

Risk factors of suicidal ideation in a population of UK military veterans seeking support for mental health difficulties

Larissa Harden,¹ D Murphy²

¹Academic Department of Military Mental Health, Weston Education Centre, King's College London, London, UK
²Combat Stress, Leatherhead, Surrey, UK

Correspondence to

Miss Larissa Harden, Academic Department of Military Mental Health, Weston Education Centre, King's College London, London SE5 9RJ, UK; larissa.harden@kcl.ac.uk

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ABSTRACT

Background Little has been reported regarding the risk factors of suicidal ideation in individuals once they have left the military in the UK. The aim of this paper was to explore the risk factors associated with suicidal ideation in a sample of treatment-seeking veterans.

Methods Using a cross-sectional design, participants included veterans (n=144) seeking treatment from a national mental health charity in the UK. Individuals completed questionnaires regarding their military experiences, pre-enlistment factors and health. Data were then linked to risk assessments extracted from clinical records.

Results After controlling for relevant variables, suicidal ideation was significantly higher in veterans who were unemployed (OR 8.01; 95% CI 1.79 to 35.80), were early service leavers (OR 8.46; 95% CI 2.21 to 32.35) and those with a history of childhood adversity (OR 6.92; 95% CI 2.10 to 22.82). In addition, taking longer than 5 years to seek help was associated with a reduced risk of suicidal ideation (OR 0.10; 95% CI 0.06 to 0.87). There was no association between health outcomes and suicidal ideation.

Conclusions Risk factors associated with suicidal ideation in this sample of veterans included: being unemployed, an early service leaver, taking less than 5 years to seek help and experiencing preservice adversity.

INTRODUCTION

Suicide rates in the UK military are reported to be lower than in the general UK population.¹ However, there is a paucity of research examining the risk of suicide in individuals once they have left military service. Kapur *et al*² examined suicide risk in a cohort of UK Armed Forces personnel who had left the military and found that the overall rate of suicide was not greater than that in the general population; however, they did find that the risk of suicide was higher in young men, those who had a short length of service and those who had a lower rank.² Further research is required in order to identify potentially modifiable risk factors for suicidal behaviour, to detect risk early, aid prevention and inform intervention efforts. If factors are not modifiable, research may still provide a better understanding of those who are at elevated risk for suicidal behaviour.

Empirical literature on risk factors associated with suicidal behaviour in serving and ex-serving personnel can be separated into sociodemographic (eg, gender), military (eg, rank),² predeployment (eg, childhood maltreatment)³ and postdeployment

Key messages

- ▶ Help-seeking veterans who were unemployed, early service leavers, took less than 5 years to seek help or experienced preservice adversity were at higher risk of suicidal ideation.
- ▶ No association between mental health outcomes and suicidal ideation was found.
- ▶ The paper highlights individuals who may be at higher risk of suicidal ideation and may benefit from early interventions and prevention efforts.

factors (eg, mental health disorders).⁴ Existing research suggests that various different sociodemographic and military factors may increase the risk of suicide. For example, Ursano *et al* (2016) indicate that suicidal ideation in enlisted participants was more common in those who were female, younger, older at enlistment, less educated, never or previously deployed and had a recent mental health diagnosis.⁵ Due to the inconsistency and variations between findings shown in the literature, there is a strong suggestion for the need to study risk factors in this population.

The Army Study to Assess Risk and Resilience in Service members (Army STARRS) has reported that 13.9% of a sample of US soldiers had a history of suicidal ideation, 5.3% had a history of suicide plans and 2.4% had attempted suicide. Prior mental health problems strongly predicted self-reported suicidal behaviours in this sample.⁶

In the UK, evidence suggests that serving military personnel are approximately twice more likely to suffer from common mental disorders (CMD) than the general working population.⁷ There is a wide range of research that suggests mental health problems such as post-traumatic stress disorder (PTSD)⁴ are associated with higher risk of suicide in veterans. Taking a longer time to seek care for these problems has also been linked to suicidality in veterans,⁸ which is worrying considering that veterans can take an average of 11 years to seek help.⁹

In the Army STARRS, 47%–60% of suicidal outcomes first occurred prior to enlistment. The examination of premilitary vulnerability is crucial with research indicating its importance as a risk factor for military personnel later in life.¹⁰ For example, childhood maltreatment¹¹ has been linked to suicidal behaviours in military personnel.

Because the research suggests different risk factors are associated with suicidal ideation, it can



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be difficult to determine which risk factors to target and which individuals are at higher risk. The present study sought to identify potential risk factors associated with suicidal ideation in a veteran population seeking support for mental health difficulties.

METHODS

Setting

This cross-sectional study used data drawn from a sample of veteran's engaging in mental health treatment at a national mental health charity called Combat Stress (CS). CS is the largest provider of veteran-specific clinical mental health services in the UK and is estimated to receive approximately 2500 new referrals annually.⁹ Further details about the services available at CS can be found elsewhere.¹² Questionnaires were sent to individuals twice, after which telephone tracing was used to prompt a response. These data were then linked to risk assessments extracted from participant's clinical records.

Participants

Study participants were 3335 veterans actively receiving treatment (attended more than one appointment after completing an initial assessment) between February 2015 and February 2016 at CS. Up to 667 (20%) participants were randomly selected from this population. Sixty-three individuals had insufficient address information and four had died prior to starting data collection, thus giving a final sample size of 600. A total of 403 out of 600 individuals returned completed questionnaires. There were no differences between those who participated in the study and those who did not, as shown by published data.¹³ These data were then linked using a unique patient identification number to risk assessment data contained within patients' electronic files. We were only able to conduct data linkage for a proportion of the sample, $n=144/403$ (35.7%).

Measures and procedure

Participants were asked to complete an eight-page questionnaire. For the current study, the questionnaire collected data on socio-demographic characteristics and health outcomes. As mentioned above, these data were then linked to data on suicidal ideation assessments extracted from electronic patient records.

Suicidal ideation data

Risk assessments were carried out by psychiatric nurses using standardised criteria consisting of three levels (green, amber or red), indicating increasing levels of severity. Participants categorised into the green group were defined as: no concerns raised by clinical staff, no plans, stable in terms of mental health presentation, may have history of suicidal ideation or low mood but no current thoughts and manages with routine support. The amber criteria were: experiencing suicidal ideation but no plans were in place, suicidal ideation present but without consistent thoughts and evidence of protective factors. The red criteria were: evidence of recurring suicidal ideation, evidence of plan and talks about committing suicide. Level of risk was dichotomised into low (green group) or high (amber or red group) for the purposes of this study.

Demographic characteristics

Demographic factors included age, relationship status (single or in a relationship), employment status (working, not working or not working due to ill health), whether participants were experiencing current financial difficulties, number of years between leaving the armed forces and seeking help from CS (dichotomised to greater or less than 5 years), whether participants were

early service leavers (ESL) from the military (leaving after less than 4 years of service within the military) and type of discharge from the military (voluntary or non-voluntary discharge).

Items were taken from a longitudinal epidemiological study exploring the health and well-being of the UK military to explore childhood adversity.¹⁰ Participants were asked to give true or false responses to a list of 16 statements associated with difficult early life events. Responses were combined and divided into tertiles. Participants whose responses were in the highest tertile were deemed to be in the high childhood adversity group and those in the lower two tertiles were the low childhood adversity group.

Health outcomes

The 20-item PTSD Checklist of DSM-5 (PCL-5) was used to assess symptoms of PTSD. Scores on the PCL-5 range from 0 to 80. In veterans, a score of 38 or above has been suggested to indicate the presence of PTSD.¹⁴ The 12-item General Health Questionnaire (GHQ-12) was used to measure symptoms of common mental health difficulties (CMD) (anxiety and depression), using a cut-off of 4 or above to identify cases.¹⁵ The 5-item Dimensions of Anger Reactions (DAR-5) was used to measure problems with anger using a cut-off score of 12 or more to meet case criteria.¹⁶ The 10-item WHO Alcohol Use Disorders Identification Test (AUDIT)¹⁷ was used to assess alcohol misuse; a cut-off score of 8 or above was used to suggest problem drinking. Functional impairment was measured with the Work and Social Adjustment Scale (WSAS) consisting of five items that explore different components of functioning. These are: ability to work, conduct home management, engage in social leisure activities, private leisure activities, and family and relationships. Scores range from 0 to 40, with a score of 20 or above indicating severe functional impairment.¹⁸

Analysis

All analyses were conducted using STATA V.13.0. First, predictors of having data successfully linked to suicidal ideation assessment data were evaluated. Data available for both groups included age, relationship status, employment status, experience of financial difficulties, being an ESL, discharge type from military, combat role in military and health status (PCL-5, GHQ-12, DAR-5, AUDIT and WSAS). According to previous research investigating UK military personnel, these variables had been identified a priori as possible predictors of response.¹⁹ To explore predictors of having data linked or not, a multivariate logistic regression model was fitted (including all of the above variables). Response weights were then generated to account for non-data linkage. Response weights indicated the reverse probability of responding in the sampled group and were influenced by the factors associated with a response as presented in the above analysis. Based on the assumptions that data were missing at random and variables used to model non-response were correctly modelled, to improve the validity of findings, analyses were then weighted using the response weights. The analysis then only included participants whose data were successfully linked.

Following this, logistic regression models were fitted to calculate the ORs between being in the high-risk group and sociodemographic factors to investigate associations between the two. Models were then adjusted for by fitting multivariate logistic regression models and including all of the demographic variables (age, sex, relationship status, employment status, years to seek help and financial difficulties). These analyses were repeated to calculate associations between reporting being in the high-risk

Table 1 Characteristics of those whose data were successfully linked to suicidal ideation data or not

	No linkage n=259	Successful linkage n=144	Adjusted odds of successful data linkage
	n (%)	n (%)	OR (95% CI)
Age			
<35	22 (8.5)	27 (18.8)	1.00
35–44	55 (21.2)	40 (27.8)	0.52 (0.25 to 1.10)
45–54	72 (27.8)	38 (27.4)	0.39 (0.18 to 0.81)*
55>	110 (42.5)	39 (27.1)	0.31 (0.14 to 0.65)*
Relationship status (single)	84 (32.4)	46 (31.9)	1.01 (0.62 to 1.65)
Employment status (not working)	179 (69.1)	98 (68.1)	0.97 (0.57 to 1.63)
Financial difficulties (yes)	72 (27.8)	35 (24.3)	0.63 (0.39 to 1.02)
Early service leave (yes)	37 (13.5)	11 (7.6)	0.42 (0.19 to 0.92)*
Combat role (yes)	153 (59.1)	95 (66.0)	1.19 (0.74 to 1.90)
PCL-5 case	204 (78.8)	127 (88.2)	1.00 (0.98 to 1.02)
GHQ-12 case	179 (69.9)	111 (77.1)	1.02 (0.96 to 1.08)
DAR-5 case	178 (70.1)	116 (80.6)	1.05 (0.99 to 1.10)
AUDIT case	101 (39.0)	65 (45.1)	1.00 (0.97 to 1.02)
WSAS case	162 (62.3)	106 (73.6)	1.02 (0.99 to 1.05)

*P≤0.05.

AUDIT, Alcohol Use Disorders Identification Test; DAR-5, 5-item Dimensions of Anger Reactions; GHQ-12, 12-item General Health Questionnaire; PCL-5, PTSD Checklist for DSM-5; WSAS, Work and Social Adjustment Scale.

group and military service factors (adjusting for all other military service factors) and health outcomes (adjusted for all other health outcomes).

RESULTS

Table 1 shows the demographic factors associated with having data successfully linked to suicidal ideation or not. After adjustment,

only age and being an ESL were significantly associated with linked data. Individuals between 35 and 44 or 45 and 54 were more likely to have data successfully linked to suicidal ideation. ESLs were also more likely to have data successfully linked to suicidal ideation data than those who were not.

Demographic characteristics are described in Table 2. This shows an association between employment status and suicidal ideation after adjusting for relevant variables, with unemployed veterans being at higher risk of suicidal ideation than employed veterans (OR 8.01; 95% CI 1.79 to 35.80). There was also an association between time to seek help and suicidal ideation, with veterans who took longer than 5 years to seek help being at decreased risk of suicidal ideation than those who took less than 5 years to seek help (OR 0.10; 95% CI 0.06 to 0.87).

Military service factors are described in Table 3. This shows an association between being an ESL and suicidal ideation after adjusting for relevant variables, with ESLs being at higher risk of suicidal ideation than those who were non-ESLs (OR 8.46; 95% CI 2.21 to 32.35). There was also an association between preservice adversity and suicidal ideation, with veterans who had high preadversity scores being at higher risk of suicidal ideation than those with low preadversity scores (OR 6.92; 95% CI 2.10 to 22.82).

Health outcomes are described in Table 4. This shows no associations between health outcomes and suicidal ideation.

DISCUSSION

The current study aimed to investigate risk factors associated with suicidal ideation in a population of treatment-seeking veterans. Our results indicate that being unemployed, an ESL, taking less than 5 years to seek help and experiencing higher preservice childhood adversity are potential risk factors for suicidal ideation in this sample of treatment-seeking veterans.

The current study found an association between unemployment and suicidal ideation in our veteran sample. Existing

Table 2 Associations between demographic characteristics and suicidal ideation

	Suicidal ideation		Unadjusted OR	Adjusted OR†
	Low group	High group	OR (95% CI)	OR (95% CI)
Age, n (%)				
<35	17 (9.2)	10 (30.1)	1.00	1.00
35–44	34 (24.8)	6 (20.3)	0.24 (0.07 to 0.81)*	0.20 (0.05 to 0.78)
45–54	33 (26.6)	5 (18.6)	0.20 (0.05 to 0.76)*	0.20 (0.04 to 0.97)
55>	33 (37.3)	6 (30.4)	0.24 (0.06 to 0.92)*	0.29 (0.06 to 1.39)
Sex, n (%)				
Male	116 (87.1)	24 (12.9)	1.00	1.00
Female	1 (28.8)	3 (71.2)	16.7 (1.53 to 180.38)*	6.68 (0.92 to 48.28)
Relationship status, n (%)				
In a relationship	83 (89.8)	15 (10.2)	1.00	1.00
Not in a relationship	34 (76.4)	12 (23.6)	2.72 (1.04 to 7.18)*	1.77 (0.59 to 5.34)
Employment status, n (%)				
Working	42 (95.4)	4 (4.6)	1.00	1.00
Not working	20 (85.3)	5 (14.7)	4.98 (1.34 to 18.4)*	8.01 (1.79 to 35.80)*
Financial difficulties, n (%)				
No	86 (82.4)	23 (17.6)	1.00	1.00
Yes	31 (92.9)	4 (7.1)	0.36 (0.11 to 1.21)	0.38 (0.06 to 1.87)
Time to seek help, n (%)				
Less than 5 years	65 (76.3)	22 (23.7)	1.00	1.00
Greater than 5 years	52 (95.7)	5 (4.3)	0.14 (0.04 to 0.53)*	0.10 (0.06 to 0.87)*

*P≤0.05. Percentages weighted to take into account data-linkage sampling.

†Multivariate regression model adjusted for age, relationship status, employment status, financial difficulties and time to seek help.

Table 3 Associations between military service factors and suicidal ideation

	Suicidal ideation		Unadjusted OR	Adjusted OR†
	Low group	High group	OR (95% CI)	OR (95% CI)
Early service leaver, n (%)				
No	112 (87.6)	21 (12.4)	1.00	1.00
Yes	5 (56.7)	6 (43.4)	5.43 (1.40 to 21.1)*	8.46 (2.21 to 32.35)*
Combat role, n (%)				
No	41 (88.0)	8 (12.0)	1.00	1.00
Yes	76 (83.6)	19 (16.4)	1.44 (0.53 to 3.93)	1.21 (0.38 to 3.82)
Discharge from service, n (%)				
Voluntary	63 (88.8)	10 (11.2)	1.00	1.00
Non-voluntary	54 (81.5)	17 (18.5)	1.80 (0.65 to 4.96)	2.16 (0.63 to 7.38)
Childhood adversity, n (%)				
Low	71 (90.7)	12 (9.3)	1.00	1.00
High	25 (67.2)	12 (32.8)	4.76 (1.72 to 13.15)*	6.92 (2.10 to 22.82)*

*P≤0.05. Percentages weighted to take into account data-linkage sampling.

†Multivariate regression model adjusted for all other factors in table.

published research regarding the association between unemployment and suicidal risk in veterans has found no relationship between the two.²⁰ In contrast, our findings imply that within veterans with mental health difficulties it could be beneficial to help veterans make a successful transition from military life, with a focus on securing employment. Empirical research has suggested that veterans with psychological problems may benefit from evidence-based employment support programmes.²¹ It may be useful to explore whether these have a beneficial effect on veterans with suicidal ideation.

The findings suggest that suicidal ideation is associated with being an ESL, supporting previous research that has described ESLs having poorer mental health outcomes than non-ESLs.²² It also corroborates with research by Woodhead *et al*,²³ who found that UK ESLs from the Cold War and Northern Ireland generation had more suicidal thoughts, and were more likely to self-harm than non-ESLs.²³ Despite there being initiatives designed to help ESLs access appropriate services once they have left,²⁴ the research suggests that this population may be at risk. With

few studies on ESLs in the UK Armed Forces,²² this may be a subject that warrants further investigation.

Previous research has consistently shown that childhood adversity is linked to mental health difficulties later in life in military personnel.¹⁰ Furthermore, childhood abuse has been reported to be strongly associated with suicidal behaviour in military personnel.^{3 11} Our findings are consistent with this, demonstrating an association between preservice childhood adversity and suicidal ideation. It has been suggested that adverse childhood experiences may be more prevalent among military populations as personnel may originally enlist to escape these problems.²⁵ The presented findings suggest that interventions to reduce suicidal ideation may need to address preservice vulnerabilities rather than solely focus on military-related traumas.

The current study demonstrated that individuals who took less than 5 years to seek help were at higher risk of suicidal ideation. This could suggest that those who seek help sooner may be at crisis and at higher risk of suicidal ideation compared with those who may have found ways to cope and have put off treatment for a longer time before seeking help. These findings suggest a need to support military personnel during their postservice transition. This also supports previous findings from civilian populations that show individuals with suicidal behaviours are more likely to use services²⁶ and perceive a need for treatment²⁷ compared with those without suicidal behaviours, although these studies have significant limitations.

Empirical research has reported that the presence of a mental disorder is among the most consistently reported risk factors for suicidal behaviour.²⁸ Interestingly, contrary to previous research,⁴ our findings suggest no association between suicidal ideation and mental health outcomes. Perhaps this could be due to the small convenience sample.

Limitations

The current study has several limitations that require acknowledgement. Data were collected from treatment-seeking veterans from a national mental health charity and therefore have limited generalisability to veterans and those seeking help. CS receives referrals from veterans with acute mental health needs and specialises in PTSD treatment, as a result the sample may differ from veterans seeking help from other services. The mental health data and risk assessments were collected at different times

Table 4 ORs of increasing scores on a range of health outcomes and suicidal ideation

	Suicidal ideation		Unadjusted OR	Adjusted OR†
	Low group	High group	OR (95% CI)	OR (95% CI)
<i>PTSD (PCL-5)</i>				
Mean score	54.4	59.6	1.02 (0.99 to 1.06)	1.00 (0.95 to 1.04)
<i>CMD (GHQ-12)</i>				
Mean score	6.8	7.4	1.04 (0.93 to 1.15)	1.03 (0.91 to 1.18)
<i>Anger (DAR-5)</i>				
Mean score	11.9	12.8	1.03 (0.95 to 1.11)	0.99 (0.90 to 1.11)
<i>Alcohol (AUDIT)</i>				
Mean score	8.7	9.4	1.01 (0.96 to 1.06)	1.01 (0.96 to 1.06)
<i>Functioning (WSAS)</i>				
Mean score	25.5	28.2	1.04 (0.98 to 1.09)	1.02 (0.96 to 1.09)

*P≤0.05. Percentages weighted to take into account data-linkage sampling.

†Multivariate regression model adjusted for all other health outcomes in table. AUDIT, Alcohol Use Disorders Identification Test; CMD, common mental disorder; DAR-5, 5-item Dimensions of Anger Reactions; GHQ-12, 12-item General Health Questionnaire; PCL-5, PTSD Checklist for DSM-5; PTSD, post-traumatic stress disorder; WSAS, Work and Social Adjustment Scale.

and data regarding this were unavailable. Due to the cross-sectional nature of the study, we cannot establish causality when looking at predictors of risk. In addition, participant's ability to recall childhood adversity may have been subject to recall bias. We were only able to link data for 35% of the sample; however, we attempted to mitigate for this by exploring differences between the two groups and generated weight to counter this. The analyses were limited to the available variables. However, other factors such as spiritual beliefs could have had an effect on suicidal ideation as suggested by previous research.²⁹ Finally, the sample size was relatively small decreasing the power of our results.

CONCLUSIONS

In this clinical sample, being unemployed, being an ESL, taking less than 5 years to seek help and experiencing preservice childhood adversity were associated with suicidal ideation, after adjusting for relevant variables. This type of research is crucial to inform the effort to reduce suicide in military populations and has implications for service planning and knowing how to support this client group. Despite the limitations, the data presented provide suggestions for possible targets for intervention before, during and after military service, which could potentially in turn reduce the risk of suicidal ideation. Further research is required to develop a stronger evidence base to inform how to implement suggested changes in practice.

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