR 2.02, 95% CI (1.07-3.83)).	More likely to recognise alcohol misuse if reported physical/somatic symptoms compared to those who did not (adj. OR 3.10, 95% CI (1.59-6.04)).
<b>Functional impairment</b>	
More likely to recognise alcohol misuse if reported any functional impairment compared to those who did not (adj. OR 3.27, 95% CI (1.56-6.86)).	Did not play a role.
<b>Social impairment</b>	
More likely to recognise alcohol misuse if reported moderate social (adj. OR 3.09, 95% CI (1.35-7.06)) or quite/extreme social impairment (adj. OR 3.25, 95% CI (1.59-6.64)) compared to no/slight impairment.	More likely to recognise alcohol misuse if reported moderate social impairment compared to no/slight impairment (adj. OR 2.73, 95% CI (1.22-6.08)).
<b>Smoking</b>	
Compared to current smokers, less likely to recognise alcohol misuse if not a current smoker (adj. OR 0.35, 95% CI (0.17-0.71)).	Did not play a role.
<b>Current drinking behaviours</b>	
Comorbid mental health and alcohol problem <sup>a</sup>	Alcohol problem only <sup>b</sup>
<b>Alcohol misuse severity (AUDIT scores)</b>	
More likely to recognise alcohol misuse if had increasing AUDIT scores (adj. OR 1.36, 95% CI (1.20-1.55))	More likely to recognise alcohol misuse if had increasing AUDIT scores (adj. OR 1.37, 95% CI (1.24-1.51))
<b>AUDIT domains</b>	
More likely to recognise alcohol misuse if endorsed hazardous drinking (adj. OR 2.33, 95% CI (1.24-4.38)) or probable dependence (adj. OR 3.13, 95% CI (1.62-6.04)) compared to those who did not	More likely to recognise alcohol misuse if endorsed probable dependence (adj. OR 4.37, 95% CI (2.28-8.37)) compared to those who did not

<sup>a</sup> Adjusted for age, gender <sup>b</sup> Adjusted for age, gender, education

**Table 12:** Stressful and adverse life events associated with alcohol misuse recognition among serving and ex-serving personnel meeting criteria for alcohol misuse (AUDIT $\geq$ 16) according to mental health comorbidity

Stressful and adverse life events	
Comorbid mental health and alcohol problem <sup>a</sup>	Alcohol problem only <sup>b</sup>
<b>Adverse life events</b>	
More likely to recognise alcohol misuse if reported experiencing three or more adverse life events compared to those reporting none or one events (adj. OR 3.38, 95% CI (1.61-7.09))	Did not play a role
<b>Ever been arrested</b>	
More likely to recognise alcohol misuse if reported ever being arrested compared to those who did not (adj. OR 4.60, 95% CI (1.63-12.93))	Did not play a role

<sup>a</sup> Adjusted for age, gender <sup>b</sup> Adjusted for age, gender, education

## 4.6 Summary

- Approximately half of serving and ex-serving personnel who met criteria for alcohol misuse recognised an alcohol misuse problem.
- There was no significant difference in the recognition of alcohol misuse problems between serving and ex-serving personnel after accounting for age and gender.
- Recognition was significantly higher among those who have experienced greater physical health or mental health problems or greater alcohol misuse severity across all samples.
- Recognition was significantly higher among respondents reporting a greater number of adverse life events (e.g. divorce, accidents, financial problems, ever been arrested), although this was found only among serving personnel and personnel with comorbid alcohol and mental health problems.
- Recognition also differed according to socio-demographics and military factors:
  - o In the overall sample, recognition was significantly less likely among those with higher educational attainment or those currently in a relationship.
  - o Serving personnel were significantly more likely to recognise alcohol misuse problems if they were older in age, had children, or if they had deployed to Iraq or Afghanistan.
  - o Ex-serving personnel were significantly less likely to recognise alcohol misuse problems if they had higher educational attainment or and if they were women.
  - o Recognition was significantly less likely among women who had comorbid alcohol misuse and mental health problems, compared to men who had comorbid alcohol misuse and mental health problems.
  - o Recognition was significantly less likely among those with higher

educational attainment who did not met criteria for comorbid alcohol misuse and mental health problems, compared to those with lower educational attainment.

## 4.7 Discussion

### 4.7a Prevalence of alcohol misuse problems recognition in serving and ex-serving personnel

Overall, approximately half of those serving and ex-serving personnel who met criteria for alcohol misuse (AUDIT $\geq$ 16), also recognised they had an alcohol problem. This is higher than the results found in a previous study which looked at UK serving personnel only [12]. The difference in results could therefore be down to recognition increasing among military populations, but it could equally be due to greater recognition among the ex-service population, which was the missing group in the latter study (i.e. approximately four in ten serving personnel recognise alcohol misuse compared to nearly five in ten ex-serving personnel). However, serving status was not significantly associated with alcohol misuse recognition after accounting for age and gender, suggesting that the difference in alcohol misuse recognition may be due to the different age and gender compositions of the two groups, rather than whether or not they were still serving. For example, previous research in civilian samples found that women had lower alcohol misuse recognition compared to men [22].

### 4.7b Factors associated with alcohol misuse problem recognition in serving and ex-serving personnel.

Recognition varied according to age, gender, education and marital status across the samples. Recognition was significantly more likely in older serving personnel. Among ex-serving personnel and personnel with comorbid alcohol and mental health problems, recognition was significantly less likely in women. This gender difference found in these sub-samples (ex-serving personnel and personnel with comorbid alcohol and mental health problems) are in agreement with non-military literature where women showed lower recognition compared to men, and that this was due to a lower severity of alcohol problems in women [22]. Among the overall sample, recognition was significantly lower among those with higher educational qualifications. This finding is initially counterintuitive, but we may assume that those of a higher socioeconomic position view their general health more positively and as a result are more resistant to identify themselves as problem drinkers. Another explanation could be that heavy drinking in individuals of lower socioeconomic status is more likely to be accompanied by other unhealthy behaviours, such as smoking [60], which it was found here to increase alcohol misuse recognition. Finally, among the overall sample, those who reported currently being in a relationship were less likely to recognise alcohol misuse compared to those not in a relationship. While the cross-sectional nature of the data does not allow us to determine which came first, a possible explanation is that serving and ex-serving personnel who recognise alcohol problems may have had more severe misuse which may in turn have disrupted their interpersonal relationships. For example, alcohol misuse has been previously associated with intimate partner violence [61-63].

The only military factor significantly associated with alcohol misuse recognition was deployment. Serving personnel who had ever deployed to Iraq or Afghanistan were more likely to recognise their alcohol misuse compared to their colleagues who had not deployed to these operation theatres. One explanation might be that, due to the requirement to abstain from alcohol during a deployment, the alcohol-free deployment period may provide someone with more awareness of their own drinking behaviours, and following that period of abstinence, they are more likely to recognise an increase in their own alcohol use on return from deployment [7].

Among all samples, respondents were more likely to recognise their alcohol misuse problem if they had more severe alcohol misuse or if they endorsed symptoms of either hazardous drinking or probable dependence. Greater recognition of alcohol misuse when alcohol misuse is more severe is a common finding in the literature with non-military samples [22, 40, 51]. This might suggest that an increase in the number and severity of harmful consequences makes the problem more evident. Apart from the individuals themselves, others in their immediate environment may start noticing the problem to a greater extent, which in turn may facilitate recognition.

Regarding health factors, among all samples, respondents were more likely to recognise their alcohol misuse if they perceived their general health as poor/fair (i.e. compared to better than that) or if they experienced any of the following: functional or social impairment due to health or emotional problems, physical/somatic symptoms, CMD, or probable PTSD. Experiencing a greater number of adverse life events such as divorce, accidents, financial difficulties, or having ever been arrested by the police or charged with a criminal offence, was associated with greater recognition of alcohol misuse among serving personnel or those with comorbid alcohol and mental health problems, but not among ex-serving personnel or those with alcohol problems only.

Taken together, these findings suggest alcohol misuse recognition was more likely if respondents had experienced greater hardship, including, physical health or mental health problems, impairment due to these problems, and more adverse life events. Some of these hardships might reflect a more severe alcohol misuse status, which has been found here to increase alcohol misuse recognition. For example, people who drink more excessively might have poorer health or experience more accidents due to alcohol [36]. It might also be that people with greater mental health problems drink more heavily as previously found in military [6, 27] and non-military samples [64, 65], potentially as a coping mechanism [66-68]. Changes in the causes people assign to successes and failures in life [69], might also explain these associations. For example, experiencing a greater number of stressors and difficult situations in life might provide an explanation for alcohol misuse problems that is related to situational factors outside the person's control, rather than to personal moral failure. This attributional shift might alleviate some of the self-blaming stigma associated with alcohol use and mental health problems in general [70] and facilitate admittance of alcohol misuse problems. Finally, those with greater mental or physical health problems might already have received treatment for

these problems. Alcohol drinking behaviours might therefore have been brought up and discussed in the treatment context, facilitating problem recognition.

## 4.8 Conclusion

Overall, recognition of alcohol misuse problems among serving and ex-serving personnel who met criteria for alcohol misuse is low. Recognition among serving personnel does not differ from ex-serving when age and gender is taken into account. Recognition of alcohol misuse problems is facilitated by also experiencing greater physical and mental health problems and greater alcohol misuse severity. Experiencing adverse life events (e.g. financial problems, accidents, ever being arrested) is also associated with greater likelihood of recognition in serving personnel or personnel with alcohol and mental health problems.

## 5. STUDY 3

### HELP-SEEKING FOR SELF-REPORTED ALCOHOL PROBLEMS

Once serving and ex-serving personnel recognise that they have an alcohol misuse problem, it is important to understand who is likely to go on to seek help for these problems and who will therefore be seen by support services. The proportion of those accessing support for alcohol problems among military and ex-military populations, is routinely lower than the number help-seeking for other mental health, emotional or general medical problems [12-17]. UK research suggests approximately one in third of UK military personnel will seek help for alcohol problems compared to four out of ten of those reporting mental health problems [12], possibly due to the long-standing use of alcohol being used as a bonding tool within the military community and therefore normalising problematic drinking behaviours [71, 72]. The literature on help-seeking indicates that this is a common pattern across studies (Table 13), although a meta-analysis suggests that the overall prevalence of help-seeking may be similar for alcohol misuse and mental health problems after accounting for differences across studies and samples [73].

**Table 13:** Comparison of prevalence of help-seeking for alcohol misuse and mental health problems

Type of problem	Country & population	Percentage seeking help	Reference
Alcohol	US veterans	33%	[13]
	UK tri-service regular personnel	31%	[12]
	US Army and Air Force National Guard personnel	23%	[32]
	US veterans aged over 60 years	24%	[18]
Mental health	UK tri-service regular personnel	42%	[12]
	Canadian active duty with PTSD	62%	[74]
	US Army with PTSD	48%	[75]
	US veterans & active duty accessing Veteran's Affairs services	43%	[76]

Research has also shown that serving and ex-serving personnel who do seek help for alcohol issues may opt for different sources of support if they are still in Service. The perceived consequences of help-seeking on career progression can result in serving military personnel opting to use civilian mental health professional or self-help rather than utilising military services [26]. Help-seeking for alcohol problems can also differ

according to the presence or absence of mental health comorbidities [27-29], with help-seeking for alcohol problems more common in those with comorbid mental problems [12, 77, 78].

The aim of this study was to examine the proportion of serving and ex-serving personnel who self-report an alcohol problem and seek help for this issue. The objectives of this study were:

1. How many serving and ex-serving personnel who self-report an alcohol problem sought help, and from which sources?
2. What factors are associated with seeking help for self-reported alcohol problems among serving and ex-serving personnel?

The findings of this study can help us understand which support services are commonly used by those with alcohol problems and where serving and ex-serving personnel with additional issues may be accessing support.

#### 5.1 Study samples and methods

To provide greater insight into help-seeking for self-reported alcohol problems, data from two samples was used to understand help-seeking for self-reported alcohol problems and answer the two questions posed; the first, using a large military cohort, and the second study that examined help-seeking among a sub-sample of serving and ex-serving personnel who self-reported stress, emotional or mental health difficulties.

##### 5.1.1 Cohort study

As in Study 2 (see page 16), this study used data from the third phase of the King's Centre for Military Health Research (KCMHR) Health and Well-being Cohort study [7]. Self-reported alcohol problems were determined by asking respondents if they recognised an alcohol problem in the last three years.

The sample used in the analyses for this study was comprised of serving and ex-serving regular or fulltime reserve service (FTRS) personnel who responded to items on self-reported alcohol problems (n=6,199). Respondents who reported an alcohol problem were asked where they had sought help for this issue. Sources of support were categorised as:

- formal medical sources (general practitioner/medical officer (GP/MO), hospital doctor, mental health specialist (e.g. psychiatrist, psychologist, counsellor))
- non-medical sources (other<sup>2</sup>, telephone helplines or online therapy services)
- did not seek help

Respondents were able to report multiple sources of support from formal medical or non-medical sources. Analyses of help-seeking for alcohol problems among serving and ex-serving personnel were restricted to those who responded 'yes' to an alcohol problem in the last three years (n=461).

Data from the Cohort study was also used to understand which groups may be seeking more or less help, and to identify which type of support they were accessing. Help-seeking was categorised as formal medical support (GP/MO, hospital doctor or mental health specialist) or non-medical support (other/telephone helpline/online therapy). Factors associated with these different sources of help-seeking for self-reported alcohol problems were then examined compared to those not seeking help. Socio-demographic, military, health factors and stressful or adverse life events variables were grouped together into blocks (Table 1 and Table 2, see page 17).

##### 5.1.2 Interview study

The second dataset used to examine help-seeking for self-reported alcohol problems among serving and ex-serving personnel came from the KCMHR Interview study (see box below) [17].

Self-reported alcohol problems were determined by asking respondents if they had experienced an alcohol problem in the last three years. The final sample used in the following analyses was comprised of serving and ex-serving regular or fulltime reserve service (FTRS) personnel who recognised a current or prior alcohol problem (n=1,151).

#### The KCMHR Interview study

Data from the KCMHR Interview study was collected via structured telephone interviews between February 2015 and December 2016. All participants had previously taken part in the Cohort study and self-reported an emotional, stress, relationship or mental health problem in the last three years. In the Interview study, participants were asked more detailed questions about their help-seeking, the sources of support they had accessed and their perceptions of treatment.

Unlike the Cohort study, sources of support in the Interview study were not linked to the specific issues that respondents reported. While this means we cannot specifically say that use of particular sources of help related to specific problems respondents had experienced, we can use this data to identify where respondents with self-reported alcohol problems were accessing services. Help-seeking for self-reported alcohol problems was defined by respondents seeking support from:

- Informal sources (e.g. friends, family member/colleagues)
- Formal medical sources (e.g. GP, medical officer or doctor)
- Formal non-medical sources (e.g. chain of command, other non-medical professionals)

Multiple sources of support were permitted. Analyses on help-seeking for self-reported alcohol problems was limited to those who self-reported a current or previous alcohol problem and responded to questions on help-seeking (n=186).

#### 5.1.3 Analyses

Descriptive analyses were conducted to estimate the proportion of help-seeking for self-reported alcohol problems among serving and ex-serving personnel. Additional analyses (multinomial regressions) were conducted to identify factors associated with different types of help-seeking while accounting for other relevant factors. The samples were weighted for non-response. All proportions and odds ratios reported in this study are weighted, while cell counts are unweighted.

#### What is multinomial logistic regression?

Multinomial logistic regression is a statistical technique similar to logistic regression. Instead of comparing variables with binary outcomes (e.g. yes/no or male/female), multinomial regression allows comparison across variables with multiple outcomes (e.g. age group categories, military ranks (officers, NCOs or other). As with logistic regression, univariable models were conducted to identify factors associated with different types of help-seeking identified in Table 1 and Table 2 (p15). Multivariable models including socio-demographic, military, health factors, childhood or adverse life events found to be statistically significantly associated with the outcome in univariable models were then analysed to account for the role of different factors in help-seeking. Unadjusted and adjusted odds ratios are presented.

### 5.2 Help-seeking for self-reported alcohol problems

#### 5.2.1 Cohort study

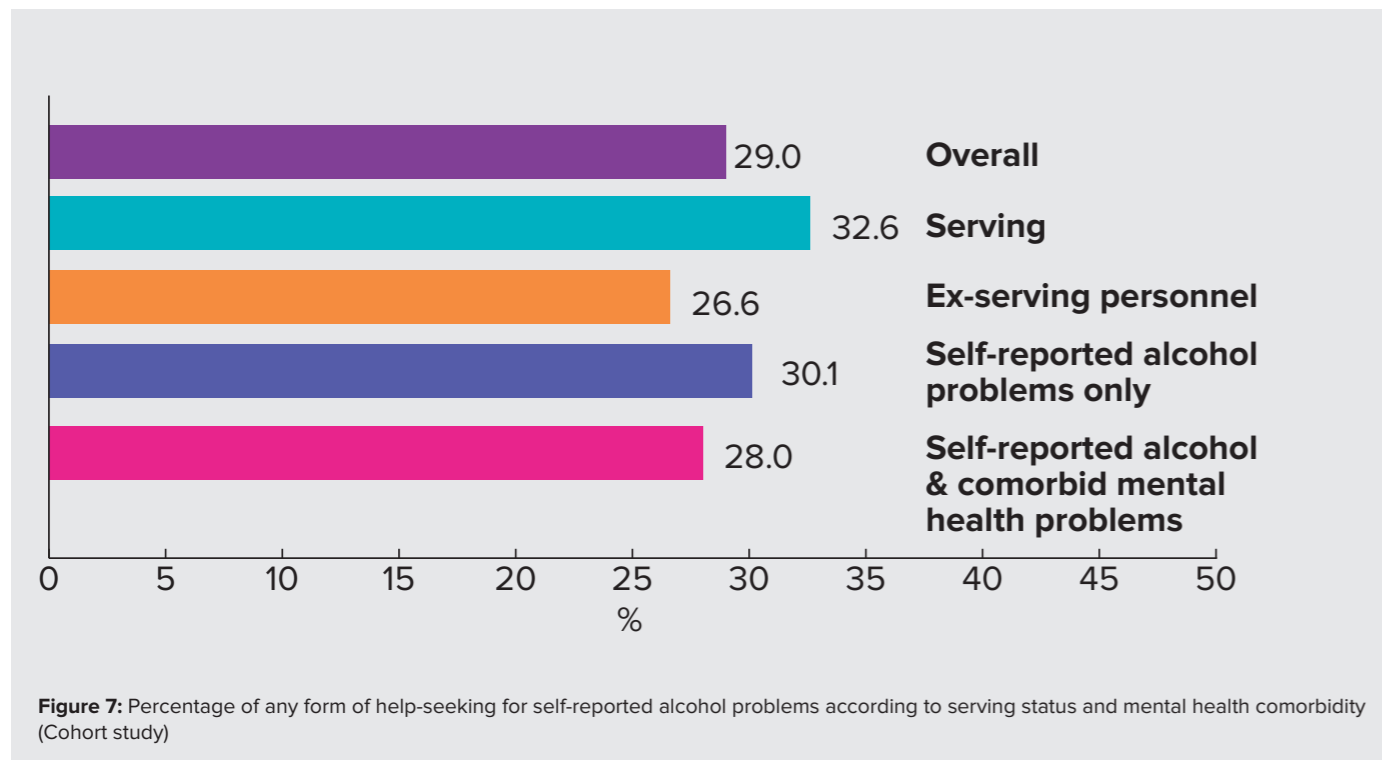
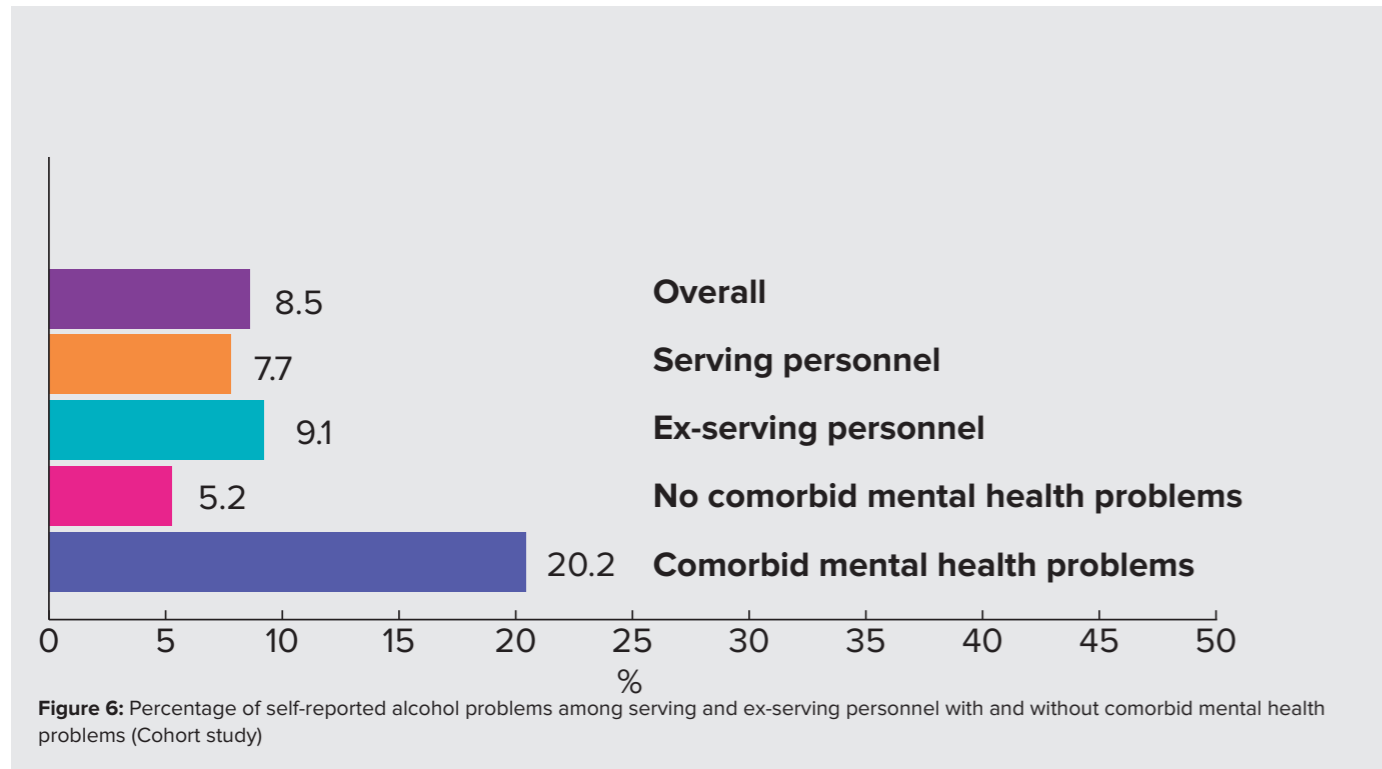
The overall prevalence of self-reported alcohol problems in the last three years among regular or FTRS serving and ex-serving personnel was 8.5% (n=461), with no significant difference by serving status. Self-reported alcohol problems were significantly more prevalent among respondents who met criteria for a mental health problem (common mental disorder and/or probable PTSD) than among those who did not meet any criteria for a mental health problem (Figure 6).

In the Cohort study, approximately three in ten serving and ex-serving personnel who self-reported an alcohol problem had sought some kind of help for this issue (Figure 7, Table 14). Help-seeking did not differ between those still in Service and those who had left, or according to the presence or absence of mental health problems.

Among those who had accessed support for self-reported alcohol problems (Table 14), the most common source of support was formal medical services such as general practitioners (GPs), medical officers (MOs) or mental health specialists such as psychiatrists, psychologists or counsellors. Individual sources of support did not differ by serving status but there were differences in sources of support according to the presence or absence of mental health problems. Respondents who self-reported an alcohol problem and met criteria for at least one mental health problem were significantly more likely to see hospital doctors compared to those who only self-reported alcohol problems (3.7% vs. 0.5%).

There was overlap in some of the support that individual serving or ex-serving personnel sought for self-reported alcohol problems. Among

2 NB Informal support (e.g. from friends, family or colleagues) was not directly captured in response options for this question



serving or ex-serving personnel seeking help from GPs or MOs, 67.7% (n=7) also sought help from a hospital doctor and 55.4% (n=31) from a mental health specialist, indicating that multiple sources of formal medical help were used for support. No similar overlap in support from

telephone or online helplines or 'other' forms of support was found, suggesting preferences for different types of informal support or the use of informal support prior to formal medical help.

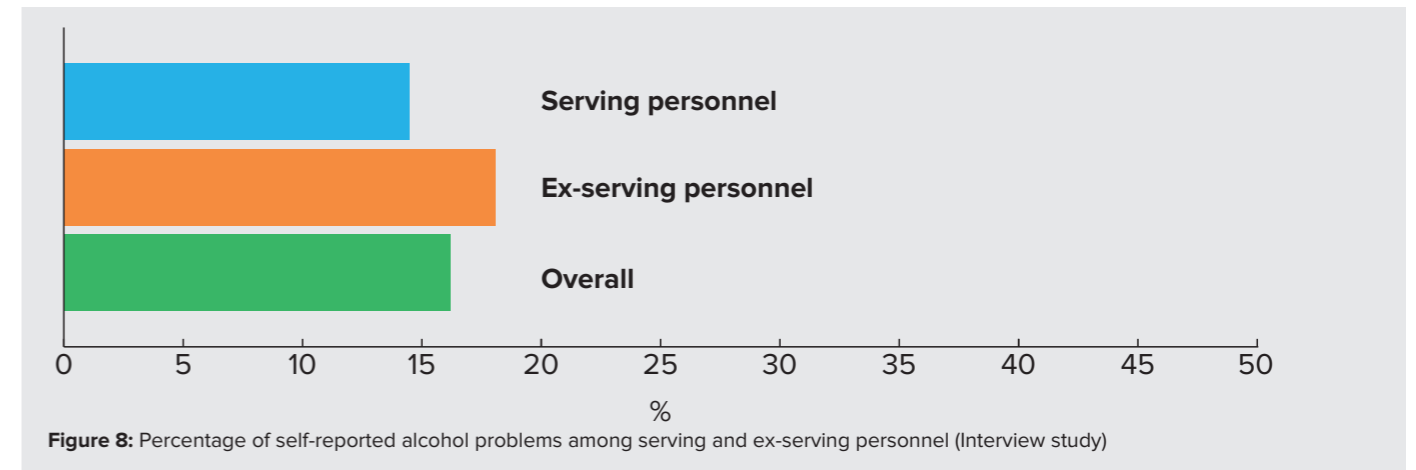
**Table 14:** Sources of help-seeking for self-reported alcohol problems among serving and ex-serving personnel according to mental health comorbidity (any response) (Cohort study)

Sources of support for self-reported alcohol problems (any response)	Serving and ex-serving personnel (N=461)	Mental health comorbidities N (%)		p (X <sup>2</sup> )
		Self-reported alcohol problems (N=222)	Self-reported alcohol & comorbid mental health problems (N=236)	
Did not seek help	333 (71.1)	155 (69.9)	176 (72.0)	0.672
Formal medical support				
GP/MO	64 (14.4)	34 (16.8)	29 (12.1)	0.219
Mental health specialist	59 (12.7)	31 (14.1)	27 (11.2)	0.444
Hospital doctor	11 (2.1)	2 (0.45)	9 (3.7)	0.002
Other				
Other	35 (8.9)	15 (6.7)	20 (11.0)	0.164
Telephone helpline/online therapy	10 (2.5)	7 (3.8)	3 (1.4)	0.200

NB N>100 & %>100% as respondents could give multiple answers  
Comorbid mental health = meeting caseness criteria for probable PTSD (PCL-5), probable depression (PHQ-15) and/or probable CMD (GHQ)

**5.2.2 Interview study**

The Interview study, a sub-sample of the original KCMHR phase three cohort, comprised of participants who had self-reported an emotional, stress, relationship or mental health problem in the last three years. In the Interview study, the prevalence of self-reported alcohol problems was higher than the Cohort study, with 16.2% (n=186) self-reporting a current or previous alcohol problem. This was because the sample was comprised of those who reported emotional or mental health difficulties in the last three years. There was no statistically significant difference in self-reported alcohol problems by serving status in the Interview study (Figure 8).



Compared to the Cohort study, the majority of participants in the Interview study had sought help (Table 15), possibly as participants had already self-reported recent stress/emotional or mental health problems. While we cannot be sure whether the reported help-seeking relates to the mental health or alcohol problem, serving and ex-serving personnel who self-reported an alcohol problem most commonly accessed informal support (79.7% and 71.1%, respectively), of which 60.6% (n=112) had sought help from family, and 51.0% (n=94) from friends or colleagues. Formal medical (GP, medical officer or doctors) and non-medical (e.g. chain of command, counsellors) support was used by 55.7% of serving and 67.7% of ex-serving personnel. There were no significant differences in the sources of help used by serving or ex-serving personnel.

**Table 15:** Sources of help-seeking among serving and ex-serving personnel self-reporting alcohol problems (any response) (Interview study)

Sources of support for self-reported alcohol problems (any response)	Serving personnel (n=86) N (%)	Ex-serving personnel (n=100) N (%)	p (X <sup>2</sup> )
Any informal	68 (79.7)	71 (71.1)	0.177
Any formal medical	48 (55.7)	68 (67.7)	0.097
Any formal non-medical	33 (38.5)	49 (49.3)	0.142
Did not seek help	8 (9.1)	8 (7.9)	0.771

\*p<0.05, \*\*p<0.01, \*\*\*p<0.001 NB N>100 as respondents could give multiple answers

**5.3 Factors associated with sources of help-seeking for self-reported alcohol problems**

In the Cohort study, help-seeking from formal medical services (GP/MO, hospital doctor or mental health specialist) for self-reported alcohol problems was found to decrease significantly with increasing age after accounting for other socio-demographic factors; while serving and ex-serving personnel who were not in a relationship were nearly twice as likely to seek support from formal medical services than those in a relationship (Table 16). No military factors were found to be associated



with accessing different types of help for self-reported alcohol problems.

Compared to those who did not seek help, serving and ex-serving personnel who currently smoked were nearly twice as likely to use formal medical services for self-reported alcohol problems compared to non-smokers, while those with increasing alcohol severity (AUDIT scores) were significantly less likely to use these services after accounting for other health factors and age (Table 16). Serving and ex-serving personnel who had experienced an increasing number of adverse life events, such as divorce, bereavement, financial problems or being the victim of crime, were more likely to use other sources of support (telephone/online or 'other') for self-reported alcohol problems than those not seeking help.

**Table 16:** Factors associated with type of help-seeking for self-reported alcohol problems (Cohort study)

Socio-demographic <sup>a</sup>
<b>Age</b>
Help-seeking from formal medical services (GP/MO, hospital doctor or mental health specialist) decreased significantly with increasing age (adj. OR 0.97, 95% CI (0.94-0.99)).
<b>Marital status</b>
Serving and ex-serving personnel who were not in a relationship were nearly twice as likely to seek support from formal medical services than those in a relationship (adj. OR 1.97, 95% CI (1.05-3.68)).
<b>Health factors<sup>b</sup></b>
<b>Tobacco use</b>
Compared to those who did not seek help, current smokers were significantly more likely to access formal medical services than non-smokers (adj. OR 1.88, 95% CI (1.04-3.39)).
<b>Alcohol severity</b>
An increasing AUDIT score was associated with significantly lower help-seeking from formal medical services compared to those who did not seek help (adj. OR 0.95, 95% CI (0.91-0.99)).
<b>Stressful or adverse life events<sup>c</sup></b>
<b>Adverse life events</b>
Compared to those not seeking help, accessing non-medical sources of support was significantly more likely among serving and ex-serving personnel who had experienced an increasing number of negative life events (adj. OR 1.27, 95% CI (1.05-1.55)).

<sup>a</sup> Adjusted for age, marital status, children over 18 years <sup>b</sup> Adjusted for age, tobacco use, PTSD caseness, AUDIT score, social impairment <sup>c</sup> Adjusted for age, stressful or adverse life events (cont), ever been arrested

## 5.4 Summary

- The majority of respondents from the Cohort study who self-reported an alcohol problem had not sought support (71.1%). Those that had sought help had mainly accessed medical services, such as general practitioners and medical officers or mental health specialists for

their self-reported alcohol problem.

- There were no differences in the proportion of self-reported alcohol problems, or in the proportion of overall help-seeking reported by serving and ex-serving personnel in either the Cohort or Interview studies.
- Those self-reporting an alcohol problem and meeting criteria for at least one mental health problem were significantly more likely to see hospital doctors compared to those self-reporting alcohol problems only, potentially due to more complex needs.
- Help-seeking varied according to socio-demographic, military, health and stressful or adverse life events:
  - Based on data from the Cohort study, help-seeking from formal medical services for self-reported alcohol problems was lower for older respondents but higher among serving and ex-serving personnel who were not in a relationship and among current smokers.
  - Formal medical help-seeking was significantly lower for those with increasing AUDIT scores, possibly due to concerns about approaching formal medical services with alcohol issues given public health campaigns about their harms. Future research should be conducted to try and understand this finding in more detail given that these associations remained after adjusting for demographic characteristics known to be associated with AUDIT score (e.g. gender, age and marital status).
  - Based on data from the Cohort study, help-seeking from other sources/helplines for self-reported alcohol problems was greater among those with an increasing number of adverse life events such as divorce, bereavement, financial problems or being the victim of crime.

## 5.5 Discussion

The aim of Study 3 was to determine how many serving and ex-serving personnel with self-reported alcohol problems sought help and from what sources and to identify factors associated with different types of help-seeking.

### 5.5a Proportion of help-seeking for self-reported alcohol problems

The overall proportion of help-seeking for self-reported alcohol problems was low among serving and ex-serving personnel in the Cohort study but comparable to that reported in previous studies of UK and US military personnel [12, 13, 18]. While there were no differences in the proportion of help-seeking overall by serving status or mental health comorbidity in the cohort, there were differences in the sources that certain groups chose to use. Serving and ex-serving personnel who self-reported alcohol problems and met criteria for at least one mental health problem were significantly more likely to see hospital doctors and less likely to access services from phone or online helplines. While the low numbers in this analysis mean that caution should be applied to these findings, they may indicate that appropriate pathways for care are being followed for this patient group, with more complex cases among serving personnel appropriately obtaining support from formal medical service. The overlap in some of the services accessed by respondents

self-reporting alcohol problems is also likely to reflect pathways to clinical care within the UK, with a high proportion of those accessing GPs/MOs also reporting use of mental health specialists and hospital doctors as they encounter secondary and tertiary NHS services. However, the use of hospital services may also reflect individuals with more complex needs during crisis using emergency healthcare services, indicating greater support may be needed for those with comorbid alcohol and mental health problems.

Respondents with self-reported alcohol problems in the Interview study showed greater help-seeking compared to the Cohort study – which may be expected given the focus of the interview study was around help seeking. Unlike the Cohort study, informal support from family, friends and colleagues was the most commonly accessed source of help by serving and ex-serving personnel in the Interview study. What is unclear is how capable family members feel in providing support to loved ones who think they may have an alcohol problem. This could be further explored, with the potential use of interventions to help friends and family members who are supporting serving and ex-serving personnel with alcohol problems, including online services [79], specific programmes addressing substance use such as CRAFT [80], or wider-reaching interventions to address family stress [81].

### 5.5b Factors associated with help-seeking for self-reported alcohol problems

Help-seeking for self-reported alcohol problems from formal medical services was significantly higher among serving and ex-serving military personnel who were not in a relationship compared to those in a relationship. This may be due to a lack of available informal support from spouses/partners among single serving and ex-serving personnel, who may possibly have become single as a result of relationship breakdown due to these problems, as mentioned in other literature [18, 82]. Older serving and ex-serving personnel were less likely to seek help for self-reported alcohol problems. This may be because alcohol problems among the military and general population decrease with age [7] and therefore less help is required. No military factors were found to be associated with different types of help-seeking for self-reported alcohol problems compared to those not seeking help. This may be because socio-demographic factors play a larger role in help-seeking in the UK military. An increasing number of adverse life events were associated with greater help-seeking from non-medical sources, possibly as help is being sought for the life event rather than the alcohol problem. Further research is needed to explore help-seeking pathways further and understand why some sources are chosen over others when experiencing multiple need.

One finding of interest is that poor health behaviours, such as higher scores on the AUDIT, had differing impacts on accessing formal medical care. A reduction in help seeking for respondents with greater alcohol severity may be due to a greater reliance on these methods to coping with problems they may be experiencing or anticipated stigma about seeking any form of help when engaging in behaviours that people know are harmful and a reluctance to admit

detrimental patterns of behaviour. In contrast, current smokers were more likely to access formal support for alcohol problems, possibly due to requests for support in quitting smoking, or their awareness of the health consequences of tobacco use. Future research should explore if serving and ex-serving personnel seeking support for smoking cessation may be a potential point of intervention for reducing alcohol use. Help-seeking from non-medical services also differed, with greater access from those with an increasing number of adverse life events. Such events may act as a driver for seeking support for alcohol problems, or this particular source of support may act as a form of sense-checking for those uncertain about accessing more formal services for alcohol misuse given any perceived stigma or anticipated consequences for their career or reputation).

## 5.6 Conclusion

The overall proportion of help-seeking for self-reported alcohol problems was low among serving and ex-serving personnel in the Cohort study but comparable to that reported in previous studies of UK and US military personnel. There was no significant difference in overall help-seeking by serving status or the presence or absence of mental health comorbidities. Help-seeking was higher among respondents who may have increased vulnerabilities, such as single, widowed or divorced serving and ex-serving personnel and those with poorer health behaviours.

## 6. STUDY 4

### HOW DOES HELP-SEEKING AND PERCEPTIONS OF TREATMENT FOR MENTAL HEALTH PROBLEMS DIFFER IN SERVING AND EX-SERVING PERSONNEL WHO ARE ALSO MISUSING ALCOHOL?

Help-seeking for mental health problems may be less likely in those misusing alcohol as a maladaptive coping mechanism to manage mental health issues, in particular PTSD [30-32]. These delays in help-seeking can result in increased treatment needs among ex-serving personnel and greater burden on NHS services [33]. Compliance with treatment may also be affected, with high rates of dropout among ex-serving personnel and civilians with PTSD and substance misuse disorders [34, 35].

The aim of Study 4 was to understand how help-seeking and adherence to treatment for mental health problems among serving and ex-serving personnel may differ in those who do and do not have comorbid alcohol misuse. The objectives of this study were to answer the following questions:

1. How many serving and ex-serving personnel recognise a mental health problem (post-traumatic stress disorder (PTSD) or common mental disorder (CMD)) and also meet criteria for alcohol misuse?
2. Are serving and ex-serving personnel who recognise a mental health problem less likely to seek help if they also meet criteria for alcohol misuse?
3. Does alcohol misuse affect perceptions of psychological treatment among serving and ex-serving personnel who recognise they have a mental health problem?

#### Alcohol comorbidity

*Alcohol comorbidity or comorbid alcohol misuse refers to participants who self-reported mental health problems but who also score above a particular cut-off on the AUDIT which indicates that someone is likely to have problems with alcohol. For the Cohort study, alcohol misuse was determined using an AUDIT score of 16 or more.*

### 6.1 Samples and methods

#### 6.1.1 Cohort study

The role of alcohol in help-seeking for mental health problems (question 1 and 2 above) was examined using data from the Cohort study (see page 16). Self-reported mental health problems were determined by asking respondents if they had had a stress/emotional or mental health problem in the last three years (referred to throughout as "self-reported mental health problems"). The sample was comprised of serving and ex-serving regular or fulltime reserve service personnel

who responded to this question at phase three of the cohort (2014-2016, n=6,243).

Sources of help-seeking for self-reported mental health problems were the same as those used in Study 3 (see page 29); formal medical sources (general practitioner/medical officer (GP/MO), hospital doctor, mental health specialist (e.g. psychiatrist, psychologist, counsellor)), non-medical sources (other<sup>3</sup>, telephone helplines or online therapy services) and did not seek help. Multiple sources of support were permitted. Analyses examining how alcohol misuse influences help-seeking for self-reported mental health problems was restricted to those who self-reported a mental health problem and who completed the AUDIT (caseness  $\geq 16$ ) [53, 57] (n=2,010).

#### 6.1.2 Interview study

Perceptions of psychological treatment for self-reported mental health problems, and how these may differ according to alcohol misuse, were examined using data from the KCMHR Interview study (see page 29) (question 3 above). Respondents who reported finishing treatment (n=435) were asked questions about perceived completion of therapy, average length of sessions and if they found treatment helpful.

#### 6.1.3 Analyses

Analyses were similar to previous studies. Descriptive statistics were calculated to determine the proportion of respondents with self-reported mental health problems, the number of those also meeting criteria for alcohol misuse, and the proportion of help-seekers. Logistic regressions were conducted to identify factors associated with any form of help-seeking for self-reported mental health problems while accounting for other relevant factors.

### 6.2 Help-seeking for self-reported mental health problems

Among the Cohort study, the overall prevalence of self-reported stress, emotional or mental health problems in the last three years was 34.4% (n=2,041). The prevalence of alcohol misuse (AUDIT score  $\geq 16$ ) among this group was significantly higher than among those not reporting stress, emotional or mental health problems (17.9% vs. 6.5%) (Table 17). No significant difference in self-reported mental health problems and alcohol comorbidity between serving and ex-serving personnel was found (p=0.242).

**Table 17:** Self-reported mental health problems and alcohol misuse (AUDIT  $\geq 16$ ) among serving and ex-serving personnel (Cohort study)

Overall sample			
Alcohol comorbidity			
Self-reported mental health problems	No (AUDIT <16)	Yes (AUDIT $\geq 16$ )	p (X <sup>2</sup> )
No	3887 (93.5)	266 (6.5)	
Yes	1683 (82.2)	327 (17.9)	p<0.001

#### 6.2.1 Prevalence and sources of help-seeking for self-reported mental health problems

Help-seeking for self-reported mental health problems in the Cohort study was higher than help-seeking for alcohol problems, with approximately six in ten seeking support (Figure 9) compared to approximately three in ten for self-reported alcohol problems (Figure 7). There was no difference in overall help-seeking for self-reported mental health problems between serving and ex-serving personnel or between those meeting criteria for alcohol misuse (AUDIT $\geq 16$ ). This may be significant if examined in a larger sample.

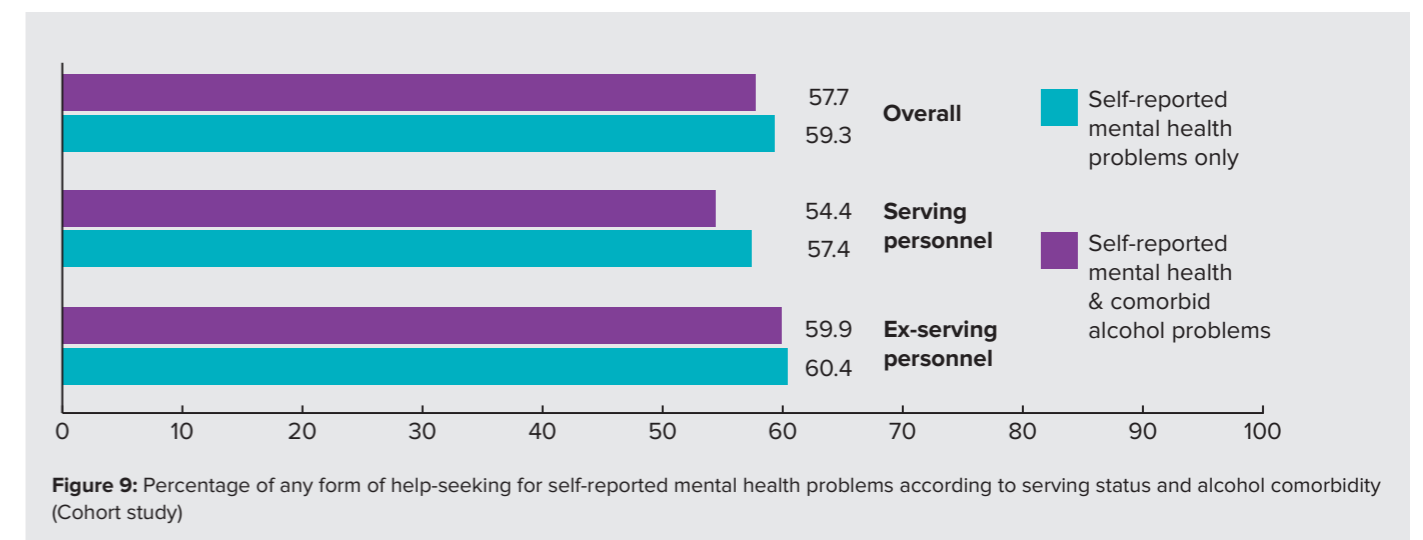
Among those that had sought help for self-reported mental health problems, the most common sources were GP/MOs and mental health specialists (Table 18). Although there were no significant differences in never seeking help and help-seeking from formal medical services by serving status, there were differences in non-medical support according to alcohol comorbidity. Compared to ex-serving personnel who self-reported mental health problems only, those who also met alcohol misuse caseness (AUDIT $\geq 16$ ) were significantly more likely to access 'other' forms of support (p=0.049). While 'other' is not defined, this may include non-medical sources of support such as friends, family, military, or other charities providing treatments for alcohol/substance use. An association approaching significance was found for greater help-seeking from telephone or online services among serving personnel with self-reported mental health problems and alcohol comorbidity

compared to those with self-reported mental health problems only (p=0.010). These findings provide an insight into variation in sources of help-seeking for self-reported mental health problems according to alcohol comorbidity, however caution should be applied due to small numbers.

**Table 18:** Sources of help-seeking among serving and ex-serving personnel according to self-reported mental health problems and alcohol comorbidity (any response) (Cohort study)

Sources of support (any response)	Serving N (%)		p	Ex-serving N (%)		p (X <sup>2</sup> )
	Self-reported mental health problem only (n=999)	Self-reported mental health problem with comorbid alcohol misuse (n=171)		Self-reported mental health problem only (n=762)	Self-reported mental health problem with comorbid alcohol misuse (n=156)	
<i>Did not seek help</i>	417 (45.6)	78 (42.7)	0.536	296 (40.1)	56 (39.6)	0.914
<i>Formal medical support</i>						
GP/MO	339 (36.4)	58 (37.5)	0.819	348 (44.6)	73 (43.8)	0.874
Mental health specialist	284 (30.4)	6 (2.9)	0.667	259 (33.6)	15 (7.8)	0.572
Hospital doctor	38 (3.7)			56 (6.4)		
<i>Non-medical support</i>						
Other	89 (8.7)	19 (12.0)	0.265	51 (6.5)	14 (12.0)	0.049
Telephone helpline/online therapy	25 (3.2)	13 (8.5)	0.010	54 (7.1)	15 (8.6)	0.537

NB N>100 & %>100% as respondents could give multiple answers



3 NB Informal support (e.g. from friends, family or colleagues) was not directly captured in response options for this question

### 6.2.2 Factors associated with help-seeking for self-reported mental health problems

To understand how help-seeking for a mental health problem may differ among those who self-reported a mental health problem *and* who were and were not comorbid for alcohol misuse, associations between socio-demographic, military, and stressful or adverse life event factors and any form of help-seeking for mental health were examined for each group. Individual factors associated with help-seeking were included in statistical models to identify key factors associated with help-seeking while accounting for other relevant factors. Factors associated with any form of help-seeking for perceived mental health problems are shown in Table 19 and Table 20. Regardless of the presence or absence of alcohol misuse (AUDIT $\geq$ 16), any form of help-seeking for self-reported mental health problems was twice as likely among women compared to men and 1.5 times more likely among those who were not in a relationship compared to those who were (Table 19). Among serving and ex-serving personnel with self-reported mental health problems only, being in a combat role was associated with significantly lower help-seeking compared to those not in a combat role. An association approaching significance was found for higher help-seeking for mental health problems among ex-serving personnel who self-reported mental health problems only compared to serving personnel (adj. OR 1.28, 95% CI (1.00-1.65)),  $p=0.051$ ) after adjusting for age and other military factors - this may be significant if examined in a larger sample.

**Table 19:** Sociodemographic and military factors associated with any form of help-seeking for self-reported mental health problems and comorbid alcohol problems (Cohort study)

Sociodemographic and military factors associated with help-seeking*	
Self-reported mental health problems only	Self-reported mental health & comorbid alcohol problems
<b>Age</b>	
Increases with increasing age (adj. OR 1.01, 95% CI (1.00-1.03))	Did not play a role.
<b>Gender</b>	
More likely among women compared to men (adj. OR 2.09, 95% CI (1.46-3.00)).	More likely among women compared to men (adj. OR 5.27 (1.80-15.45)).
<b>Marital status</b>	
More likely among those not in a relationship compared to those in a relationship (adj. OR 1.40, 95% CI (1.02-1.90)).	More likely among those not in a relationship compared to those in a relationship (adj. OR 2.99 (1.49-6.00)).
<b>Combat role</b>	
Less likely among those in a combat role compared to those not in a combat role (adj. OR 0.70, 95% CI (0.53-0.92)).	Did not play a role.

\*Adjusted for age, gender, marital status

For serving and ex-serving personnel self-reporting mental health problems *only*, help-seeking was significantly higher in those with additional needs, such as those experiencing an increasing number of adverse life events, those meeting criteria for probable PTSD, and those demonstrating harmful patterns of alcohol use (e.g. probable dependence or alcohol related-harm) (Table 20). The only health and life factor significantly associated with help-seeking among serving and ex-serving personnel self-reporting mental health problems *who were also* comorbid for alcohol misuse, was childhood antisocial behaviour (fighting at school, truancy, suspension/expulsion and trouble with the police) after adjusting for age.

**Table 20:** Health and life factors associated with any form of help-seeking for self-reported mental health problems and comorbid alcohol problems (Cohort study)

Health factors	
Self-reported mental health problems only	Self-reported mental health & comorbid alcohol problems
<b>Probable PTSD caseness<sup>a</sup></b>	
More likely among those meeting probable PTSD caseness compared to those who do not (adj. OR 1.87, 95% CI (1.22-2.87)).	Did not play a role
<b>Alcohol behaviours (AUDIT)<sup>b</sup></b>	
Compared to those not meeting criteria, more likely among those meeting criteria for AUDIT domains of hazardous alcohol consumption (adj. OR 0.59, 95% CI (0.41-0.85)), alcohol-related harm (adj. OR 0.71, 95% CI (0.56-0.90)) or probable alcohol dependence (adj. OR 0.76, 95% CI (0.58-0.99)).	Did not play a role.
<b>Stressful or adverse life events<sup>b</sup></b>	
<b>Childhood anti-social behaviour</b>	
Did not play a role.	More likely among those reporting childhood anti-social behaviour compared to those who do not (adj. OR 1.85, 95% CI (1.02-3.37)).
<b>Adverse life events</b>	
More likely among those with increasing number of adverse life events (adj. OR 1.13 (1.04-1.23)).	Did not play a role.

<sup>a</sup>Adjusted for age, subjective health, physical problems, social impairment <sup>b</sup>Adjusted for age

### 6.2.3 Perceptions of psychological treatment

Previous research has suggested that attrition in psychological treatment may be greater among serving and ex-serving personnel who also misuse alcohol [34, 35]. This could be because people believe they can use alcohol to successfully manage their problems on their own [83] or because of perceived difficulties in accessing services that will treat both problems. Although the NHS and services like Combat Stress now accept clients with comorbid alcohol and mental health problems, perceptions around poorer access to co-treatment of alcohol and mental health problems may still exist among serving and ex-serving personnel. It is therefore important to understand how perceptions of mental health treatment may differ in those who do and do not misuse alcohol. We used data from the Interview study to look at perceptions of treatment among participants who self-reported mental health problems and who were and were not comorbid for alcohol misuse.

**Table 21:** Uptake and perceptions of psychological treatment among serving and ex-serving personnel according to self-reported mental health problems and alcohol misuse (Interview study)

Treatment uptake and perceptions of therapy	Self-reported mental health problem only N (%)	Self-reported mental health problem & comorbid alcohol misuse N (%)	p (X <sup>2</sup> )
Completion of therapy			
Ongoing	62 (15.9)	15 (17.1)	0.777
Finished	331 (84.1)	75 (82.9)	
Average length of session			0.606
<30 min	17 (4.3)	6 (6.6)	
30-60 min	286 (73.0)	63 (69.4)	
>60 min	89 (22.8)	21 (24.1)	
Perceived completion of therapy if finished			0.035
No	57 (17.3)	21 (28.0)	
Yes	273 (82.7)	54 (72.0)	
Helpfulness of therapy if finished			0.029
No	24 (9.0)	10 (19.2)	
Yes	247 (91.0)	44 (80.8)	

Although we cannot be certain which self-reported problem respondents were seeking help for because of the way the questions were asked in the Interview study, there was no significant difference in the proportion reporting completion of treatment between serving and ex-serving personnel who self-reported mental health problems and who were and were not comorbid for alcohol misuse (Table 21). There were also no significant differences in the average length of sessions for those who reported completing therapy or in the reasons for stopping therapy in those who did not complete, such as: not helping,

making things worse, or perceived as not necessary between serving and ex-serving personnel who self-reported an alcohol problem and met alcohol misuse criteria.

While overall completion of treatment did not differ, perceived completion and helpfulness of therapy were significantly lower among serving and ex-serving personnel who self-reported a mental health problem and met alcohol misuse criteria, compared to those who only self-reported a mental health problem ( $p<0.05$ ). We looked to see if this perception may be more common among those who felt they had an unresolved issue. Respondents who reported a resolved mental health problem and who met criteria for alcohol misuse (AUDIT $\geq$ 16) were significantly less likely to perceive their therapy as helpful compared to those reporting resolved mental health problems only (75.3% vs. 91.8%,  $p<0.05$ ).

### 6.3 Summary

- Nearly 60% of serving and ex-serving personnel who recognised a mental health problem had sought help for this issue, with no difference according to alcohol comorbidity or serving status.
- The most common source of help-seeking for mental health problems was primary health care services (GP/MO).
- Serving personnel who self-reported mental health problems and met alcohol misuse caseness (AUDIT $\geq$ 16) were significantly more likely to report using telephone or online services compared to those who did not meet alcohol misuse caseness; ex-serving personnel with self-reported mental health problems and alcohol misuse caseness were more likely to access 'other' forms of support than those with mental health problems only. Such 'other' forms of support may include non-medical sources such as friends, family, or charities providing support for alcohol/substance use.
- Help-seeking varied according to socio-demographic, military, health, and stressful or adverse life events:
  - Help-seeking for self-reported mental health problems was higher among women and serving and ex-serving personnel not in a relationship, regardless of alcohol comorbidity
  - Help-seeking among those with self-reported mental health problems only, was higher among those experiencing an increasing number of adverse life events, those meeting caseness for probable PTSD, and those with harmful patterns of alcohol use; experience of a combat role in Iraq or Afghanistan was associated with reduced help-seeking in this group.
  - Among serving and ex-serving personnel with self-reported mental health problems and comorbid alcohol misuse, help-seeking for mental health problems was higher for those reporting childhood antisocial behaviour.
- Perceived completion and helpfulness of therapy were significantly higher among serving and ex-serving personnel completing therapy who self-reported a mental health problem, only compared to those who also meet criteria for alcohol misuse.

## 6.4 Discussion

### 6.4a Proportion of help-seeking for self-reported mental health problems

As with self-reported alcohol problems, there was no significant difference in overall help-seeking for self-reported mental health problems according to serving status in the Cohort study - there was also no difference according to the presence or absence of alcohol problems. However, the use of different individual sources of support did vary. While help-seeking for mental health problems from primary health care services (GP/MO) did not differ if participants also met criteria for alcohol misuse, there were differences in some of the sources of support used. Serving personnel self-reporting mental health problems and endorsing alcohol comorbidity were more likely to report using telephone or online services compared to those who self-reported mental health problems only, possibly due to anticipated stigma due to the perceived impacts on their career, particularly if provided by the military as their employer [20]. In contrast, ex-serving personnel were more likely to use 'other' sources of support, which could include alcohol/substance misuse charities, friends, family or colleagues, due to reduced stigma in admitting to concerns about mental health once personnel have left Service.

### 6.4b The role of alcohol in help-seeking for self-reported mental health problems

Perceptions of treatment from the Interview study were also examined to determine if serving and ex-serving personnel with self-reported mental health problems had differing opinions of the support they had received if they also met alcohol misuse caseness (AUDIT $\geq$ 16). Among serving and ex-serving personnel who completed therapy, perceived completion and helpfulness of therapy were significantly lower among those who self-reported a mental health problem *and* met alcohol misuse caseness (AUDIT $\geq$ 16), compared to those who self-reported a mental health problem only. Further examination of the data suggests that this was due to poorer perceptions of received treatment among those who had resolved mental health problems - this may be because of the ongoing alcohol misuse issues. However, there were no significant differences according to the presence or absence of alcohol misuse in the reasons for stopping therapy among those who did not complete. While recent changes to NHS services allow for treatment of patients with alcohol and mental health comorbidities, this finding suggests serving and ex-serving personnel who complete treatment for mental health problems may not feel they receive appropriate treatment addressing both issues if they also have alcohol problems. Guidance has been developed to help support services and commissioning bodies in delivering care for those with alcohol and mental health comorbidity [84], however research has suggested that accessing integrated care remains problematic for this group, with a lack of joined-up care, stigma, poor funding and employee shortages all cited as explanations [85]. These perceptions should be explored further to understand what leads to this perception and whether additional sessions should be provided for such patients to ensure adequate time to address their multiple needs.

### 6.4c Factors associated with help-seeking for self-reported mental health problems

Help-seeking for self-reported mental health problems also differed across groups. Regardless of the presence or absence of alcohol misuse, help-seeking for mental health problems was higher among women compared to men, as commonly found in health research [13, 86, 87], and among those not in a relationship. Help-seeking was lower among those who had been in a combat role in contrast to previous studies [88, 89], possibly reflecting reduced help-seeking among those who make up the UK Army and Royal Marines combat arms [17]. Future research should examine this associations in a larger sample to determine if drivers of help-seeking for self-reported mental health problems are similar to those found for self-reported alcohol problems (see page 32). For example, does higher help-seeking for self-reported mental health problems result from a lack of informal care from spouses/partner who may have encouraged help-seeking or are this group accessing different forms of support.

Help-seeking for self-reported mental health problems *only* was associated with an increasing number of adverse life events, probable PTSD, and harmful patterns of alcohol use among serving and ex-serving personnel. Similar findings regarding greater help-seeking among respondents with greater life adversity are reported among problem gamblers [90], those with substance misuse problems [91], including alcohol [92, 93] and mental health issues [27-29, 94]), largely when there begin to be consequences for family life, employment or finances. There was also a suggestion that help-seeking may be greater among ex-serving personnel compared to serving (p=0.051). While this should be explored in larger samples to confirm the finding, it may reflect the anticipated stigma reported among military personnel about the potential impact on their career [26]. Among serving and ex-serving personnel self-reporting mental health problems who also had alcohol problems, help-seeking was higher among those reporting childhood anti-social behaviour, again possibly due to more complex needs. Services should therefore be aware that those accessing support for self-reported mental health problems may bring additional issues that will require holistic assessment and treatment.

# 7. OVERALL DISCUSSION

## 7.1 Main findings

### Study 1 and 2: Recognition of alcohol misuse problems.

A comprehensive review of published literature in military and non-military populations found that recognition among those who meet criteria for alcohol misuse was low, with less than half recognising an alcohol misuse problem (Study 1). We found no significant difference in the prevalence of recognition between military and non-military populations based on the prior literature.

Low recognition of alcohol misuse problems, as established by the review, was corroborated by findings in our secondary analysis of the KCMHR cohort data, in which approximately half of the serving and ex-serving personnel who met criteria for alcohol misuse recognised the problem (Study 2). The results suggested that alcohol misuse recognition was significantly influenced by health factors, alcohol behaviours and life experiences. Across all samples examined (serving or ex-serving personnel, and those with or without comorbid alcohol misuse and mental health problems), recognition was significantly higher among those who had experienced greater physical health or mental health problems, or greater alcohol misuse severity. Recognition was also significantly higher among those who had experienced adverse life events (e.g. divorce, accidents, financial problems, ever been arrested), although this was found only among serving personnel or personnel with comorbid alcohol and mental health problems. It is difficult to explain (and probably beyond the data available) why adverse life events did not play a role in recognition for ex-serving personnel or personnel with alcohol problems only. Although speculative, greater recognition when experiencing adverse life events among personnel with comorbid alcohol and mental health problems could reflect greater awareness of alcohol problems among those who had sought help, or were forced to seek help, for multiple problems they were experiencing which required them to address their alcohol intake.

Alcohol misuse recognition was also significantly influenced by socio-demographic and military factors. In the overall sample, recognition was significantly less likely among those with higher educational attainment or those currently in a relationship. Serving status did not significantly impact on the prevalence of alcohol misuse recognition after accounting for age and gender. Serving personnel were significantly more likely to recognise alcohol misuse problems if they were older, had children, or if they had deployed to Iraq or Afghanistan; these factors did not play a role in influencing alcohol misuse recognition for ex-serving personnel. Ex-serving personnel were significantly less likely to recognise alcohol misuse problems if they had higher educational attainment, or if they were women. In respondents who had comorbid

alcohol misuse and mental health problems, gender influenced recognition of alcohol misuse (i.e. it was less likely among women), but gender did not play a role in recognition where respondents did not meet criteria for comorbid alcohol misuse and mental health problems. In the latter group, recognition was significantly less likely among those with higher educational attainment.

### Study 3 and 4: Help-seeking for self-reported alcohol and mental health problems

The overall proportion of help-seeking for self-reported alcohol problems was low among serving and ex-serving personnel in the Cohort study but comparable to that reported in previous studies of UK and US military personnel [12, 13, 18]. While research suggests alcohol misuse may be decreasing over time among UK serving and ex-serving personnel [7], these findings highlight the need for a greater focus on encouraging help-seeking for this problem within the military community. Such endeavours have been shown to be successful for related problems, such as significant increases in the numbers of military personnel accessing support for mental health problems in response to mental health stigma-reduction campaigns [95, 96].

Ex-serving personnel did not differ from serving personnel in terms of the overall proportion of help-seeking for alcohol misuse problems in either the Cohort or Interview study. However, there were differences in the sources serving and ex-serving personnel with self-reported alcohol problems and mental health comorbidities chose to use in the Cohort study, with hospital doctors more commonly used by those with endorsing both issues. Respondents with self-reported alcohol problems in the Interview study showed greater help-seeking compared to the cohort – but this is to be expected given Interview study participants are taken from a sample of known help-seekers. Unlike the Cohort study, informal support from family, friends and colleagues was the most commonly accessed source of help.

As with the findings on recognition, help-seeking in the Cohort study was greater among more vulnerable serving and ex-serving personnel, such as those with mental health problems, those experiencing negative life and childhood events, as well as those not in a relationship who may lack the informal care provide by spouses or partners. Services should be aware of the needed to ensure holistic, wrap-around provision of care to support those accessing their services as a result of these increased adversities, increasingly difficult under cuts to health services.

While we looked at how the presence of an alcohol problem could impact on help-seeking for a mental health problem in the Cohort study, we did not find a difference in overall help-seeking for self-

reported mental health problems among serving and ex-serving personnel where alcohol misuse (AUDIT $\geq$ 16) was present or absent. Again, individual sources of support varied, with greater help-seeking from 'other' sources for serving and ex-serving personnel self-reporting mental health problems and meeting alcohol misuse criteria (AUDIT $\geq$ 16). Perceptions of therapy also differed in the presence of alcohol comorbidity, with respondents who self-reported a mental health problem and met alcohol misuse criteria less likely to report that they had found the therapy helpful for their problems. This suggests that current therapeutic services may not be fully meeting the needs of those with more complex problems and that staff providing mental health services may not always have the appropriate training to provide additional or integrated support for comorbid alcohol problems.

## 7.2 Strengths and limitations

Together, these studies address a number of gaps in the literature regarding recognition of, and help-seeking for, alcohol problems among serving and ex-serving military populations. It also provides evidence to understand how alcohol misuse influences help-seeking for self-reported mental health problems.

A major strength of this study was the use of a large cohort study of UK military personnel. This allows us to provide robust estimates of the proportion of serving and ex-serving who recognise an alcohol misuse problem and then go on to seek help, as well as examine how this might differ across different groups. Data from the Interview study allowed us to examine more specific details of help-seeking among serving and ex-serving personnel who recognise a recent stress, emotional or mental health problem.

There are some limitations that should be considered. While the meta-analysis provides a summary of the existing findings on recognition of alcohol misuse in the literature, there are considerable differences in sample type and the measures of alcohol misuse and recognition used in the included studies. This means that the meta-analysis summarises information provided by different groups of people, where data has been collected in various ways, which in turn might reduce the representativeness of the pooled prevalence. Non-military studies from the US were over-represented and it is evident that there is a dearth of research around alcohol misuse recognition in the UK in both non-military and military samples. There was also a focus on US studies of civilians which should be considered given differences in alcohol use between the US and other countries [97].

The KCMHR Cohort study was established in 2003 to examine the health and well-being of UK military personnel deployed to Iraq, with subsequent phases including personnel deployed to Afghanistan. Findings may therefore not be representative of personnel deployed on other operational missions. The Interview study is comprised of a sub-sample from the cohort. While this data provides a more detailed understanding of help-seeking, care should be taken in interpreting the findings against the larger and more representative study. Both datasets are based on cross-sectional surveys measuring outcomes

and variables at one point in time. As a result, associations can be identified but causality cannot be proved. Variables from prior phases of the cohort were used to account for changing alcohol behaviour over time but this was limited in both studies. All data is self-reported, and it is possible that some respondents under-reported perceived alcohol problems and alcohol intake [98] – a common issue in alcohol research. Some analyses and significant associations were conducted on small sample sizes and therefore have low statistical power. Caution should be applied to such findings until they are able to be verified in larger samples.

Respondents in the Cohort and Interview studies were asked different questions about sources of help-seeking for self-reported alcohol misuse and mental health problems, therefore direct comparisons are limited. In particular, the Interview study included categories for informal support from family, family or colleagues which was missing from the response options in the Cohort study.

## 8. CONCLUSION

The findings of this study show that, among serving and ex-serving personnel in the UK military, recognition of alcohol misuse problems, and help-seeking for self-reported alcohol problems, remains low. The findings demonstrate the ongoing need for additional support to aid recognition of alcohol misuse problems, signpost to appropriate services for alcohol problems both within and outside the military, and campaigns to reduce stigma and encourage help-seeking. Serving status did not affect the proportion of recognition alcohol misuse or help-seeking for this issue. Recognition of alcohol misuse problems and help-seeking for self-reported alcohol problems were higher among those experiencing additional stressors. Perceptions of the helpfulness and completeness of therapy were significantly lower among those self-reporting a mental health problem who were also experiencing an alcohol problem. Further investigation found this was due to poorer attitudes towards therapy among those with resolved mental health issues, suggesting current therapeutic services may not be adequately addressing both issues among serving and ex-serving personnel clientele.

## 9. RECOMMENDATIONS

Overall, our results suggest that recognition of alcohol misuse problems and help-seeking for these problems in the UK military is low. Our work has shown that alcohol problems are only likely to be recognised once they become more severe. This is concerning given that problems will be more treatable before the severity increases and it is better to provide intervention before problems escalate. Our findings suggest that people, including serving and ex-serving personnel, may not recognise or seek help for an alcohol misuse problem until it impacts on their home life, their job, finances and potentially on their housing situation. All of these negative consequences may be avoidable if we can improve support for both hazardous and harmful drinking behaviours, reduce stigma and encourage help-seeking and healthy alcohol consumption.

We identified a number of groups within serving and ex-serving military populations who seemed less likely to both recognise and seek help for alcohol problems. Recognition was significantly lower in those who may not have yet experienced the harms of their drinking, such as those of a younger age, those who were more highly educated, and those in better general health. Individuals who had experienced stressful or adverse life events were more likely to both recognise and seek help for alcohol problems, suggesting that more support could be in place for health and personal issues before maladaptive coping strategies such as using alcohol progress into problems and have wide-reaching consequences. This work also highlights that social norms around when heavy drinking 'actually becomes a problem' may still be preventing people from getting help when they need it, particularly in a military and post-military context. Research has shown that such normative attitudes to alcohol can persist for long periods after military Service [6, 7].

A further focus of this work was around understanding how help-seeking and perceptions of treatment for post-traumatic stress disorder (PTSD) or a common mental disorder (CMD) differ in serving and ex-serving personnel who are also misusing alcohol. Our findings seem to suggest that individuals with this comorbidity do not believe that they have gained the same benefits from treatment, which aligns with findings from the general population practitioners regarding perceived difficulties successfully integrating mental health and alcohol treatment services [85].

Below we present a number of implications and recommendations that might increase awareness of alcohol problems and help-seeking.

### 1. Changing the conversation about alcohol in the military context

- We would encourage a change of language around alcohol within serving and ex-serving military communities to move away from the

'alcoholic' label and emphasise that there is a spectrum of alcohol problems including problems of milder severity (e.g. hazardous or harmful drinking). This may encourage serving and ex-serving personnel to consider alcohol misuse in a less black and white way if such problems are commonly discussed. Future research could explore how such an approach may assist help-seeking and recognition.

- Alcohol misuse is a highly stigmatised health problem [43] and stigmatisation of those affected is common even among health professionals [99]. Many people in the UK, including those in the military, are also not aware of drinking limits for hazardous drinking [100] and may more easily recognise more severe manifestations of problem drinking. Greater discussion of how alcohol is used to cope with difficult life events or the impact of alcohol on wider family and home life could help reduce stigma by increasing awareness of ways in which these challenges can be supported within and outside the military. More information about what hazardous and harmful drinking looks like and the signs that both chains of command and medical professionals can be looking out for should also be provided.
- Interventions like 'Have a Word' [101] should be encouraged to support more informal conversations about cutting down before problems become too bad and such interventions should be present throughout military medical services.
- We can also change the conversation if we promote more positive role models of people talking about previous alcohol problems and the benefits they gained from reducing their alcohol consumption, including to their career while in Service.

### 2. Increase brief alcohol intervention (BAIs) programmes to target all, not just those perceived to have greatest need

- Study 2 found that individuals who are younger, have higher educational attainment, and who have better general health are less likely to recognise an alcohol misuse problem, most likely explained by their broader self-perceptions and general stereotypes about who may be at risk of developing an alcohol problem. This shows the need for broader screening programmes for alcohol misuse rather than focusing on those perceived as being at greater risk.
- Brief alcohol interventions (BAIs) usually include provision of feedback for one's own drinking and simple, clear advice for cutting down. These can be useful in promoting recognition of alcohol misuse problems and encouraging reduction of consumption [21].
- There is currently a lack of UK research on the effectiveness of screening and brief interventions for alcohol misuse in military populations [77, 102]. However, it is important to ensure that appropriate support is in place after alcohol screening. Electronic interventions, such as 'Information about Drinking for Ex-serving

personnel' (InDEx (now Drinks;Ration);[79]), have shown positive outcomes in feasibility study and have been perceived as acceptable by serving personnel. This is in line with general population data showing positive outcomes from these types of interventions [21]. Electronic interventions might provide appropriate support for those who do not opt for formal help-seeking and may prefer something more discrete.

### 3. Support for families and wider support networks in supporting and advising serving and ex-serving personnel on alcohol problems

- Informal support from family, friends and colleagues can play an important role in supporting those with alcohol problems, as shown in the findings from the Interview study (Table 15). However, it is important to ensure that appropriate skills are developed in this support group to help enable recognition and encourage or facilitate help-seeking for alcohol problems.
- The potential adaptation of family-focused interventions, such as FOCUS [81] or CRAFT [80], should be explored in a UK context to assist friends and family in providing this support.
- Any programme should include provision of support for single serving and ex-serving personnel given the increased support sought from formal medical services in these groups, potentially highlighting a lack of informal support being available to them.

### 4. Ensure that there is better publicity of the available treatment services for alcohol problems

- As well as a broader need for more substance use services in the UK [103], knowledge about currently available support could be improved as low uptake of treatment in individuals recognising an alcohol problem may be due to a lack of awareness about where to seek help and if their issue is severe enough to warrant intervention.
- Understanding about the available support should focus on less intensive treatments for alcohol problems, such as BAIs and outpatient treatments like cognitive behavioural therapy which have high success rates.
- Given the higher rates of alcohol misuse among the military, it may be that residential treatments are more appropriate to treat the severity of misuse in this population. However, there is little current research focusing on this form of specific intervention for the military or on how effective such programmes may be (see Appendix 1). Further research is needed.

### 5. Need for improved and wider access to treatment for alcohol problems

- Any recommendations to encourage recognition of and help-seeking for alcohol misuse must be supported by ensuring appropriate services are available for those coming forward.
- There has been a noticeable reduction in available services and public health budgets for supporting people with substance use issues, including alcohol problems [103, 104]. This is likely to also affect those who have left the military given that many alcohol and substance use treatment services are not specific to ex-serving

populations (e.g. Addaction and Adfam) and specific residential services for ex-Service personnel have limited capacity.

- The perception that there is limited availability of services might discourage people from disclosing alcohol problems and seeking help, especially among those perceiving their problems to be less severe (e.g. thinking that someone with worse problems may be in greater need of the available places).

### 6. Aligning alcohol and mental health treatments

- Findings from Study 3 suggest that current mental health therapies may not be as beneficial to those who self-report mental health problems and have comorbid alcohol misuse problems.
- Public Health England (PHE) has developed guidance [84] on provision of services for individuals with co-occurring mental health and alcohol/drug use conditions, with a focus on ensuring that staff providing treatment for one condition have also received some training in relation to the other. We need to ensure that this guidance is extended to military-specific settings and into ex-serving personnel-specific charities to ensure that appropriate care is provided.
- Following the previous comment about PHE guidance, appropriate training about mental health and alcohol comorbidity should be given to those providing treatment as research shows staff may not feel qualified to advise on health problems outside their remit [85]. This should include information on military culture to ensure cultural capacity within services.

### 7. Future research

Additional research should be conducted to address the following questions:

- Understanding why increasing alcohol severity is associated with reduced help-seeking.
- Understanding the psychological mechanisms behind the finding that recognition of alcohol misuse is more likely in those experiencing greater physical and mental health problems, and more adverse life events.
- Exploring pathways into treatment to understand why some services are preferred over others.
- Understanding why those with alcohol and mental health comorbidities have poorer perceptions of treatment and identifying what would benefit their needs.
- Understanding more about the effectiveness of specific alcohol treatments, with a focus on residential treatment services, in UK ex-serving personnel.

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# APPENDIX 1:

## AN INTERNATIONAL NARRATIVE REVIEW OF RESIDENTIAL ALCOHOL TREATMENT FOR SERVING AND EX-SERVING MILITARY PERSONNEL

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### Abstract

#### Background

Alcohol problems are more prevalent among serving and ex-serving personnel compared to the general population. Residential rehabilitation for alcohol problems offers a stable, live-in environment to provide treatment, including for those with more complex problems (e.g. housing, mental health). This review aims to collate the research on residential treatment for serving and ex-serving personnel.

#### Method

A narrative review was conducted by searching five electronic databases to identify relevant studies that reported the characteristics of serving and ex-serving personnel in residential treatment, post-treatment drinking and mental health outcomes and receipt of aftercare services.

#### Results

Nine papers were identified, four of which were drawn from one study. Most of the papers were conducted in the US (n = 8) and one study was conducted in Canada. No studies using UK data or randomised control trials were identified. Approximately one third of personnel in residential treatment for alcohol problems had a mental health comorbidity. Following residential treatment, significant reductions in drinking and related problems were reported, but numbers attending aftercare programmes supporting transition out of treatment appeared to be low.

#### Conclusions

This review highlights a lack of research in relation to serving and ex-serving personnel and residential treatment for alcohol problems, especially in the UK. It was not possible to formally evaluate the effectiveness of residential treatment for serving and ex-serving personnel given that no relevant randomised controlled trials were identified. Future research is needed within the UK, to evaluate effectiveness and explore harm reduction approaches. Studies should be more transparent with regards to describing residential treatment programmes and identifying sub-groups who may benefit most from residential rather than outpatient treatment.

### 1. Introduction

Alcohol use disorders (AUDs), characterised by risky drinking and negative emotions in the absence of alcohol (National Institute on Alcohol Abuse and Alcoholism, NIAAA, n.d.), are reported by approximately ten percent of United States (US) (Seal et al, 2011) and UK serving and ex-serving personnel (Stevelink et al., 2018) – collectively described as “(ex-)serving personnel” throughout this paper. This is higher than in the general population (Murphy & Turgoose, 2019).

The treatment landscape for alcohol and substance use services is complex. For example, in the UK, (ex-)serving personnel can access treatment for alcohol problems through Defence Medical Services (who refer on to alcohol and substance misuse charities, such as Addaction), and via National Health Service (NHS) services that offer priority services to ex-serving personnel (NHS, 2018). Substance abuse treatment programmes specifically tailored to (ex-)serving personnel are also available in the UK and internationally, which may use trauma-focused therapies to address deployment-related mental health problems and the impact on alcohol use (Combat Stress, n.d.). (Ex-) serving personnel in the US are eligible for subsidised health care, providing they meet certain requirements, and may access treatment for alcohol problems at facilities affiliated with the US Department of Veterans Affairs (VA). These include detoxification services, outpatient treatment and residential care (VA, 2015).

Residential programmes operate within supervised accommodation to help patients reduce their drinking or achieve abstinence, improve their quality of life, prevent relapse, and provide referrals to continuing care services in non-hospital facilities (Burkinshaw et al, 2017; National Institute for Health and Clinical Excellence, NICE, 2011). The level of treatment intensity varies across programmes, but should, in theory, match the severity of the alcohol problem (Chen, Barnett, Sempel & Timko, 2006). Hence, residential treatment is normally recommended to those with severe alcohol or polysubstance problems (De Leon, Melnick & Cleland, 2008; NICE, 2011). Typically, residential alcohol treatment programmes last approximately twelve weeks in the UK (Alcohol Change UK, n.d.), but range considerably from short (15-30 days) to long stays (>90 days) across VA facilities (Harris, Kivlahan, Barnett & Finney, 2012).

Residential treatment programmes are delivered in an alcohol- and drug-free environment but vary in their approach to recovery. Many

are based on cognitive-behavioural (CB) principles, for example Self-Management and Recovery Training (UK Smart Recovery, n.d.) and/or the 12 “steps” of recovery addressed in faith-based self-help groups like Alcoholics Anonymous (AA; Moggi, Giovanoli, Buri, Moos & Moos, 2010). AA and other 12-step groups focus on abstinence as a main goal, although this may not always be realistic or achievable. Harm reduction approaches instead aim to reduce negative alcohol-related consequences without expecting total abstinence, so CB principles may be used to identify individualised goals and prevent relapse (Logan & Marlatt, 2010). Both 12-step and CB Programmes may include additional treatment components such as individual and group therapies, relapse prevention, training to improve coping strategies and social skills, mindfulness, aversion therapy, and pharmacological treatments (Raistrick et al, 2006; Witkiewitz, Litten & Leggio, 2019).

A review conducted by Reif and colleagues (2014), including randomised controlled trials (RCTs) and quasi-experimental studies, among general population samples, found moderate evidence for the effectiveness of residential treatment services in reducing substance use. Despite noting methodological flaws across the included studies, the outcomes of residential treatment appeared to be comparable to or better than those of other treatment modalities (e.g. outpatient). However, the cost-effectiveness of residential treatment remains a contentious issue, costing more than outpatient treatments, which limits the availability of treatment (Luty, 2015).

Following treatment, attendance at aftercare services is important for maintaining long-term abstinence or reductions in alcohol use (Gossop, Stewart & Marsden, 2008). Aftercare services may include outpatient care or 12-step support groups, which help to prevent relapse after discharge. However, many individuals fail to make contact with these services and have difficulty transitioning out of residential treatment due to unmet basic needs (i.e., financial security, housing, employment) which may not be resolved at the end of treatment (Manuel et al, 2017). It is crucial to consider how personnel transition out of these facilities as relapse can reverse progress towards recovery.

While research among the general population has found good evidence for effectiveness of residential treatment programmes, it is not clear if the same applies to military samples. Help-seeking for alcohol problems is low (see main report) among (ex-)serving personnel (and may be lower than for help seeking for mental health problems), due to reasons including stigma, for example being perceived as weak (Sharp et al, 2015), and structural barriers, such as transportation (Hom, Stanley, Schneider & Joiner, 2017). (Ex-)serving personnel with more severe alcohol problems are likely to face more psychosocial problems and barriers to help-seeking as a result of their drinking (see main report).

The current study aims to collate the published research on residential alcohol treatment among (ex-)serving personnel. Specifically, the review focuses on three key areas:

- Characteristics of those in residential treatment programmes
- Drinking and mental health outcomes of residential treatment
- Transition out of residential treatment.

## 2. Method

### 2.1. Search strategy and study selection

A database search of PubMed, ScienceDirect, Scopus, PsycINFO and Web of Science was carried out using a combination of the keywords: “alcohol”, “treatment”, “rehabilitation”, “residential”, “military”, “veterans”, “army”, “armed forces”, “soldiers”, “navy”, “air force”, “service personnel” and “ex-servi” The search was restricted to papers published in English between January 2000 and July 2019 to enable coverage of almost two decades, including – but not limited to – both the Iraq and Afghanistan conflicts. Although this review focused primarily on residential treatment for AUD, studies were included if they investigated (ex-)military personnel in treatment for AUD or both AUD and drug use disorders (DUD). This is because alcohol and drug problems are highly comorbid, and many services will offer treatment for both in parallel (Bhalla, Stefanovics & Rosenheck, 2017).

Eligibility was dependent on meeting the inclusion criteria as follows:

- The paper refers to (ex-)serving personnel that have engaged in residential treatment for alcohol problems. Alternatively, the treatment setting is a residential treatment facility for (ex-)serving personnel (and, in some circumstances, their dependents in the case of Veterans Affairs [VA] centres).
- >75% of the sample must have an alcohol problem (this may include personnel with other substance use problems)

Papers were excluded if they met any of the following criteria:

- Case studies and studies in which the sample size is <100 to exclude small samples that are not representative of personnel in residential treatment for alcohol problems
- Samples consisting mostly (>50%) of adolescents and/or students (aged <21, as 21 is the legal drinking age in the US)
- Does not report information relevant to residential treatment for alcohol problems,
- In the case of dually diagnosed personnel, treatment is primarily for comorbid psychiatric conditions besides AUD or other substance abuse issues
- The entire sample has abuse or dependence of another drug besides alcohol (e.g. 100% opioid users)
- Book chapters, literature reviews and dissertations

Papers were grouped to address each of the three aims. In addition to the criteria stated above, studies must have also reported information on at least one of the key outcomes of interest.

### 2.2. Data extraction

The following data was extracted from studies eligible for inclusion in the review: citation content, sample characteristics and recruitment strategy, information about treatment modalities and components, and information relating to the outcomes of interest (characteristics of personnel, drinking and mental health outcomes of residential treatment, transition out of/aftercare following residential treatment).

## 3. Results

### 3.1. Overview of search results

The database search identified 2,364 articles, of which 215 duplicates

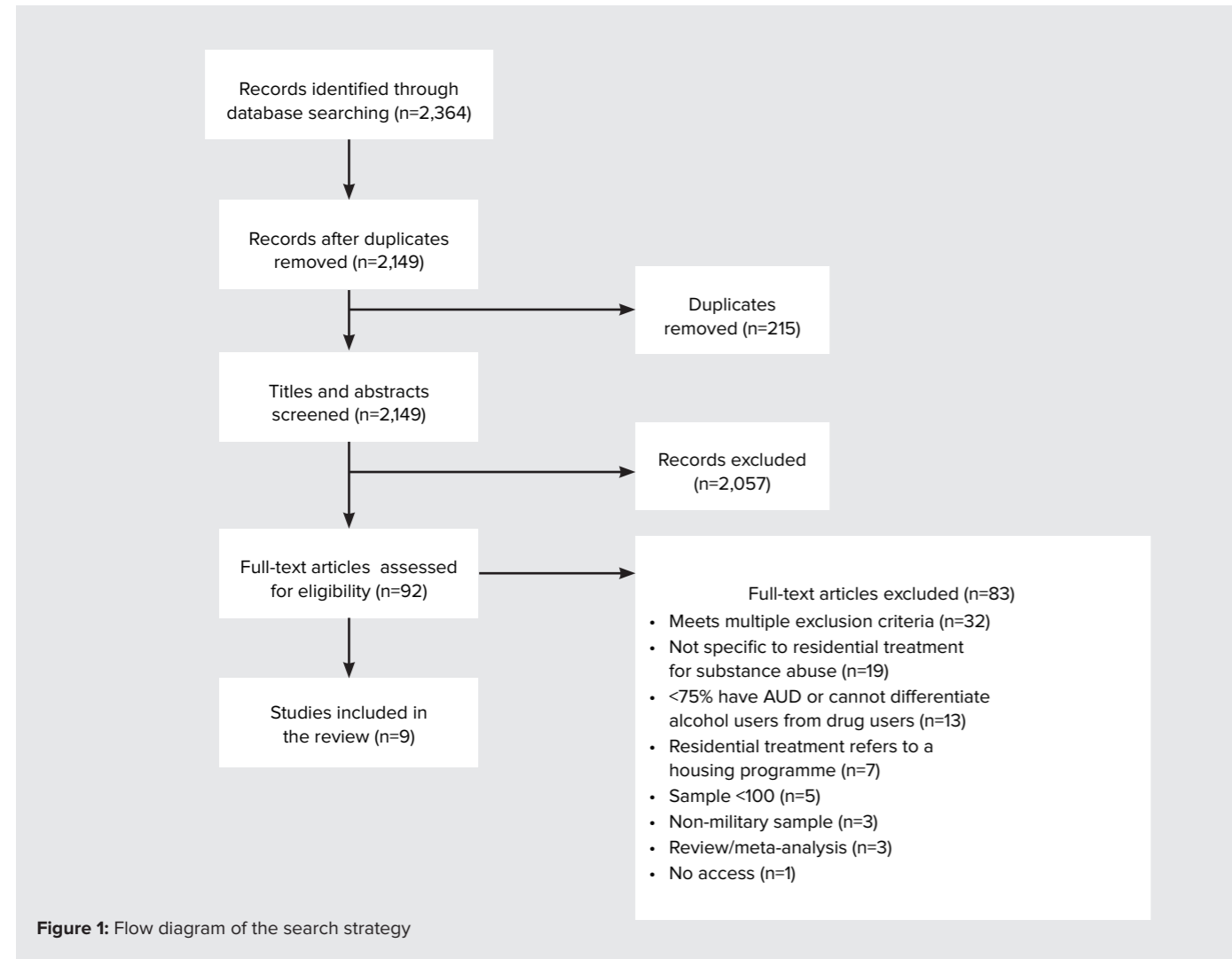


Figure 1: Flow diagram of the search strategy

were removed. Altogether, 2,149 titles and abstracts were screened, and 92 were kept for full-text screening. A further 83 were excluded due to the pre-defined criteria (Figure 1).

A total of 9 papers were identified as eligible for inclusion. Eight papers were based on US data (Boden & Moos, 2009; Edens & Willoughby, 2000; Haller et al, 2016; Ilgen, Tiet & Moos, 2004; Johnson, Finney & Moos, 2006; McKellar, Harris & Moos, 2006; Mooney et al, 2014; Schaefer, Ingudomnukul, Harris & Cronkite, 2005) and one study was conducted in Canada (Gavrysh, Arbour, Hambley & Sivagnanasundaram, 2016). Four papers (Boden & Moos, 2009; Ilgen et al, 2004; Johnson et al, 2006; McKellar et al, 2006) were based on the same dataset used by Ouimette, Finney & Moos (1997), but were included as they reported on different time points/follow ups or contributed different outcome data of interest to the review (but they are summarised collectively in tables 1-3). Two cross-sectional or retrospective (e.g. using medical records) studies (Haller et al, 2016; Mooney et al, 2014) and seven longitudinal papers were included (with average follow-up at 3 years and 7 months, ranging from 6 months

post-discharge [Gavrysh et al, 2016] to 5 years [Boden & Moos, 2009;

The mean sample size was 1,335 participants (range = 108 [Mooney et al, 2014] – 3,397 [McKellar et al, 2006]). The four papers based on Ouimette et al, 1997 consisted of male personnel only (Boden & Moos, 2009; Ilgen et al, 2004; Johnson et al, 2006; McKellar et al, 2006), with the remaining five studies using mixed-gender samples reflecting the typical demographic of U.S. active duty personnel (14.4% female, Department of Defense, 2010) (average = 8.42%, range = 1% [Eden et al, 2005] – 21% [Mooney et al, 2014]). Information relating to residential treatment for military (ex-)serving populations with alcohol problems was extracted from eight papers based in centres affiliated with the VA, including one study based in a VA Canada facility, and one study was conducted in a military-specific residential treatment centre (Mooney et al, 2014). The eight papers that used samples identified from VA programmes may have included a proportion of non-military personnel as some military dependents (i.e., spouses, children) qualify for VA health care benefits (VA, 2019b). However, the available data did not indicate the ratio of (ex-)serving personnel to civilian patients.

The residential treatment settings described in the reviewed papers ranged from 22- (Mooney et al, 2014) to 70-bed facilities (Edens & Willoughby, 2000). Programme duration varied depending on the type of facility and treatments offered, although residential treatment programmes often lasted fewer than 30 days (Boden & Moos, 2009; McKellar et al, 2006; Mooney et al, 2014; Schaefer et al, 2005).

**3.2. Characteristics of personnel included and overview of treatment programme (see table 1)**

The majority of personnel in residential treatment for alcohol problems were male and middle-aged. (Ex-)serving personnel in residential treatment were significantly more likely to be of white ethnicity compared to those in outpatient treatment (Haller et al, 2016; Schaefer et al, 2005). Across the four papers based on the Ouimette et al (1997)

Table 1 – Study details, characteristics of personnel in treatment and overview of treatment programme

Reference	Country	Study design	Sample	n	Age (years)	% male	% with an alcohol problem	% employed	Mental health comorbidity	Programme length and average length of stay	Treatment content/modality
Boden & Moos (2009)	USA	Longitudinal (baseline, 1- and 5- years)	Detoxified alcohol-dependent male veterans that sought treatment at 1 of 15 residential treatment programmes (VA)	3,048 (the sample size varied from 1,873 to 3,397 across the 4 papers based on Ouimette et al, 1997)	Mental health comorbidity: 43.8 (SD = 8.6) SUD-only: 43.6 (SD = 10.3)	100%	100%	Mental health comorbidity: 19% SUD-only: 24%	28% (64% mood disorder, 46% anxiety disorder, 26% psychotic disorder)	Programme length: 21-28 days	<ul style="list-style-type: none"> <li>Programmes were multidisciplinary and had a 12-step or CB orientation.</li> <li>12-step programmes were focused on 12-step meetings and materials, progressing through the 'steps' and writing an autobiography, while treatment encouraged abstinence as a goal.</li> <li>Cognitive-behavioural (CB) programmes were more focused on developing cognitive and behavioural skills to enable (ex-)serving personnel to more effectively cope in stressful situations and avoid relapse. Treatment aimed to improve self-efficacy and alter (ex-)serving personnel substance-related expectations.</li> <li>Individual and group therapy provided.</li> <li>Referrals for continuing care and self-help groups provided.</li> </ul>
Edens & Willoughby (2000)	USA	Cross-sectional (patient records, post-discharge)	Alcohol-dependent veterans seeking residential alcohol treatment (VA domiciliary)	162	49 (SD = 9.10)	99%	100%	-	-	-Average length of stay: Completers: 80.26 days (SD = 21.81) Non-completers: 40.23 days (SD = 31.08)	<ul style="list-style-type: none"> <li>Not provided</li> </ul>
Gavrysh et al (2016)	Canada	Longitudinal (treatment entry and 6-months post-treatment)	Service members (n = 62) and civilians (n = 206) in the same residential treatment programme (Canadian Forces + Veterans Affairs Canada, VAC)	268	Military: 38.2 (SD = 8.70) Civilians: 41.8 (SD = 11.3)	Military: 87.1% Civilians: 70.9%	Military: 86.9% Civilians: 75.2%	100% (excluded if not employed)	-	Programme length: 30-80 days (Average 37 days)	<ul style="list-style-type: none"> <li>Intensive and holistic, abstinence-oriented programme.</li> <li>Medical services, educational lectures, group therapy, relapse prevention, nutrition, meditation, physical exercise, access to mutual self-help groups.</li> <li>After discharge, personnel are offered one year of outpatient aftercare (weekly).</li> </ul>
Haller et al (2016)	USA	Cross-sectional (baseline in first week of treatment)	Veterans that received treatment for both PTSD and AUD (VA)	179	Outpatients: 40.10 (SD = 13.34) Residential: 40.32 (SD = 11.95)	Outpatients: 93.4% Residential: 94.8%	100%	-	100% (AUD + PTSD)	Not reported	<ul style="list-style-type: none"> <li>Combat-related PTSD track of a residential SUD treatment programme</li> </ul>
Mooney et al (2014)	USA	Retrospective cohort study	Substance-dependent service members that had previously failed SUD treatment	108	307 (range = 18-57)	79%	80%	-	34% (Of those with alcohol dependence: 22% depression, 8% mood disorder, 6% anxiety, 2% full PTSD criteria)	Programme length: 28 days	<ul style="list-style-type: none"> <li>Psychological assessment at intake and discharge.</li> <li>Multidisciplinary team, including e.g. psychiatrist, clinical psychologist, acupuncturist, occupational therapist. Military-style regime that may involve waking at 4:50am, physical training, group therapy, relaxation classes, medication, and AA meetings.</li> </ul>
Schaefer et al (2005)	USA	Longitudinal (intake, 6 months post-discharge)	(Ex-)serving personnel with SUD admitted from inpatient/residential and outpatient programs (VA)	878	47 (SD = 8)	98%	91%	-	36%	Minimum 14 days of treatment (median 22 days)	<ul style="list-style-type: none"> <li>Not reported</li> </ul>

dataset, approximately three quarters of ex-serving personnel were unemployed at treatment entry (e.g. Boden & Moos, 2009).

Military personnel and civilians enrolled in the same residential treatment programme did not differ from each other in terms of quantity of alcohol consumed, but military personnel reported fewer drinking days than civilians (Gavrysh et al, 2016). (Ex-)serving personnel in residential treatment programmes had more severe substance use problems than those in outpatient programmes (Haller et al, 2016; McKellar et al, 2006).

Many personnel in residential treatment had both an alcohol problem and a drug problem, with two papers reporting that more than half of those in treatment met criteria for both (McKellar et al, 2006; Schaefer et al, 2005). Approximately one third of (ex-) serving personnel in residential treatment had a comorbid mental health condition (28%, Boden & Moos, 2009; 36%, Ilgen et al, 2004; 34%, Mooney et al, 2014; 34%, Schaefer et al, 2005). (Ex-)serving personnel in residential treatment programmes were more likely to have a mental health comorbidity compared to those in outpatient treatment (Haller et al, 2016; Schaefer et al, 2005).

Seven papers provided an overview of the treatment programme, with the majority involving multidisciplinary programmes, but full details of the treatment approach and psychological therapies applied was not always detailed. The papers providing data from the same Ouimette et al (1997) study reviewed 15 programmes which involved either 12-step and CB approaches (Boden & Moos, 2009; Ilgen et al, 2004; Johnson et al, 2006; McKellar et al, 2006).

### 3.3. Drinking and mental health outcomes of residential treatment for alcohol problems

Most studies used before and after comparisons to determine treatment effectiveness (Table 2). When reported, treatment completion rates were encouraging (87%, Mooney et al, 2014; 94%, McKellar et al, 2006), and most personnel decreased their alcohol consumption and substance-related problems by the time of follow-up assessments (Boden & Moos, 2009; Gavrysh et al, 2016; Ilgen et al, 2004; McKellar et al, 2006). Boden & Moos (2009) reported that the maximum quantity of alcohol drunk in a single day by ex-serving personnel without mental health comorbidity was 20.5oz at intake, which was reduced to 8.5oz at the 1-year follow-up and then 7.1oz at the 5-year follow-up. Another study reported that personnel drank on approximately 84.5 days within the 6 months prior to treatment

**Table 2 – Findings from individual studies regarding outcomes of residential treatment for alcohol problems**

Study	Treatment	Key findings
*Boden & Moos (2009)	12-step or CB	<ul style="list-style-type: none"> <li>Boden &amp; Moos (2009) <ul style="list-style-type: none"> <li>(Ex-)serving personnel with mental health comorbidity reported significantly lower treatment satisfaction than (ex-)serving personnel without mental health comorbidity, (<math>p &lt; .01</math>).</li> <li>(Ex-)serving personnel with and without mental health comorbidity did not differ significantly on alcohol consumption (max. intake on one day, past 3 months) at 1- (8.9 oz vs. 8.5 oz) or 5-year (7.7 oz vs. 7.1 oz) follow-up assessments.</li> </ul> </li> <li>McKellar et al (2006) <ul style="list-style-type: none"> <li>Dropouts did not differ significantly from treatment completers in terms of substance-related problems at 5 years (6.0 vs. 5.9)</li> <li>Higher pre-treatment substance-related problems (frequency/severity) and mental health symptoms associated with greater improvements over time (<math>p &lt; .001</math>).</li> </ul> </li> <li>Ilgen et al (2004) <ul style="list-style-type: none"> <li>Controlling for mental health comorbidity at intake, there was a significant overall decrease in quantity (<math>F = 145.06, p &lt; .01</math>) and frequency (<math>F = 432.05, p &lt; .01</math>) of alcohol use between intake, discharge, 1-year and 5-year follow-up assessments.</li> </ul> </li> <li>Quimette et al (1997) <ul style="list-style-type: none"> <li>(Ex-)serving personnel in 12-step programmes were 1.54 times (95% CI, 1.24-1.92) more likely to be abstinent than (ex-)serving personnel in CB programmes</li> </ul> </li> </ul>
Edens & Willoughby (2000)	Not reported	<ul style="list-style-type: none"> <li>Treatment completers had significantly longer stays than non-completers (mean length of stay: 80.26 days vs. 40.23 days, <math>p &lt; .001</math>), highlighting an average length of stay longer than a month in non-completers.</li> </ul>
Gavrysh et al (2016)	Holistic, abstinence-oriented	<ul style="list-style-type: none"> <li>Both military and civilian participants significantly reduced their alcohol (<math>p &lt; .001</math>) and drug use (<math>p &lt; .001</math>) between 6 months pre-treatment and 6-month follow-up.</li> <li>Personnel reduced the number of drinking days they had between 6 months pre-treatment and 6 months post-treatment (84.5 vs. 6.44), as well as the number of drinks they had per day (8.31 vs. 2.49).</li> </ul>
Mooney et al (2014)	Military-specific treatment based on 12-step practices and CB principles	<ul style="list-style-type: none"> <li>87% completed treatment.</li> <li>Relapse rates: <ul style="list-style-type: none"> <li>By 90 days: 29%</li> <li>By 180 days: 45%</li> <li>By 360 days: 78%</li> </ul> </li> </ul>

compared to only 6.44 days in the 6 months after treatment, while the average number of drinks they consumed per day decreased from 8.31 to 2.49 across the same timeframe (Gavrysh et al, 2016). Papers that used the Ouimette et al (1997) dataset reported that improvements in the frequency and quantity of alcohol use/substance-related problems were maintained for up to five years (Boden & Moos, 2009; Ilgen et al, 2004; McKellar et al, 2006). In comparison with CB-oriented programmes, (ex-)serving personnel enrolled in 12-step programmes were more likely to have an abstinence goal by the end of treatment, in addition to endorsing a stronger belief in the disease model of addiction (Johnson et al, 2006) which is the premise of abstinence-oriented treatments (i.e., 12-step). This is supported by 1-year follow up data from the original Ouimette et al (1997) paper, in which (ex-) serving personnel in 12-step programmes were 1.54 times (95% CI, 1.24-1.92) more likely to be abstinent than (ex-)serving personnel in CB programmes.

However, not all studies reported positive outcomes and Mooney et al (2014) found that 78% of active duty personnel relapsed within one year following treatment in a military-specific programme. Those with more severe mental health and SUD problems reported lower treatment satisfaction and benefited less than those without mental health comorbidities in terms of SUD-related problems and psychological distress (Boden & Moos, 2009; Ilgen et al, 2004). One paper reported no overall differences between drop-outs and completers with regards to SUD-related problems at the 5-year follow-up assessments (McKellar et al, 2006).

### 3.4. Transition out of residential treatment

Many residential treatment programmes encouraged engagement in aftercare care and self-help groups after discharge, such as 12-step meetings and outpatient aftercare services, to maintain the improvements made throughout treatment (e.g. Gavrysh et al, 2016;

Johnson et al, 2006; Schaefer et al, 2005) (Table 3). Estimates of the proportion of (ex-)serving personnel attending continuing care post-discharge varied between papers, reported by 17% of one sample (Schaefer et al, 2005) and 60.3% of another (Johnson et al, 2006). Those in inpatient/residential treatment programmes were less likely than outpatients to remain in contact with their respective treatment providers and engage in continuing care (32% vs. 59% during the first month post-discharge), but approximately 90% of both inpatient/residential (ex-)serving personnel and outpatients had dropped out of continuing care by six months post-treatment (Schaefer et al, 2005). Continuity of care was more likely if personnel were older and with higher self-reported motivation at the time of discharge, whereas attendance at continuing care was found to be less likely when (ex-) serving personnel had more alcohol-related problems at intake (Schaefer et al, 2005). (Ex-)serving personnel that attended 12-step and CB aftercare services were more likely to maintain improvements made in treatment than those that had not engaged in any continuing care, whilst (ex-)serving personnel that attended only 12-step groups maintained improvements better than those only attending aftercare in other outpatient settings (Johnson et al, 2006). No studies reported housing outcomes for (ex-)serving personnel in residential treatment, but personnel in one study reported significant work-related improvements following residential treatment (Gavrysh et al, 2016).

## 4. Discussion

This review aimed to collate the available research on (ex-)serving personnel in residential treatment for alcohol problems and identified 9 relevant papers. Residential treatment options available to US (ex-)serving personnel with AUD include 12-step and CB-oriented programmes, which appear to prompt some reductions in substance use and mental health symptoms even if they are not always

**Table 3 – Findings from individual studies regarding transition out of residential treatment**

Study	Findings
Gavrysh et al (2016)	<ul style="list-style-type: none"> <li>Both groups reported significant quality of life improvements (<math>p &lt; .001</math>) and improvements in work-related absenteeism, tardiness and productivity (<math>p &lt; .001</math>) at follow-up.</li> </ul>
Johnson et al (2006)	<ul style="list-style-type: none"> <li>Attendance at 12-step meetings with or without outpatient care was associated with significantly better maintenance of gains (e.g. self-efficacy, expectancies, disease model beliefs) (See footnote for further clarification) than those that did not attend continuing care or attended outpatient care only (<math>p &lt; .001</math>).</li> <li>(Ex-)serving personnel in 12-step and CB showed significant improvements (e.g. self-efficacy, expectancies, beliefs) between intake and follow-up on most proximal variables (<math>p &lt; .001</math>).</li> <li>Effects of 12-step programmes (compared to CB) on abstinence were partially mediated by having an abstinence goal, reading 12-step materials, having a sponsor and attending self-help groups (post-discharge).</li> </ul>
Schaefer et al (2005)	<ul style="list-style-type: none"> <li>Outpatients attended continuing care for a significantly longer time than inpatients/residential (ex-)serving personnel (1.65 vs. 1.02 months, <math>p &lt; .001</math>) but at 6-months post-discharge, only 10% of each group stayed in continuing care.</li> <li>In the first month post-discharge, 59% of outpatients and 32% of inpatients/residential (ex-)serving personnel attended 2+ continuing care visits.</li> <li>(Ex-)serving personnel with more alcohol-related problems at intake engaged in less continuing care (<math>p &lt; .01</math>) whereas those that were older (3/4 models: <math>p &lt; .01</math>) and more motivated (2/4 models: <math>p &lt; .01</math>) attended significantly more continuing care.</li> </ul>

\* Findings from the studies based on the Ouimette et al (1997) paper have been combined given that they use the same dataset.

maintained. Although it was intended that both UK and international research would be examined, this was not possible due to the small number of eligible papers that were almost exclusively from the US with no UK research.

The papers included in this review suggest that approximately one third of (ex-) serving personnel in residential treatment for alcohol problems have mental health comorbidity. This is lower than has been reported for the UK with 86% of those who have engaged with alcohol services reporting mental health comorbidity (Public Health England, 2017).

The treatment completion rates reported here (76% - 94%) are somewhat higher than those reported previously (64.5%) in relation to non-military individuals in residential treatment (Stahler, Mennis & DuCette, 2016), perhaps due to the discipline and resilience required for military duties. Many (ex-)serving personnel in the included papers reduced their alcohol consumption between intake and follow-up, and some improvements in drinking and/or mental health were maintained for up to five years after treatment. The one study included in the review that used a sample of serving personnel and civilians in the same abstinence-oriented residential programme (Gavrysh et al, 2016) found comparable improvements in drinking outcomes for both groups. This has potential implications for tailoring treatments to meet the additional needs of (ex-)serving personnel, however the relapse rates following a military-specific treatment programme (also abstinence-oriented) reported by Mooney et al (2014) suggest that most personnel in that specific residential treatment programme relapsed within a year. These results were reported to be positive as this sample had previously undergone treatment and “failed”. However, it is important to consider that the living environment and residential treatment setting may vary considerably, so relapse may be more likely if they lack structural and emotional support upon discharge. For serving personnel specifically, returning to a military environment may also present challenges to maintaining abstinence, such as social drinking to promote bonding within the unit (Ames, Duke, Moore & Cunradi, 2009).

Programme lengths specified in the reviewed papers were usually less than 30 days so, for personnel that relapsed or failed to reduce their alcohol-related problems in the long-term, it may be that this time scale was too short, particularly for those with longer military service who have been embedded in a heavy drinking culture. In non-military samples, research suggests that longer lengths of stay in residential treatment are associated with a higher likelihood of abstinence (Chang, Martin, Tang & Fleming, 2016; McPherson, Boyne & Waseem, 2017) and a lower risk of substance-related inpatient hospitalisation, but this remains a topic of debate (Harris et al, 2012). The positive findings here and across the other included papers suggest that (ex-)serving personnel can reduce their alcohol consumption through residential treatment, despite not always maintaining long-term abstinence. Given the lack of research specific to serving personnel then we cannot conclude whether residential treatments are suitable for those who return to service after completion of treatment.

Recent research suggests that treatment goal preferences (abstinence

vs. reduced use) differ and are linked to severity of drinking problem (Lozano et al, 2015), so it would be beneficial for future research to investigate harm reduction approaches as well as abstinence-oriented approaches to alcohol treatment in (ex-)serving populations. For example, motivational interviewing (MI) is a technique used to promote individuals’ readiness to change their problematic drinking, but which may not have abstinence as the focus. A systematic review of reviews has found MI to be effective in reducing drinking in non-military populations, although its long-term effectiveness is still undetermined (Frost et al, 2018). A recent RCT demonstrated that telephone-based MI elicited greater reductions in drinking in military personnel compared to telephone-based psychoeducation (Walker et al, 2017), perhaps due to the participative aspect of MI in comparison with passive listening during psychoeducation sessions. Further research is needed to investigate the potential benefits of MI for (ex-)serving personnel in residential treatment settings, as it may allow them to more openly discuss emotional and alcohol-related problems in a supportive, substance-free environment. Conversely, then a recent review found that 12-step programmes are more effective in promoting abstinence compared to other treatments (including motivational and CB approaches), although this is not specific to (ex-)serving personnel or residential settings (Kelly, Humphreys & Ferri, 2020). The study conducted by Ouimette et al (1997), from which four included papers drew their samples, found that 12-step programmes are effective in treating alcohol problems in ex-serving populations, with similar effectiveness reported for CB-only and mixed 12-step/CB programmes. This is in line with previous reviews evaluating the effectiveness of 12-step approaches (Ferri, Amato & Davoli, 2006; Raistrick, Heather & Godfrey, 2006). However, abstinence was more likely if personnel attended 12-step rather than CB programmes (Ouimette et al, 1997), which echoes Kelly and colleagues’ (2020) more recent findings.

The current findings were inconclusive with regards to attendance at continuing care/aftercare as only two eligible papers reported this information. Previous research suggests that attendance at continuing care/aftercare sessions after residential treatment is low (Decker, Peglow, Samples & Cunningham, 2017; McKay, 2009), despite it reportedly being key to achieving abstinence (Donovan, Ingalsbe, Benbow & Daley, 2013) and maintaining improvements in the long-term (i.e. reduced substance use and mental health issues). However, there is a dearth of information about what services and resources are offered to personnel in residential treatment throughout the programmes and as continuing care/aftercare. There was also a lack of transparency regarding what therapies and components are involved throughout residential treatment, so it would be advantageous for studies to provide a more detailed overview of the treatment regimens or indicate where this information may be available. This would allow better comparisons to be made between the outcomes of personnel in various residential treatment programmes, and determine which components are more suited to personnel with different needs.

#### 4.1. Limitations

- The lack of studies conducted outside of the US limits how far these findings can be generalised to other military populations in

residential treatment – especially since the majority of studies used samples from VA-affiliated centres, whose healthcare/insurance policies and practices differ from international treatment facilities. Cultural differences in terms of both state and public attitudes towards the military also restrict the representativeness of these findings. There is a clear need for more research to be conducted in the UK, as British personnel might have different treatment options available to them and encounter different challenges when transitioning in and out of residential treatment. Based on the studies identified in this review, cross-cultural comparisons cannot be made.

- This review included only a small number of studies, of which four had drawn their sample from a previous dataset (Ouimette et al, 1997) and the other five studies had relatively small samples. This hinders the generalisability of the findings to military personnel that receive residential treatment for alcohol problems, so there is a need for more recent, primary research to corroborate the findings reported here.
- The sample demographics varied across the included studies, such that a small proportion of personnel had drug problems, which may be an artefact of the type of residential programme. Most studies used samples that attended VA facilities for residential treatment, wherein military dependents may also be eligible for treatment, and did not report the ratio of personnel to civilians. It was therefore difficult to compare findings from each study and determine how personnel fared during and after treatment, so the generalisability of these findings to (ex-)serving personnel is limited.

#### 4.2 Recommendations for future research

There is a need for more UK research examining residential treatments for (ex-)serving personnel with alcohol problems, particularly longitudinal studies that report alcohol use outcomes and abstinence rates at follow-up. Future research should aim to be more transparent in reporting a detailed overview of the treatment programme and there is a need for research comparing abstinence rates after discharge from residential treatment in serving personnel (returning to a military environment) to ex-service personnel (returning to civilian life).

#### Conclusion

This review examined the characteristics and outcomes of (ex-)serving personnel in residential treatment for alcohol problems. Few studies met eligibility criteria and the included papers were applicable only to the US and Canadian military forces. It was not possible to formally evaluate the effectiveness of residential treatment for (ex-)serving personnel given that no relevant randomised controlled trials were identified. However, the available evidence shows some reduction in the quantity and frequency of alcohol use following residential treatment for alcohol problems. Future research is needed within the UK, including those using randomised methods to evaluate effectiveness and explore harm reduction approaches. Studies should be more transparent with regards to describing the content and psychological approach of residential treatment programmes and in

identifying sub-groups who may benefit most from residential rather than outpatient treatment.

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