Traumatology

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Online First Publication, February 22, 2024. https://dx.doi.org/10.1037/trm0000498

AMERICAN PSYCHOLOGICAL ASSOCIATION
GREEN CROSS Academy of Traumatology
Traumatology

ISSN: 1085-9373
https://doi.org/10.1037/trm0000498

Adverse Childhood Experiences in a Clinical Sample of U.K. Military Veterans

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Objective: Adverse childhood experiences (ACEs) are consistently linked with poorer psychosocial and mental health outcomes, including in military veterans. Military veterans are an at-risk group because of the combined risk factors of ACEs and being more likely to experience high stress and trauma in adulthood. This study aimed to report rates of self-reported ACEs in a clinical sample of U.K. military veterans, and to test for associations between high levels of ACEs and psychosocial variables. ***Method:*** Participants were a clinical sample of military veterans who were seeking treatment for mental health issues at a U.K. veterans mental health charity. Participants completed surveys relating to their experiences of ACEs and their current mental health and well-being. Associations were tested using regression analyses. ***Results:*** A high proportion (35%) reported a high-risk level of 4+ ACEs. Higher ACE scores, and reporting 4+ ACEs were not associated with any specific mental health outcomes, but were associated with having low levels of perceived social support ($OR = 0.2000$, 95% CI [0.083, 0.482]). ***Conclusions:*** Military veterans are at high risk for experiencing multiple ACEs which may leave them more likely to develop to mental health difficulties in adulthood. Additionally, those with high ACEs may require additional help in accessing social support as this is a key risk/protective factor in mental health issues such as posttraumatic stress disorder.

Keywords: adverse childhood experiences, military veterans, mental health, social support

Military veterans are a subgroup of the population who can suffer mental health and psychosocial difficulties, sometimes relating to their service (Williamson et al., 2023), and often at a higher rate than the general population (Rhead et al., 2022). Psychosocial difficulties facing military veterans can be varied and complex (Murphy et al., 2019), and can be compounded by further issues such as unemployment and social exclusion (Iversen et al., 2007; Kintzle et al., 2015). It is important to fully understand the nature of the psychosocial difficulties experienced by military veterans in order to inform better practice for supporting and treating this population.

It is well-recognized that early life experiences can predict poorer psychosocial outcomes and well-being in later life. Adverse childhood experiences (ACEs) are a commonly used framework for conceptualizing negative life events that occur in childhood. Since its original conception (Felitti et al., 1998), the literature on ACEs has developed widely, with many studies suggesting that higher prevalence of ACEs predicts worse outcomes in later life, such as mental health (Nurius et al., 2015; Petruccelli et al., 2019; Schilling et al., 2007), chronic and risky health outcomes (Exley et al., 2015; Huang et al., 2015; Kalmakis & Chandler, 2015; Nurius et al., 2019), and psychosocial outcomes such as education and criminality (Craig et al., 2017; Hardcastle et al., 2018).

ACEs are synonymous with childhood trauma and maltreatment, and the most prevalent conceptualization of ACEs covers events relating to forms of abuse (emotional, physical, and sexual), neglect (emotional and physical), and several indicators of household and family dysfunction (e.g. domestic violence and parental separation). Prevalence rates for ACEs have been reported to be as high as 47% for individuals reporting at least one ACE (Bellis et al., 2014). Risk of poorer outcomes increases with the number of ACEs experienced, with individuals who experience four or more ACEs being at highest risk of developing health-related problems (Boullier & Blair, 2018; Felitti et al., 1998). In the original ACEs study, 12.5% reported experiencing four or more ACEs (Felitti et al., 1998), and a more recent study suggested a figure of 9% in a survey of the general U.K. population (Bellis et al., 2015).

Previous research has suggested that higher rates of ACEs in military veterans are associated with higher rates of common mental health difficulties, posttraumatic stress disorder (PTSD), aggression, and alcohol misuse (Murphy & Turgoose, 2022; Ross et al., 2022). Prevalence of ACEs has been reported to be higher in the military population compared to the general public, with one study suggesting that those in military service were significantly more likely to have experienced childhood physical abuse (23% military vs. 16% civilian), verbal abuse (42% military vs. 27% civilian), and sexual abuse (21% military vs. 16% civilian; Katon et al., 2015). Within the military population, research has also suggested that those seeking treatment for mental health difficulties report higher levels of ACEs than those who are not (Murphy & Turgoose, 2022). Research into child

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This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. The authors have no conflicts of interests to disclose.

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abuse in military samples has suggested that prevalence is higher in this population than community samples, with all types of abuse being associated with suicidality (Afifi et al., 2016).

Military personnel who experience multiple ACEs might therefore have a complex picture of risk factors, in which they are both more likely to have experienced childhood trauma and adversity, and then go into a profession where they are often exposed to traumatic events. This may leave military personnel more at-risk of developing psychological distress when exposed to traumatic experiences in adulthood, which may in turn compound the impact of adversity and trauma experienced in childhood.

The purpose of the present study was to build on existing literature to investigate the rates of ACEs in a clinical sample of military veterans, as well as to investigate associations between ACEs and a range of mental health and psychosocial variables. Based on existing evidence, we expected to find that high levels of ACEs were associated with poorer mental health and psychosocial outcomes in this population.

Method

Design

The study was undertaken with Combat Stress, a U.K.-based military veterans mental health charity, which delivers mental health interventions to military veterans across the United Kingdom, receiving approximately 2,600 referrals annually (Murphy et al., 2019). The study used a cross-sectional design with participants completing self-report measures at a single time point.

Participants

The data for the present study was collected via a larger study undertaken at Combat Stress, whereby a random clinical sample of military veterans was selected to complete a health and well-being survey, to ascertain the general health of this population (Williamson et al., 2023). For this survey, a sample of 989 participants was approached, with 428 completing the survey. Participants were eligible to take part if they: (a) had received support from Combat Stress over a 1-year period, (b) consented to be contacted for research purposes, and (c) provided a contact email address. In the United Kingdom, a military veteran is defined as someone who has completed at least one day of paid employment in the Armed Forces.

Measures

Participants completed the self-report survey which included questions about ACEs, as well as a range of standardized, validated measures of psychosocial well-being. Participants also gave demographic information relating to sex, age, employment status, relationship status, housing status, reasons for leaving the military (voluntary vs. nonvoluntary/medical), and whether they left service prior to completing their initial 4-year enlistment due to administrative or medical discharge.

Information about ACEs was collected using the 10-item Adverse Childhood Experiences Questionnaire (Felitti et al., 1998). The questionnaire covers a range of ACEs and is broadly split into three sections. The first relates to physical, emotional, and sexual abuse. The second focuses on abuse by neglect (emotional and physical), with the third covering dysfunctional experiences within the family and household, such as parental mental health difficulties, substance misuse, and domestic violence. Scores range from 0 to 10 with participants answering a binary yes/no response for each ACE.

Social support and connectedness were investigated using measures of social support and loneliness. The Oslo Social Support (OSS) scale (Dalgard, 1996), was used to measure perceived social support, with scores categorized into poor (3–8), moderate (9–11), and strong (12–14) social support. Loneliness was measured using the University of California, Los Angeles (UCLA) loneliness scale (UCLA three-item; Hughes et al., 2004), which contains three dimensions of loneliness (relational connectedness, social connectedness, and self-perceived isolation). UCLA-3 scores under five are classed as *not lonely* and over five as *lonely*.

Common mental health difficulties (CMD) such as anxiety and depression were measured using the General Health Questionnaire (GHQ; Goldberg & Williams, 1998), which is a 12-item questionnaire where a score of four or higher indicates the likely presence of a CMD. Posttraumatic stress reactions were measured using the International Trauma Questionnaire (ITQ; Cloitre et al., 2018; Murphy et al., 2020). The ITQ can be used to give an overall score for both PTSD and complex-PTSD (CPTSD), as well as a score for disturbances in self-organization (DSO). Total ITQ scores range from 0 to 24. If a score of two or more is reported for each of the three PTSD symptom clusters, diagnosis is indicated. Diagnostic criteria for CPTSD include meeting the criteria for PTSD, plus scoring two or more for at least one symptom of each DSO symptom cluster.

Participants also completed the alcohol use disorder identification test (AUDIT; Babor et al., 2001; Saunders et al., 1993), where higher scores are indicative of more severe alcohol-related difficulties. Scores can be categorized into hazardous alcohol use (score of 8+) and harmful alcohol use (16+). Psychosomatic symptoms and physical health were measured using the 15-item Patient Health Questionnaire (PHQ-15; Spitzer, 1999). Here, more severe symptoms are indicated by higher scores, with a score of four and under suggesting minimal symptom severity, and scores of 15–30 indicating high somatic symptom severity.

Procedure

Participants who had consented to be contacted via email were invited to take part and sent links via email to complete an online version of the survey via Survey Monkey. A total of five email invitations were sent over a period of 6 weeks, with data were collected between August and September 2020. Those who did not respond in this initial phase were sent a hard copy of the survey via post ($N = 692$).

Analysis

Frequencies were calculated for each ACE item as well as for each ACE category (4+ ACEs are commonly classed as "high risk"; Felitti et al., 1998). Chi-square analyses were performed to determine any differences between ACEs categories by demographic variables. The associations between ACEs and psychosocial well-being variables were investigated in two ways. Firstly, a multivariate logistic regression was used to investigate associations between ACEs categories and the psychosocial well-being variables by clinical cutoff scores. Secondly, a multivariate linear regression was to test for associations between total number of ACEs reported and total scores on the psychosocial well-being measures. All analyses were carried out using IBM SPSS Version 27 (IBM Corp., 2020).

Results

A sample of 428 participants completed the original survey. Cases that did not complete the ACEs section of the survey ($N = 92$) were removed for the purpose of the present study, giving an effective sample size of 336. Most of the samples were male (97%), which matched the proportion of the overall survey sample. This is larger than the comparative proportion of males in the U.K. Armed Forces overall which is 88.5% (Ministry of Defence, 2023). In terms of age, 10% were under 35, 19% were 35–44, 35% were 45–54, and 37% were 55 and over. Most of the sample identified as White (95%), which is higher than the U.K. Armed Forces overall (89.9%; Ministry of Defence, 2023). The majority were either in work or retired from work (56%), 65% reported being in a relationship, and 10% reported currently being homeless. Only a small proportion (4%) reported leaving service before the end of their initial 4-year enlistment, and 55% reported leaving service voluntarily, as opposed to leaving for nonvoluntary or medical reasons.

Frequencies of ACEs by type are reported in Table 1. Table 1 also describes the proportion of participants in each ACEs category, with four or more categorized as being high risk. ACEs scores ranged from 0 to 10, with a mean of 2.7 ($SD = 2.5$). Table 2 contains descriptive data for each psychosocial variable by ACEs category. Chi-square analyses showed that there were no significant associations between ACE score categories and demographic variables, age: $\chi^2(1,\ N = 336) = 6.50,\ p = .89$, sex: $\chi^2(1,\ N = 336) = 5.88,\ p = .21$; employment status, $\chi^2(1,\ N = 330) = 6.28,\ p = .18$; relationship status, $\chi^2(1,\ N = 332) = 4.30,\ p = .37$; housing status, $\chi^2(1, N = 331) = 1.62, p = .81$; and reason for leaving the military, $\chi^2(1, N = 331) = 5.80, p = .22$.

Findings from the multivariate logistic regression suggested that participants who reported experiencing four or more ACEs were significantly more likely to fall into the category of having low perceived social support, than those reporting zero ACEs ($OR =$ 0.2000, 95% CI [0.083, 0.482]). There were no other significant associations between ACEs categories and psychosocial well-being variables based on clinical cutoff scores (Table 3). Findings from the multivariate linear regression using total scores also suggest a strong association between total ACEs score and having low perceived social support (Table 4), but no other significant associations. Statistics suggest that this model was a good fit for the data in this case, $F(6,\ 250) = 2.236,\ p = .04$. The beta coefficient was $\beta = -.209$, representing a small effect (Cohen, 1988).

Table 1
Rates (%) of ACEs in Current Sample ($N = 336$)

Category of ACEs exposure	%
Abuse type	
Emotional	43.7
Physical	44.0
Sexual	13.5
Neglect type	
Emotional	41.1
Physical	18.7
Household dysfunction type	
Parental divorce	37.1
Family alcohol or substance misuse	22.1
Domestic violence	24.7
Family mental illness	21.3
Family member in prison	5.5
ACE score	***N* (%)**
0 ACEs	86 (25.6)
1 ACE	51 (15.2)
2 ACEs	44 (13.1)
3 ACEs	40 (11.9)
4+ ACEs	115 (34.2)

Note. ACEs = adverse childhood experiences.

Table 2
Descriptive Data for Each Psychosocial Variable by ACEs Category

Psychosocial variable measure	ACE category	*M* score (*SD*)	Number meeting cutoff threshold (%)
GHQ (common mental health problems)	0	7.32 (3.76)	67 (77.9)
	1	7.73 (4.08)	39 (76.5)
	2	6.81 (4.10)	35 (79.5)
	3	7.38 (3.94)	33 (82.5)
	4+	7.97 (3.92)	94 (81.7)
ITQ—(CPTSD)	0	30.05 (11.24)	48 (55.8)
	1	33.25 (11.83)	39 (76.5)
	2	31.93 (9.59)	26 (59.1)
	3	31.03 (10.94)	22 (55.0)
	4+	34.35 (10.78)	76 (66.1)
ITQ (PTSD subscale)	0	14.45 (6.10)	51 (59.3)
	1	16.53 (6.35)	41 (80.4)
	2	16.12 (4.83)	31 (70.5)
	3	15.27 (6.12)	25 (62.5)
	4+	16.55 (5.63)	82 (71.3)
ITQ (DSO subscale)	0	15.59 (5.96)	61 (70.9)
	1	16.73 (6.17)	42 (82.4)
	2	15.81 (5.76)	28 (63.6)
	3	15.75 (6.55)	25 (62.5)
	4+	17.80 (5.98)	88 (76.5)
PHQ (psychosomatic symptoms)	0	11.51 (5.34)	26 (30.2)
	1	14.35 (6.05)	27 (52.9)
	2	11.73 (4.98)	11 (25.0)
	3	13.08 (5.63)	14 (35.0)
	4+	12.78 (5.23)	47 (40.9)
AUDIT (alcohol use)	0	10.16 (7.93)	14 (16.3)
	1	9.46 (7.14)	7 (13.7)
	2	11.12 (7.73)	8 (18.2)
	3	10.88 (7.63)	8 (20.0)
	4+	10.53 (9.28)	26 (22.6)
OSS (social support)	0	7.96 (2.45)	50 (58.1)
	1	7.58 (2.30)	35 (68.6)
	2	6.98 (2.34)	33 (75.0)
	3	7.87 (2.98)	24 (60.0)
	4+	6.66 (2.33)	94 (81.7)
UCLA-R (loneliness)	0	6.73 (1.87)	64 (74.4)
	1	7.43 (1.60)	46 (90.2)
	2	6.91 (2.27)	31 (70.5)
	3	6.78 (2.15)	29 (72.5)
	4+	7.33 (1.87)	94 (81.7)

Note. ACEs = adverse childhood experiences; GHQ = General Health Questionnaire; ITQ = International Trauma Questionnaire; PTSD = posttraumatic stress disorder; DSO = disturbances in self-organization; PHQ = Patient Health Questionnaire; AUDIT = alcohol use disorder identification test; OSS = Oslo Social Support; CPTSD = complex-PTSD; UCLA-R = UCLA loneliness scale.

Discussion

The present study aimed to report rates of ACEs in a clinical sample of U.K. military veterans, as well as investigating if experiencing

Table 3
Associations Between ACEs Category (4+) and Mental Health Variables (by Clinical Cutoff)

Psychosocial variable measure	*B*	*SE*	*OR*	95% CI
GHQ case (common MH)	0.784	0.572	2.190	[0.714, 6.722]
ITQ PTSD case	0.017	1.044	0.491	[0.063, 3.796]
ITQ CPTSD case	0.088	1.184	1.092	[0.107, 11.122]
ITQ DSO case	0.017	0.697	1.017	[0.260, 1.292]
PHQ-15 case (psychosomatic symptoms)	−0.271	0.410	0.762	[0.341, 1.704]
AUDIT heavy drinking case	−0.120	0.503	0.887	[0.331, 2.376]
OSS case (low social support)	−1.610	0.449	0.2000	[0.083, 0.482*]
UCLA-R case (loneliness)	0.039	0.515	1.039	[0.379, 2.853]

Note. *OR* = odds ratio; ACEs = adverse childhood experiences; GHQ = General Health Questionnaire; ITQ = International Trauma Questionnaire; PTSD = posttraumatic stress disorder; DSO = disturbances in self-organization; PHQ = Patient Health Questionnaire; AUDIT = alcohol use disorder identification test; OSS = Oslo Social Support; CPTSD = complex-PTSD; MH = mental health; UCLA-R = UCLA loneliness scale. Reference category = 0 ACEs.
* $p < .01$.

a high number of ACEs (4+) was associated with psychosocial well-being variables. A large proportion (34.2%) of the sample reported experiencing four or more ACEs, which is the accepted cutoff for being high risk (Felitti et al., 1998). This represents a very large number of military veterans reporting a high number of ACEs compared with the general population, where rates of people reporting four or more ACEs have been 12.5% in the original ACEs study (Felitti et al., 1998). A more recent study reported that 12.7% of people from the most deprived backgrounds reported four or more ACEs (Bellis et al., 2014). In the United States, similar figures are reported for the general, nonmilitary population (12.9%), with 27.3% of a nonclinical military sample reporting 4+ ACEs (Blosnich et al., 2014). Together, this demonstrates that this clinical sample of veterans appears to be more likely to report high ACEs that nonclinical samples of veterans and the wider general public. It is important to understand and be aware of the likelihood of military veterans experiencing high levels of early adversity, because ACEs are strongly linked to poorer health and well-being outcomes in military populations (Gottschall et al., 2022; LeardMann et al., 2010; Xue et al., 2015). Clinicians treating military veterans for mental health therefore ought to routinely screen for ACEs given they are a known risk factor.

The present study reports a significant link between high ACEs and low levels of social support. This has not been reported previously in literature pertaining to military personnel. Low perceived social support has been frequently reported as an important pretrauma risk factor for mental health difficulties in general and military samples (Harandi et al., 2017; Hefner & Eisenberg, 2009; Ozbay et al., 2007; Smith et al., 2013), as well as being a possible moderating factor between ACEs and mental health difficulties (Von Cheong et al., 2017). Low levels of social support have been linked to increased risk of developing PTSD (Ozer et al., 2008) with the perception of a common, shared experience and supportive social networks thought to be protective in cases where individuals experience trauma.

Table 4
Associations Between Total ACEs Score and Mental Health Variables (by Total Score)

Psychosocial variable measure	*B*	*SE*	β
GHQ score (common MH)	−0.41	0.047	−.068
ITQ score (CPTSD)	0.029	0.020	.131
PHQ-15 score (psychosomatic symptoms)	−0.009	0.033	−.021
AUDIT score (alcohol problems)	0.004	0.019	.013
OSS score (social support)	−0.206	0.070	−.209*
UCLA-R score (loneliness)	−0.083	0.097	−.067

Note. ACEs = adverse childhood experiences; GHQ = General Health Questionnaire; ITQ = International Trauma Questionnaire; PTSD = posttraumatic stress disorder; DSO = disturbances in self-organization; PHQ = Patient Health Questionnaire; AUDIT = alcohol use disorder identification test; OSS = Oslo Social Support; CPTSD = complex-PTSD; MH =mental health; UCLA-R = UCLA loneliness scale. $R^2 = .051$, ($p = .04$).
* $p < .05$.

Despite strong evidence in previous literature linking high ACEs with health and well-being outcomes, the present study did not find associations between high ACEs and related variables such as common mental health disorders, PTSD, or alcohol misuse. This contrasts with past findings (Iversen et al., 2007; Murphy & Turgoose, 2022). There are several possible explanations for this. It is possible that the use of different measures meant previously reported associations were missed, or that measures differed in their sensitivity. Despite being widely used and validated, the ACEs questionnaire used in the present study may have been open to recall bias as it relies on retrospective self-report of historical events. Scores across all measures were high, regardless of ACEs reported, with even those reporting zero ACEs commonly reporting high scores indicating poorer psychosocial well-being. It may be that other common variables within this sample, that were not measured in this study, are more explanatory risk factors, such as type of combat trauma exposure.

One of the implications of the present findings is in reiterating the high rates of early life adversity reported by military veterans. Understanding pretrauma risk factors for those serving in the military can help to raise awareness of potential vulnerability as well as informing treatment programs and other sources of support. The fact that ACEs were associated with low social support, and that both ACEs and social support have been strongly linked in past research to poorer health outcomes, is of significance. Interventions which aim to increase social and peer support networks among clinical samples of military veterans have reported successful outcomes (Drebing et al., 2018; Greden et al., 2010; Hundt et al., 2015; Jain et al., 2016; Weir et al., 2019) and could be a useful avenue for further exploration in research and treatment approaches.

Limitations

The sample in the present study were veterans who were seeking treatment for their mental health, therefore the sample does not generalize to all military veterans and might explain the large proportion reporting a high number of ACEs. This does not reduce the significance however of the fact that such a large number of veterans with mental health difficulties reported such high levels of early adversity and the possible treatment implications of this. It was also beyond the scope of this study's analysis to determine if particular patterns or groups of ACEs were predictive of different mental health outcomes and this would be a useful avenue for future research. While the analysis controlled for certain demographic variables, it is possible that the additional variables that were not measured here could help explain differences between participants reporting low and high ACEs. The finding that lower perceived social support being associated with higher ACEs is potentially an artifact of the fact that those with higher ACEs may have been more likely to have family disruption due to ACEs which explains the low social support. More detailed analysis of the relative role of different ACE types is warranted therefore. The vast majority of participants identified as being White and male, which limits the generalizability of these findings. Information about ACEs was collected retrospectively and is therefore at risk of recall bias. Additionally, there may be issues relating to stigma which affected participants' reporting of ACEs and mental health variables, particularly in the context of military populations experiencing mental health-related stigma (Murphy & Busuttil, 2015).

Conclusion

Findings suggest that veterans seeking help for their mental health are likely to report high levels of childhood adversity, which may make them more at risk for poorer health and psychosocial outcomes. While high ACEs were not associated with mental health variables in the present study, findings suggest that individuals with high ACEs were less likely to have good levels of social support which can be an important risk or protective factor. Services ought to be aware of the potential for military veterans to have these risk factors which may increase the likelihood of mental health difficulties developing postdeployment, and interventions might benefit from seeking to improve peer and social support.

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Received May 11, 2023
Revision received October 26, 2023
Accepted November 3, 2023 ■