

# Self-harm and attempted suicide among UK Armed Forces personnel: Results of a cross-sectional survey

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## Abstract

**Aims:** Little has been reported on self-harm among the UK Armed Forces, partly due to the difficulties in recording self-harm, within an often-difficult-to-reach population. This study assesses the lifetime prevalence of attempted suicide and self-harm within currently serving and ex-service personnel of the UK Armed Forces.

**Methods:** Telephone interviews were conducted with 821 personnel who had previously participated in the King's Centre for Military Health Research military health study. Within the telephone interview, participants were asked about attempted suicide and episodes of self-harm.

**Results:** A lifetime prevalence of 5.6% for intentional self-harm (self-harm or attempted suicide) was reported. Intentional self-harm was associated with psychological morbidity (in particular, post-traumatic stress disorder) and adverse experiences in childhood. Ex-service personnel reported lifetime prevalence more than double that of serving personnel (10.5% vs 4.2%, respectively). Participants reporting intentional self-harm were younger (34.4 years vs 39.8 years).

**Conclusion:** A lifetime prevalence of 5.6% for attempted suicide and self-harm is higher than previous research has suggested. Younger service personnel, those who have experienced adversity in childhood, those with other psychological morbidity, and ex-service personnel are more likely to report self-harm behaviours.

## Keywords

ex-service, military, self-harm

## Introduction

The high tempo of military operations and subsequent injury or death has focused public attention on the welfare of serving and ex-serving Armed Forces personnel, both in the UK and elsewhere (BBC News, 2008, 2010). The issue of suicide among service personnel has been of particular concern (Bruce, 2008; Eaton, Messer, Garvey Wilson, & Hoge, 2006; Fear et al., 2009; Kaplan, Huguet, McFarland, & Newsom, 2007; Kapur, While, Blatchley, Bray, & Harrison, 2009; Sacks, Flood, Dennis, Hertzberg, & Beckham, 2008). Self-harm, a risk factor for subsequent suicide (Hawton, Zahl, & Weatherall, 2003; Jenkins, Hale, Papanastassiou, Crawford, & Tyrer, 2002; Mahon, Tobin, Cusack, Kelleher, & Malone, 2005), has received less attention within the UK military (Blatchley, Ward, Davison, Harrison, & Fear, 2005; Hawton et al., 2009; Slaven & Sharpley, 2002). This is partly due to the inherent difficulties with capturing these data, as many acts of self-harm do not come to the attention of medical professionals (Suyemoto, 1998), as well as response bias, as until recently

within the UK military, self-harm was deemed a disciplinary offence (Walton, 1996).

Military populations enjoy comparatively good health compared to the general population (Smith et al., 2007); this can be attributed to the level of fitness required at enlistment screening during military service (the healthy worker effect) effect (Carpenter, 1987; McMichael, 1976), social support networks (King, 2006), access to healthcare and

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employment while in service. It is therefore not surprising that the overall incidence of suicide in the UK Armed Forces is lower than in the general population, with the exception of young Army males (Defence Analytical Services Agency, 2008; Fear et al., 2009), a trend which is reflected in ex-service personnel (Kapur et al., 2009).

Using data from a clinical interview-based study, which assessed the prevalence of psychological morbidity in the UK military (Iversen et al., 2009), we examine the prevalence of self-harm across the UK Armed Forces and its association with socio-demographics, service history and mental health.

## Methods

### Participants

The participants were drawn from Phase 1 of the King's Centre for Military Health Research (KCMHR) cohort study (Hotopf et al., 2006). Of those who had completed Phase 1 and consented to follow-up, a sub-sample was generated. This sub-sample over-sampled those reporting 'psychological distress' (defined as 4 or more on the 12-item General Health Questionnaire (GHQ; Goldberg & Williams, 1988) at the time of completion of the KCMHR cohort study questionnaire. Seventy per cent (70%) of the final sample was in the GHQ case group and 30% in the GHQ non-case group. To ensure adequate power, the sample was stratified by serving status (regular and reserve, 50% each) and deployment status (deployed or not to the first phase of the Iraq War in 2003, 50% each).

Participants were approached with a mail-out invitation pack and were offered a cheque or supermarket voucher for £15 as compensation for their time.

From this, 1,083 individuals were identified as eligible for inclusion, of which 821 (74.2%) were surveyed by telephone clinical interview. Of those not interviewed, 111 declined to participate, 127 could not be traced and 24 were unavailable for interview during the study period due to deployment or training (Iversen et al., 2009). There was no evidence of response bias in respect to health (Iversen et al., 2009). Questions covered a range of health measures, including self-harm.

To ensure the clinical interview was not overly long, where possible, information from Phase 1 of the cohort study was used (Hotopf et al., 2006). This included information on childhood adversity (Iversen et al., 2007). Using data from 16 questions about experiences in childhood (e.g. playing truant from school, being hit by parents or caregivers regularly), a composite score of adverse childhood events, with higher scores indicating greater adversity, was constructed.

### Self-harm

In line with the 2000 Adult Psychiatric Morbidity Survey (Meltzer, Lader, Corbin, Singleton, Jenkins, & Brugha,

2002; Singleton, Bumpstead, O'Brien, Lee, & Meltzer, 2001), participants were asked: 'Have you ever made an attempt to take your life, by taking an overdose of tablets or in some other way?' and 'Have you deliberately harmed yourself in anyway but not with the intention of killing yourself?'

The National Clinical Practice Guideline on self-harm (National Institute of Clinical Excellence, 2004) adopts the definition that self-harm is 'self-poisoning or self-injury irrespective of the apparent purpose of the act'. Consequently, and because of the relatively small study sample, a composite variable was generated to include any suicide or self-harm attempt (hereafter termed 'intentional self-harm'). Analyses were repeated separately for suicide attempts and for self-harm; similar results to those reported here were observed (data available from the authors).

### Other health measures

The Patient Health Questionnaire (PHQ; Spitzer, Kroenke, & Williams, 1999), a validated structured diagnostic instrument, was completed using the standardized categorical scores for the presence of a major depressive illness, other depressive illness, panic disorder, generalized anxiety disorder, somatoform disorder and alcohol 'abuse'. The Primary Care Post-Traumatic Disorder Screen (PC-PTSD), a four-item measure developed for primary care by the National Centre for PTSD (Prins et al., 2004), was used with a cut-off of 3 or more to define PTSD symptoms (Bliese, Wright, Adler, Cabrera, Castro, & Hoge, 2008).

### Statistical analysis

Initially, the prevalence of intentional self-harm was examined (taking the sampling weights into account). Associations between intentional self-harm and a range of socio-demographic and military factors were then examined. The association between intentional self-harm and a range of other health outcomes was also examined. Weighted percentages, odds ratios and 95% confidence intervals were presented (Clayton & Hills, 1993). All analyses were undertaken using the statistical software package STATA (version 10.0 for Windows). Odds ratios examining the association between self-harm and mental health were adjusted for socio-demographic and military factors shown to be significantly associated with self-harm (age, childhood adversity and serving status). The sample weights were taken into account in all analyses using the 'svy' command in STATA.

### Ethical approval

The study received approval from both the King's College Hospital NHS Research Ethics Committee (ref: 05/Q0703/155) and from the Ministry of Defence (Navy) Personnel Research Ethics Committee (ref: 0522/22).

**Table 1.** Lifetime prevalence of intentional self-harm, suicide attempt and self-harm ( $N = 821$ )

	$n$ (%) <sup>1</sup>	95% confidence interval
Intentional self-harm	100 (5.6)	3.8–8.1
Suicide attempt	80 (4.7)	3.0–7.1
Self-harm	41 (2.8)	1.6–5.0

<sup>1</sup>Prevalence is weighted to take account of the sampling fractions

## Results

### Prevalence

Of the 821 participants, 100, equivalent to a prevalence of 5.6% (accounting for sampling fractions), admitted to a history of self-harm or attempted suicide (Table 1).

### Socio-demographic and military associations with intentional self-harm

From univariable analysis, the factors associated with intentional self-harm include younger age, low educational attainment, being a regular, holding a lower rank, being in the Army, having left the services, serving for a shorter term, and increasing childhood adversity (Table 2). There was no significant difference for length of service between serving and non-serving personnel. After adjustment, significant associations remained with younger age, having left the services, and increasing childhood adversity (Table 2). The association with increasing childhood adversity score showed the strongest association ( $p$ -trend  $< 0.0001$ ). Models were not adjusted for length of service due to this variable being highly correlated with age.

A breakdown of ex-service personnel versus currently serving personnel, using weighted percentages, revealed lifetime prevalence of attempted suicide (7.6% and 3.8% ( $n = 34$  and  $46$ ,  $\chi^2 = 11.15$ , 1 d.f.,  $p = 0.001$ )) and self-harm (4.4% and 2.4% ( $n = 19$  and  $22$ ,  $\chi^2 = 8.4$ , 1 d.f.,  $p = 0.004$ )), respectively.

### Associations with other mental health

After adjustment for age, childhood adversity and serving status, intentional self-harm was associated with PTSD, having a PHQ diagnosis, depressive syndromes and somatization disorder (Table 3). The strongest association was seen with PTSD ( $p < 0.0001$ ).

## Discussion

### Principal findings

In this study, 5.6% of UK Armed Forces personnel admitted to a history of self-harm and/or attempted suicide. Intentional self-harm was associated with being young, having a shorter term of service, increasing childhood

adversity, and with a range of other health outcomes, including PTSD. In particular, we have identified a higher lifetime prevalence of intentional self-harm among ex-service personnel.

### Comparison with other studies

Attempted suicide and, in particular, self-harm are difficult to assess due to their under-reporting and associated stigma (McAllister, 2003). With this caveat in mind, within the general population, surveys have suggested a lifetime prevalence of attempted suicide of 4.4%–5.6% and self-harm of 4.9% (Bebbington et al., 2010; Nicholson, Jenkins, & Meltzer, 2009), associated with youth, female gender and lack of social support (Meltzer et al., 2002). In this context, the military population appears healthier with a lifetime prevalence of attempted suicide of 4.7% and self-harm of 2.8%, albeit in the range of general population estimates.

General population estimates aside, previous military studies have reported a lower burden of disease among the military: the KCMHR cohort from self-reported questionnaires suggested a lifetime prevalence of self-harm 1.3%–3.8% (Iversen et al., 2007) and official statistics (in the form of formally reported cases, likely to underestimate the true prevalence) show levels at fractions of 1% (Blatchley et al., 2005; Micklewright, 2005; Slaven & Sharpley, 2002).

Demographically, too, our analysis lends further weight to the increased frequency of self-harming behaviours among younger age groups (Blatchley et al., 2005; Hawton et al., 2007; Hawton et al., 2009; Sacks et al., 2008), and in particular the higher prevalence of attempted suicide among young males (Defence Analytical Services Agency, 2008; Eaton et al., 2006). Both these associations are shared with ex-service personnel who go on to commit suicide (Kapur et al., 2009). However, unlike previous military studies (Blatchley et al., 2005; Slaven & Sharpley, 2002), we found no association between self-harming behaviour and being female.

### Strengths and limitations

This study amounts to the first cross-sectional survey of self-harm within the UK military that the authors are aware of. However, the inherent limitations of this study reflect those of reporting self-harm in the general population; this

**Table 2.** Associations between intentional self-harm and a range of socio-demographic and military factors

	No intentional self-harm	Intentional self-harm	OR (95% CI)	Adj <sup>1</sup> OR (95% CI)	p <sup>1</sup>
	Mean (95% CI)	Mean (95% CI)			
<b>Age at interview (years)</b>	39.82 (38.89–40.75)	34.40 (31.79–37.02)	0.92 (0.88–0.97)	0.94 (0.87–1.00)	0.042
<b>Gender</b>	<i>n</i> (%)	<i>n</i> (%)			
Male	636 (94.4)	84 (5.6)	1.00	–	
Female	85 (94.9)	16 (5.1)	0.90 (0.42–1.93)	–	
<b>Marital status<sup>3</sup></b>					
Single/not in a relationship	141 (91.8)	30 (8.2)	1.93 (0.76–4.91)	–	
Married/long-term relationship	488 (95.6)	46 (4.5)	1.00	–	
Divorced/separated/widowed	91 (91.7)	24 (8.3)	1.95 (0.70–5.46)	–	
<b>Educational status<sup>3</sup></b>					
No qualifications	60 (87.9)	13 (12.1)	1.44 (0.40–5.18)	1.29 (0.25–6.56)	0.758
O-levels	264 (91.3)	45 (8.7)	1.00	1.00	
A-levels	182 (95.6)	27 (4.5)	0.49 (0.18–1.30)	0.66 (0.19–2.26)	0.504
Degree	172 (98.5)	11 (1.5)	0.16 (0.06–0.38)	0.73 (0.25–2.16)	0.566
<b>Engagement type<sup>3</sup></b>					
Regular	360 (92.6)	67 (7.4)	1.00	1.00	
Reserve	361 (96.4)	33 (3.6)	0.47 (0.22–0.98)	0.61 (0.23–1.66)	0.334
<b>Rank at interview</b>					
Officer	178 (98.9)	8 (1.1)	0.13 (0.06–0.32)	0.56 (0.17–1.89)	0.350
Other ranks	539 (92.3)	92 (7.4)	1.00	1.00	
<b>Service<sup>3</sup></b>					
Navy (including Marines)	93 (98.6)	8 (1.4)	0.20 (0.07–0.53)	0.39 (0.13–1.16)	0.091
Army	510 (93.3)	78 (6.7)	1.00	1.00	
Royal Air Force	118 (95.7)	14 (4.3)	0.62 (0.18–2.12)	1.24 (0.32–4.88)	0.756
	<b>Mean (95% CI)</b>	<b>Mean (95% CI)</b>			
<b>Length of service (years)</b>	17.01 (16.08–17.94)	12.31 (9.54–15.07)	0.93 (0.87–0.98)	–	
<b>Serving status at interview</b>	<i>n</i> (%)	<i>n</i> (%)			
Serving	545 (95.8)	58 (4.2)	1.00	1.00	
Left service	176 (89.5)	42 (10.5)	2.67 (1.17–6.08)	2.82 (1.08–7.34)	0.034
<b>Experience of deployment to Iraq</b>					
Not deployed to Iraq	223 (95.4)	35 (4.6)	1.00	–	
Deployed to Iraq	498 (93.9)	65 (6.1)	1.34 (0.56–3.22)	–	
<b>Number of childhood adversity factors</b>					
0–1	153 (99.0)	14 (1.1)	0.08 (0.03–0.20)	0.11 (0.04–0.33)	< 0.001
2–3	217 (97.8)	17 (2.2)	0.17 (0.06–0.48)	0.19 (0.07–0.52)	0.001
4–5	139 (90.8)	17 (9.3)	0.77 (0.26–2.25)	0.77 (0.24–2.49)	0.664
6–16	187 (88.3)	44 (11.7)	1.00	1.00	

<sup>1</sup>Adjusted for age, educational status, engagement type, rank, service, serving status and, childhood adversity<sup>2</sup>Row percentages displayed<sup>3</sup>Correct as of Phase I of the study (Hotopf et al., 2006)

**Table 3.** Associations between intentional self-harm and a range of health outcomes

	No intentional self-harmn (% <sup>1</sup> )	Intentional self-harm n (% <sup>1</sup> )	Adj <sup>2</sup> OR (95% CI)	p <sup>2</sup>
<b>PHQ or PTSD diagnosis</b>				
No	434 (98.1)	30 (2.0)	1.00	
Yes	287 (85.5)	70 (14.5)	4.65 (1.91–11.33)	0.001
<b>Any PHQ diagnosis</b>				
No	459 (97.9)	37 (2.2)	1.00	
Yes	262 (85.2)	63 (14.8)	4.14 (1.75–9.81)	0.001
<b>Any depressive syndrome</b>				
No	599 (96.0)	68 (4.0)	1.00	
Yes	122 (81.8)	32 (18.1)	3.08 (1.08–8.78)	0.036
<b>Any anxiety syndrome</b>				
No	648 (95.2)	73 (4.8)	1.00	
Yes	73 (78.0)	27 (22.0)	1.69 (0.48–5.89)	0.411
<b>Alcohol abuse</b>				
No	562 (96.2)	63 (3.8)	1.00	
Yes	159 (86.3)	37 (13.7)	2.23 (0.89–5.60)	0.088
<b>Somatization disorder</b>				
No	693 (94.6)	90 (5.4)	1.00	
Yes	28 (83.6)	10 (16.4)	3.65 (1.20–11.03)	0.022
<b>PTSD</b>				
No	638 (95.8)	73 (4.2)	1.00	
Yes	83 (66.8)	27 (33.2)	8.48 (2.73–26.33)	< 0.0001

<sup>1</sup>Row percentages displayed<sup>2</sup>Two-sided; adjusted for age, serving status and childhood adversity

is exacerbated by the small study sample, reflected by relatively wide confidence intervals. The response bias in the original sample was found to be minimal (Hotopf et al., 2006; Iversen et al., 2009; Tate et al., 2007).

As is the case in any retrospective questionnaire-orientated methodology, which is augmented by telephone interview, the data rely on self-reporting, which is open to recall bias, and false responses. Data from the 2007 Adult Psychiatric Morbidity Survey (Nicholson et al., 2009) suggest that questionnaires tend to be more open to positive responses compared with face-to-face interviews. This is thought to be associated with the stigma of self-harming behaviours; however, prevalence reported in our dataset's telephone interviews was higher than that suggested by the questionnaire responses previously published (Iversen et al., 2007).

While previous studies have described the modalities of attempted suicide (Hawton et al., 2009), we do not have these data, nor do we identify the circumstances surrounding the events, timelines or potential triggers. Importantly, this study does not establish whether episodes reported, in particular by ex-service personnel, took place before, during or after service. Among this group, the possibility of reverse causation cannot be excluded: self-harm acts may be an indirect trigger to leaving service, thereby increasing the apparent prevalence.

### Implications

These data suggest that young service personnel are at risk of intentional self-harm, in particular if they serve shorter terms of service. It adds further support for the importance of efforts currently under way that seek to improve awareness of, and access to, mental health services. With the discussion on the role of government in the care of service personnel and ex-service personnel (Dandeker, 2003), the risk of intentional self-harm appears particularly pronounced in ex-service personnel. This may be due to the loss of social networks previously relied upon during service and adds to concerns regarding social exclusion among ex-service personnel, some of whom suffer from mental illness, which adversely affects their employment prospects (Iversen et al., 2005). Alternatively, these data may reflect a reporting bias among serving personnel from fear of disciplinary proceedings. However, previous research among Royal Navy personnel has shown that the majority would respond positively to peers apparently under stress, who may be undertaking self-harming behaviour (Greenberg, Henderson, Langston, Iversen, & Wessely, 2007). Further research is needed to establish whether the increased prevalence reported by ex-service personnel represents events occurring prior, during or following military service. Where intentional self-harm is reported,

further investigation for psychological morbidity may be justified, not least because of the risk factors shared with subsequent suicide.

## Conclusion

A lifetime prevalence of 5.6% for attempted suicide and self-harm is higher than previous research has suggested. Early leavers, those who experienced childhood adversity, those with other psychological morbidity, and ex-service personnel are more likely to report self-harm behaviours.

## Conflicts of interest statement

N. T. Fear, S. Wessely, R. J. Pinder and A. Iversen work for the Academic Centre for Defence Mental Health (ACDMH)/King's Centre for Military Health Research (KCMHR) at King's College London, which receive funding from the UK Ministry of Defence. S. Wessely is an honorary civilian consultant advisor in psychiatry to the British Army and a trustee of Combat Stress, a UK charity that provides services and support for ex-service personnel with mental health problems. All other authors declare that they have no other conflicts of interest.

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