

Understanding the Mental Health Needs of a Community-Sample of UK Women Veterans

Illness, Crisis & Loss
1–18

© The Author(s) 2021

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/10541373211070487

journals.sagepub.com/home/icl



Laura Josephine Hendrikx¹ ,
Charlotte Williamson^{1,2} ,
Julia Baumann¹, and Dominic Murphy^{1,2}

Abstract

Women are often underrepresented or entirely missing from veteran research, and there remains limited understanding of their mental health needs. The present study investigated the mental health needs of a community sample of UK women veterans. A total of 750/1680 (44.6%) participants completed an online survey. Data was collected on sociodemographic and military factors, mental health and wellbeing, and childhood adversity. Findings revealed a high prevalence and comorbidity of mental health difficulties, including common mental health difficulties (28.6%) and posttraumatic stress disorder (PTSD) (10.8%). Women veterans who were older, not working, held a lower rank during service, perceived less social support and experienced greater loneliness were more likely to report such difficulties. Results further revealed high childhood and military adversity, and wellbeing difficulties. Such findings provide insight into the needs of women veterans and have implications for providing appropriate support. Considerations of the generalizability of findings are discussed.

Keywords

mental health, women veterans, military

¹Research Department, Combat Stress, Leatherhead, UK

²King's Centre for Military Health Research, King's College, London, UK

Corresponding Author:

Laura Hendrikx, Research Department, Combat Stress, Tyrwhitt House, Oaklawn Road, Leatherhead, Surrey KT22 0BX, UK.

Email: laura.hendrikx@combatstress.org.uk

The number of women in the military has increased modestly over the last 20 years, forming about 10.8% of serving personnel across NATO countries (NATO, 2015). Within the UK specifically, 10% of veterans in 2016 were women (Annual Population Survey, 2016), and is expected to rise to about 13% by 2028 (Ministry of Defence, 2019). While many women have fulfilling military experiences (Brooks et al., 2016), a significant proportion continue to struggle with their mental and physical wellbeing long after service has ended (e.g., Edwards & Wright, 2019; Yalch et al., 2018). Still, women are often underrepresented or entirely missing from veteran research, likely due to their minority status within the military. Estimates suggest that only about 2% of veteran research has mentioned women, and even less has focussed on women veterans exclusively (Dodds & Kiernan, 2019). As military and veteran services are often informed by research, much of the available support is tailored to the needs of veteran men (Yano et al., 2010), and women veterans may be less likely to seek support from and experience less satisfaction with veteran services (Goldzweig et al., 2006; Wright et al., 2006).

Military Experiences

Military women experience unique stressors related to being a woman within a traditionally, men-dominated military setting. The military has long placed importance on and celebrated stereotypic masculine values (i.e., 'hypermasculinity') (Fox & Pease, 2012; Godfrey et al., 2012); an outlook likely encouraged by views of war and violence as masculine while peace and passivity are equalled to femininity (Kovitz, 2003). Despite changes over the years in the gender makeup of militaries, such associations remain prevalent (Eichler, 2014). Such militarised masculinity may contribute to women in the military often being labelled according to gender stereotypes as vulnerable and weak, which in turn can create barriers in their career and limit their opportunities to progress (Asch et al., 2012; Crowley & Sandhoff, 2017). Hypermasculinity is understood to support group cohesion in men-only units but less so in mixed-units where there often appear negative experiences for women in the unit (Rosen et al., 2003). This is in line with findings suggesting that women commonly report feeling alienated and perceiving lower levels of unit cohesion during military service (Washington & Yano, 2013). Such findings are important as a sense of unit cohesion is protective of overall health within the military (Brooks & Greenberg, 2017).

A significant proportion of women experience less satisfaction with their time in service and end their service earlier than men counterparts (D'Amico & Lee, 1999; Nuciari, 2006). One key motivator of this relates to experiences of interpersonal violence and sexual harassment and assault while serving (Dichter & True, 2015; Sims et al., 2005). In the context of the US military, 55%–79% of serving and veteran women report instances of sexual harassment, while 11%–48% of veteran women report sexual assault during service (Goldzweig et al., 2006). Despite the paucity of statistics among UK samples, sexualised behaviours also appear to be common

within the UK Armed Forces with at least 60% of military women reporting some form of unwanted sexual behaviour ranging from comments to assault (Ministry of Defence, 2018; Rutheford et al., 2006). The true prevalence and impact of such experiences among women veterans may never be known as many women do not report such instances due to a fear of reprisal, lack of evidence, and cohesion among perpetrators and within the structure of military command (e.g., Wolff & Mills, 2016). However, such stressors clearly may rob women of fulfilling service experiences and may contribute to mental health and wellbeing difficulties that persist long after service has ended.

Mental Health and Wellbeing

Compared to the public, veterans are at an increased risk of common mental health difficulties (CMD's) (i.e., depression and anxiety), posttraumatic stress disorder (PTSD), and suicide (e.g., Rhead et al., 2020; Simkus et al., 2019), and appear less likely to benefit from psychological treatment of such difficulties (e.g., Hundt et al., 2014; Morland et al., 2015). Military women specifically may face more adverse childhood experiences (ACEs) than civilian women (McCauley et al., 2015), which is long understood to be linked to various health and wellbeing difficulties (Felitti et al., 1998). The cumulative impact of multiple traumatic experiences on mental health (Banyard et al., 2001) suggests that the higher incidence of ACEs may create a vulnerability for military women upon later adversity faced during military service.

There are likely also important gender differences in the incidence of psychological difficulties among veterans. For example, military women appear more likely to experience CMD's while serving (Maguen et al., 2012), which also serves as a motivator of terminating their service (Jones et al., 2020). There remain mixed findings of the prevalence of difficulties after leaving the military. Some studies suggest an increased risk of depression among women veterans (Freedy et al., 2010), while others demonstrate comparable levels across genders (Afari et al., 2015). In terms of incidence of PTSD, some studies demonstrate a greater risk of lifetime and past-year PTSD among women veterans compared to veteran and non-veteran men as well as non-veteran women (Lehavot et al., 2018), while others suggest no gender differences among serving personnel and veterans (e.g., Afari et al., 2015; Street et al., 2013). Military women are, however, more likely to experience military sexual trauma (MST) (Maguen et al., 2012), which is associated with an increased risk of PTSD, anxiety, depression, and sleep difficulties (Turchik & Wilson, 2010). Thus, certain experiences women face during service may create a greater vulnerability for poor mental health after service has ended. Finally, women appear at lower risk of suicide than veteran men (Simkus et al., 2019), although facing a higher risk compared to non-veteran women (Hoffmire et al., 2015).

There is also growing attention to the reintegration difficulties women veterans face that may precipitate and perpetuate poor mental health and wellbeing after leaving service. Many women appear to struggle with interpersonal relations while

reintegrating into civilian life, in addition to facing employment, debt and housing stressors (Yan et al., 2013). US veteran women appear four times more likely than non-veteran women to be homeless (Gamache et al., 2003), a risk that is positively associated with childhood adversity, adversity during and post military service, post-military mental and physical health difficulties, and unemployment (Hamilton et al., 2011). Research has also provided some evidence that women veterans may be at greater risk of pathological gambling compared to veteran men (Edens & Rosenheck, 2012; Westermeyer et al., 2013). On the contrary, women veterans appear to face a generally low risk of alcohol misuse (e.g., Rhead et al., 2020). However, the risk of alcohol difficulties increases among women veterans experiencing PTSD relating to a sexual trauma (Davis & Wood, 1999). Finally, there is also growing attention to women veteran's involvement in criminal justice systems to understand how their adverse experiences, mental health needs, and re-integration stressors may precipitate being incarcerated for criminal activity (e.g., Finlay et al., 2019; Schaffer, 2014). Such reintegration difficulties clearly reflect the challenges women veterans may face, and the impact on their mental health and wellbeing may be inferred. Yet, there remains a paucity of investigation, particularly among UK samples.

The Present Study

Despite increasing research focussing on women veterans, there remains a need to further understand the unique challenges they face during and after service that may contribute to lasting mental health difficulties. Furthermore, much of the research on the mental health and wellbeing needs of women veterans has been conducted using US samples and there remains a need to better understand the profile of UK women veterans. As such, the present study was conducted to better understand the prevalence of mental health difficulties among UK women veterans using a community sample, and to investigate potential sociodemographic and military correlates.

Method

Participants and Setting

Participants were recruited from a UK women veteran charity, that promotes membership and friendships between women veterans, offers benevolence grants for financial hardships, and advocates for changes within the military based on women's lived experiences. The charity is unique in having a large cohort of women veteran members.

The charity's database was searched for members who: (i) were veterans, (ii) consented to be contacted, and (iii) provided an email address. Of the identified sample of 1,911 women veterans, 231 were excluded due to an invalid email address. The final

sample consisted of 1,680 women veterans, of which 750 (44.6%) took part in the study.

Procedure

The present study was a cross-sectional survey that was created and distributed using Survey Monkey. Participants were sent an email invitation to take part in the study that included a link to the online survey. Participation was voluntary and no compensation was awarded. Email invitations were sent out a total of four times over a period of six weeks. Data were collected between August and October 2020. The present study was approved by the Combat Stress research committee.

Materials

Participants were informed of the study aims. They were informed that participation was voluntary and were given instructions on how to opt out if they no longer wished to take part. Participants provided consent by selecting a response indicating agreement to participate.

Sociodemographic and military characteristics. Participants provided sociodemographic information of age, relationship status, education level and employment status. In terms of military characteristics, participants indicated last rank during service, length of service, role in military, and reason for leaving. They also indicated whether they experienced emotional bullying, physical assault, and sexual harassment and/or assault during service. Scores were summed to create a total military adversity score, from which tertials were calculated to identify those with high military adversity (i.e., in the highest tertile).

Mental health and wellbeing outcomes. Participants completed a range of health and wellbeing outcomes. The 12-item General Health Questionnaire (GHQ-12; Goldberg and Williams, 1988) was used to assess common mental health difficulties (CMD's) (i.e., anxiety and depression), with a cut off score of 4 indicating CMD's. The 20-item PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013) was used to assess probable PTSD, using a cut-off score of 34 as indicated among previous veteran samples (Murphy et al., 2017). The 10-item Alcohol Use Disorders Identification Test (AUDIT; Babor et al., 2001) was used to assess alcohol use, with a cut-off score of eight suggesting hazardous or harmful alcohol use. Finally, the five-item Dimensions of Anger Reactions-Revised (DAR-5; Forbes et al., 2014) was used to assess difficulties with anger, with a cut-off score of 12 indicating anger difficulties.

The 15-item Patient Health Questionnaire (PHQ-15; Spitzer et al., 1999) was used to assess somatic symptoms, with a cut-off score of 15 indicating high somatisation. The three-item Oslo Social Support Scale (OSS-3; Dalgard, 1996) was used to

assess perceived social support, with a cut-off score of three indicating poor perceived support. The three-item UCLA Loneliness Scale (UCLA-R; Hughes et al., 2004) was used to measure feelings of loneliness, with a cut-off score of six indicating loneliness.

Childhood adversity. Finally, the 10-item Adverse Childhood Experiences scale (ACE; Felitti et al., 1998) was used to assess the experience of adverse early life experiences. Scores were summed to create a total childhood adversity score, from which tertiles were calculated to identify those with high childhood adversity (i.e., the highest tertile).

Data Analysis

Descriptive analyses of sociodemographic and military factors, mental health and well-being outcomes, and childhood adversity were performed to investigate the profile of the UK women veteran sample. Prevalence rates were then calculated to identify those meeting criteria for CMD's, PTSD, hazardous alcohol use, and anger difficulties. Comorbidity rates were also calculated by identifying the proportion of those meeting criteria for zero, one, two or three other comorbidities per mental health outcome.

Analyses were then conducted to explore associations with CMD's, the most frequently endorsed mental health outcome, as well as PTSD, given the higher prevalence rates compared to the general veteran population. First, univariate logistic regressions were fitted to explore the associations of sociodemographic and military factors with CMD's and PTSD. Next, multivariate logistic regression models of CMD's and PTSD were fitted to adjust for all sociodemographic and military factors. Finally, multivariate logistic models were fitted to explore the associations of CMD's and PTSD with military adversity, childhood adversity, and wellbeing measures. All analyses were conducted using STATA v.13.0.

Results

Participant characteristics are described in Table 1. Majority of the sample were aged 51 years or older (93.8%), were in a relationship (63.5%), were heterosexual (75.6%), had a low level of education (56.0%), and were retired (54.0%). In terms of military factors, majority of the sample were a non-commissioned officer (NCO) when leaving the military (55.8%), held a non-combat role during service (80.8%), and left the military voluntarily (73.7%). 24% of the sample were classified as early service leavers (ESL), defined as having left the military during the first four years. There was also a notable proportion reporting high military adversity and high childhood adversity (28.2%). In terms of physical health and general wellbeing, 10.3% of the sample reported severe somatic symptoms, 9.5% reported low levels of perceived social support, and 39.3% reported difficulties with loneliness.

Table 1. Sociodemographic, Military, and Health and Wellbeing Descriptives of the Sample.

	N (%)
Age group	
20–50	46 (6.2)
51–60	231 (31.2)
61–70	281 (38.0)
70+	182 (24.6)
Sexuality	
Heterosexual	415 (75.6)
LGBT+	134 (24.4)
Level of education	
Low (O levels/GCSEs/NVQs Level 1-2)	386 (56.0)
High (A Levels and/or above)	303 (44.0)
Employment status	
Working	254 (36.6)
Retired	374 (54.0)
Not working	65 (9.4)
Relationship status	
In relationship	434 (63.5)
Not in a relationship	250 (36.5)
Last rank during service	
Commissioned officer	129 (19.1)
Non-commissioned officer	378 (55.8)
Other ranks	170 (25.1)
Role in service	
Non-combat	548 (80.8)
Combat/Combat support	130 (19.2)
Early service leaver (<4 years service)	160 (24.1)
Reason for leaving	
Voluntary	487 (73.7)
Medical	55 (8.3)
Non-voluntary	119 (18.0)
High military adversity	95 (12.7)
High childhood adversity	176 (28.2)
Physical symptoms (PHQ15: score 15+)	55 (10.3)
Low social support (OSS: score <9)	60 (9.5)
Lonely (UCLA-R: score 6+)	249 (39.3)

Note. Frequencies may not up to n = 750 due to missing values.

Prevalence and comorbidity rates of mental health outcomes are described in Table 2. CMD's was the most frequently endorsed mental health difficulty (28.6%), followed by alcohol misuse (12.8%), anger difficulties (11.1%), and PTSD (10.8%). The findings further indicated a high comorbidity of meeting criteria of more than

Table 2. Prevalence Rates of Mental Health Outcomes and Comorbidities.

	Prevalence	% Reporting increasing number of comorbidities			
		0	1	2	3
PTSD					
PCL-5	10.8%	38.7	16.1	38.7	6.5
CMD's					
GHQ-12	28.6%	66.1	15.5	16.1	2.3
Anger					
DAR-5	11.1%	34.8	27.5	31.9	5.8
Alcohol misuse					
Audit (8+)	12.8%	55.4	18.4	20.0	6.2

Note. Comorbidities have been defined as meeting case criteria on the other health outcomes reported within this table.

Note. PTSD = posttraumatic stress disorder; CMD's = common mental health difficulties.

one mental health outcome. For example, 33.9% of those who met CMD's criteria and 61.3% of those who met PTSD criteria also met criteria for one or more comorbidity. Given the higher prevalence rate of PTSD compared to the general veteran population (6.2%; see Stevelink et al., 2018), analyses were conducted to explore associations with other mental health outcomes. When adjusting for all mental health outcomes, those meeting PTSD criteria were also more likely to meet criteria of CMD's, $OR = 19.95$, $p < .001$, 95% CI [6.60, 60.31], and anger difficulties, $OR = 7.31$, $p < .001$, 95% CI [3.18, 16.79], but not alcohol misuse, $OR = 2.45$, $p = .062$, 95% CI [0.95, 6.28].

Sociodemographic and military factors associated with CMD's and PTSD are described in Table 3. After adjusting for sociodemographic and military factors, being aged 61 or older, not working, and having a 'NCO' or 'other' rank when leaving the military were most strongly associated with meeting CMD's criteria. Following adjustments, not working and being retired were most strongly associated with meeting PTSD criteria.

Associations of CMD's and PTSD with military adversity, childhood adversity and wellbeing outcomes are described in Table 4. After adjusting for sociodemographic and military factors of age, employment status and rank when leaving military, high military adversity, high childhood adversity, severe somatic symptoms, low social support, and loneliness were all associated with meeting PTSD and CMD's criteria. When additionally adjusting for military adversity, childhood adversity and wellbeing outcomes, all factors remained associated with meeting PTSD criteria and only low social support and loneliness remained associated with meeting CMD's criteria.

Discussion

The present study is one of the first UK studies investigating the mental health needs of UK women veterans in such a large community sample. The findings revealed a high prevalence of mental health and wellbeing difficulties including CMD's, PTSD,

Table 3. Associations of Socio-Demographic and Military Factors with Meeting Criteria for PTSD (PCL-5) and CMD's (GHQ-12).

	PCL-5		GHQ-12	
	Unadjusted odds ratio OR (95% CI)	Adjusted odds ratio OR (95% CI)	Unadjusted odds ratio OR (95% CI)	Adjusted odds ratio OR (95% CI)
Age group				
20–50	1.00	1.00	1.00	1.00
51–60	.74 (.26 to 1.49)	.73 (.28 to 1.90)	.50 (.26 to .98)*	.56 (.28 to 1.13)
61–70	.42 (.12 to .78)*	.63 (.21 to 1.92)	.24 (.12 to .48)*	.34 (.15 to .75)*
70+	.22 (.07 to .68)*	.84 (.18 to 3.93)	.23 (.11 to .47)*	.34 (.13 to .91)*
Level of education				
High	1.00	1.00	1.00	1.00
Low	1.41 (.79 to 2.52)	1.22 (.62 to 2.39)	1.02 (.71 to 1.46)*	.78 (.50 to 1.19)
Employment status				
Working	1.00	1.00	1.00	1.00
Retired	.32 (.15 to .67)*	.35 (.13 to .95)*	.41 (.28 to .61)*	.65 (.37 to 1.12)
Not working	4.20 (2.09 to 8.45)*	3.92 (1.84 to 8.35)*	2.11 (1.18 to 3.77)*	2.10 (1.12 to 3.92)*
Relationship status				
In relationship	1.00	1.00	1.00	1.00
Not in a relationship	1.53 (.86 to 2.72)	1.46 (.76 to 2.79)	1.30 (.90 to 1.87)	1.49 (.98 to 2.26)
Last rank during service				
Commissioned officer	1.00	1.00	1.00	1.00
NCO	7.04 (1.67 to 29.74)*	4.16 (.91 to 19.02)	3.37 (1.81 to 6.27)*	2.87 (1.45 to 5.70)*
Other ranks	7.73 (1.74 to 34.38)*	3.02 (.57 to 16.07)	5.99 (3.08 to 11.64)*	4.72 (2.10 to 10.60)*
Early service leaver				
No	1.00	1.00	1.00	1.00
Yes	1.75 (.94 to 3.23)	1.89 (.82 to 4.37)	1.72 (1.15 to 2.57)*	1.39 (.81 to 2.38)

Note. *p < .05. NCO stands for non-commissioned officer.

Note. Associations of sociodemographic and military factors of sexual orientation, role during military, and reason for leaving military were not included.

Table 4. Associations of Physical Health Difficulties, Childhood and Military Adversity, Low Social Support and Loneliness with Meeting Criteria for PTSD (PCL-5) and CMD's (GHQ-12).

	PCL-5		GHQ-12	
	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 1 OR (95% CI)	Model 2 OR (95% CI)
High military adversity	4.53 (2.39 to 8.60) *	3.11 (1.32 to 7.33)*	1.76 (1.06 to 2.93)*	1.15 (.60 to 2.19)
High childhood adversity	5.12 (2.82 to 9.30) *	2.50 (1.15 to 5.45)*	2.78 (1.86 to 4.15)*	1.55 (.92 to 2.60)
Physical symptoms (PHQ15)	14.40 (7.07 to 29.34)*	7.10 (3.01 to 16.67)*	4.82 (2.51 to 9.28)*	2.13 (.99 to 4.56)
Low social support (OSS)	14.25 (7.40 to 27.42)*	4.48 (1.92 to 10.46)*	10.75 (5.40 to 21.30)*	3.16 (1.40 to 7.10)*
Feeling Lonely (UCLA-R)	19.243(7.49 to 49.38)*	6.55 (2.26 to 18.97)*	7.43 (4.90 to 11.27)*	5.42 (3.30 to 8.91)*

Note. * $p < .05$. Model 1 adjusted for age, employment status and last rank. Model 2 adjusted for model 1 variates and the adversity, physical symptoms, low social support and feeling lonely.

alcohol misuse, anger difficulties, feelings of loneliness, low perceived social support, and high somatisation. A high comorbidity between mental health outcomes was also evident, with at least 15% of those experiencing CMD's, PTSD, anger difficulties or alcohol misuse also experiencing another mental health difficulty. In general, women veterans who were 60 or older, were not working or retired, and were a 'NCO' or 'other rank' when they left the military were at greater risk of CMD's and PTSD. Those who reported greater military adversity, childhood adversity, somatisation, loneliness, and lower social support were also at greater risk of CMD's and PTSD.

In line with findings of the wider UK military population (Fear et al., 2010), CMD's was the most prevalent mental health difficulty. It was noted that there was greater incidence of CMD's (28.6%) and PTSD (10.8%) compared to the wider UK veteran population (CMD's: 21.9% and PTSD: 6.2%; Stevelink et al., 2018). The high comorbidity between depression and PTSD evident in the current findings is in line with previous studies of US samples of women veterans (Dobie et al., 2004). While the 12.8% incidence of alcohol misuse in the present study contrasts the 10.0% prevalence in the wider UK veteran population (Stevelink et al., 2018), this likely reflects a lower cut-off score (i.e., 8) used in the present study compared to Stevelink et al., (2018) (i.e., 16). While there was an absence of comorbidity between PTSD and alcohol misuse, this fell just below significance. Previous studies have consistently demonstrated a link between PTSD and alcohol misuse in the wider public and veteran population (Debell et al., 2014), as well as specifically among women veterans (Hoggatt et al., 2015).

The present findings indicated that older women veterans were at greater risk of CMD's and PTSD. This contrasts with previous findings of heightened risk of poor psychological wellbeing among younger UK military individuals (e.g., Frueh et al., 2007). One potential reason may relate to delays women veterans face in seeking support. Serving and veteran women are more likely than men to seek mental health support from public services (Jones et al., 2019), but less likely to use veteran-specific services (Goldzweig et al., 2006). Women report lacking information about availability of services, uncertainty of whether they are eligible for support, and perceiving their difficulties as not "worthy" of veteran-specific support (Washington, Yano et al., 2006; Washington, Kleimann et al., 2007). Women who experienced MST may also be less likely to take up support from veteran services (Washington et al., 2011). Still, only about 30% of veterans experiencing PTSD or depression seek out formal mental health support (Tanielian & Jaycox, 2008). As such, women veterans may be reluctant to seek support, and, if they do, services may not adequately meet their needs. However, it is also worth noting that the average age of the present sample may be much older than the average age of veteran women, with 93.8% of respondents aged 51 or older. An older sample are more likely to be retired, have a different service experience than younger women veterans, and have experienced more loss of friends and loved ones; all which may be associated with a higher incidence of mental health difficulties

There are a few potential explanations of the higher incidence of PTSD in the present study, compared to the wider veteran population. Firstly, some suggest that women generally are more likely than men to develop PTSD following a traumatic incident (Breslau et al., 1998). While studies have demonstrated comparable rates of PTSD among women and men veterans, such findings were found in samples where men faced significantly greater combat exposure (e.g., Afari et al., 2015). There in fact appears to be a direct link between combat exposure and PTSD among women veterans (Hassija et al., 2012). Although 19.2% of the present sample reported holding combat or combat support roles during service, it remains unclear how many were exposed to combat as women in the UK military were only allowed to hold combat roles as of 2018. Secondly, women are generally more likely to face interpersonal traumas, which increases the risk of developing PTSD compared to non-interpersonal traumas (Breslau, 2001). Military women who experience MST are at increased risk of PTSD, and may wait longer or entirely avoid seeking support from veteran services especially if feeling betrayed by the military institution (Monteith et al., 2021). MST survivors are also more likely to face difficulties in adjusting to civilian life (Blais et al., 2019; Skinner et al., 2000). Finally, 28.2% reported a high incidence of childhood adversity. Findings suggest that early victimisation increases the risk of PTSD, and women with a history of childhood sexual abuse who experience an incident of sexual victimisation during adulthood report more severe PTSD difficulties (Arata, 2000; Masho & Ahmed, 2007).

The present study had several limitations that require consideration. Firstly, there are some concerns regarding the sample and the generalizability of findings. The

sample was not random as participants were recruited via a women veterans' organisation. While this allowed recruiting a large sample of women veterans, women may have joined the organisation for a specific reason and the current sample is likely older than the wider women veteran population. Furthermore, the sample was restricted to those who had served in the Army. Thus, it remains unclear whether the present findings are generalisable to the wider women veteran population, specifically those who are younger and who served in the Navy and Royal Air Force. Secondly, the present study relied on self-reported data and biases or errors in reporting cannot be ruled out. Nonetheless, such data is valuable for developing an initial understanding of the mental health needs of the women veterans. Finally, while we consider the present response rate of 44.6% to be moderately high, there was a lack of data for non-responders and it remains unclear whether there are important differences compared to study responders.

The present study highlights important avenues for further research. Future studies may wish to investigate factors contributing to the higher prevalence of CMD's and PTSD among women veterans. Such research may investigate the nature of traumas women veterans face as well as factors contributing to psychological difficulties (e.g., military adversity, childhood adversity). Furthermore, investigating difficulties women face during and after military service, for example during reintegration, may provide insight into the higher prevalence of mental health difficulties after leaving the military. Future research may also wish to discern whether younger women veterans may also face such high prevalence and comorbidity. Still, the present study starts to draw the profile of women veterans who may be most at risk of experiencing mental health difficulties. Such findings hold important implications that may inform veteran and public services to ensure the appropriate provision of support. Further research is essential to further extend the potential implications for services to best meet the needs of women veterans, for example, by securing early psychological intervention and ensuring that such interventions match the difficulties and traumas women veterans face.

Acknowledgments

We would like to take the opportunity to acknowledge the support of the Women's Royal Army Corp Association (<https://wracassociation.org/>) for their support in facilitating this research via recruiting participants and advising the PI during the development of the survey.


Declaration of Conflicting Interests


The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship and/or publication of this article.

ORCID iDs

Laura Josephine Hendriks  <https://orcid.org/0000-0001-6760-3373>

Charlotte Williamson  <https://orcid.org/0000-0003-2104-921X>

References

- Afari, N., Pittman, J., Floto, E., Owen, L., Buttner, M., Hossain, N., Baker, D. G., Lindamer, L., & Lohr, J. B. (2015). Differential impact of combat on postdeployment symptoms in female and veterans of Iraq and Afghanistan. *Military Medicine, 180*(3), 296–303. <https://doi.org/10.7205/MILMED-D-14-00255>
- Annual population survey: UK armed forces veterans residing in Great Britain 2016*. <https://www.gov.uk/government/statistics/annual-population-survey-uk-armed-forces-veterans-residing-in-great-britain-2016>
- Arata, C. M. (2000). From child victim to adult victim: A model of predicting sexual revictimization. *Child Maltreatment, 5*(1), 28–38. <https://doi.org/10.1177/1077559500005001004>
- Asch, B. J., Miller, T., & Malchiodi, A. (2012). *A new look at gender and minority differences in officer career progression in the military*. RAND. <https://apps.dtic.mil/sti/citations/ADA562677>
- Babor, T. F., Higgins-Biddle, J. C., Saunders, J. B., & Monteiro, M. G. (2001). *AUDIT. The alcohol use disorders identification test. Guidelines for use in primary health care*. Geneva, Switzerland: World Health Organization. https://apps.who.int/iris/bitstream/10665/67205/1/WHO_MSD_MSB_01.6a.pdf
- Banyard, V. L., Williams, L. M., & Siegel, J. A. (2001). The long-term mental health consequences of child sexual abuse: An exploratory study of the impact of multiple traumas in a sample of women. *Journal of Traumatic Stress, 14*(4), 697–715. <https://doi.org/10.1023/A:1013085904337>
- Blais, R. K., Brignone, E., Fargo, J. D., Livingston, W., & Andresson, F. J. (2019). The importance of distinguishing between harassment-only and assault military sexual trauma during screening. *Military Psychology, 31*(3), 227–232. <https://doi.org/10.1080/08995605.2019.1598218>
- Breslau, N. (2001). The epidemiology of posttraumatic stress disorder: What is the extent of the problem? *Journal of Clinical Psychiatry, 62*(17), 16–22.
- Breslau, N., Kessler, R. C., Chilcoat, H. D., Schultz, L. R., Davis, G. C., & Andreski, P. (1998). Trauma and posttraumatic stress disorder in the community: The 1996 detroit area survey of trauma. *Archives of general psychiatry, 55*(7), 626–632. <https://doi.org/10.1001/archpsyc.55.7.626>
- Brooks, E., Dailey, N. K., Blair, B. D., & Shore, J. H. (2016). Listening to the patient: Women veteran's insights about health care needs, access, and quality in rural areas. *Military Medicine, 181*(9), 976–981. <https://doi.org/10.7205/MILMED-D-15-00367>
- Brooks, K., & Greenberg, N. (2017). Non-deployment factors affecting psychological wellbeing in military personnel: Literature review. *Journal of Mental Health, 27*(1), 80–90. <https://doi.org/10.1080/09638237.2016.1276536>
- Crowley, K., & Sandhoff, M. (2017). Just a girl in the army: U.S. Iraq war veterans negotiating femininity in a culture of masculinity. *Armed Forces and Society, 43*(2), 221–237. <https://doi.org/10.1177/0095327X16682045>
- Dalgard, O. S. (1996). Community mental health profile as tool for psychiatric prevention. In D. R. Trent, & C. Reed (Eds.), *Promotion of mental health* (Vol. 5, pp. 681–695). Aldershot, UK: Avebury.

- D'Amico, F., & Lee, L. (1999). *Gender camouflage: Women and the US military*. New York: University Press.
- Davis, T. M., & Wood, P. S. (1999). Substance abuse and sexual trauma in a female veteran population. *Journal of Substance Abuse Treatment, 16*(2), 123–127. [https://doi.org/10.1016/S0740-5472\(98\)00014-2](https://doi.org/10.1016/S0740-5472(98)00014-2)
- Debell, F., Fear, N. T., Head, M., Batt-Rawden, S., Greenberg, N., Wessely, S., & Goodwin, L. (2014). A systematic review of the comorbidity between PTSD and alcohol misuse. *Social Psychiatry and Psychiatric Epidemiology, 49*(9), 1401–1425. <https://doi.org/10.1007/s00127-014-0855-7>
- Dichter, M. E., & True, G. (2015). “This is the story of why my military career ended before it should have”: Premature separation from military service among U.S. Women veterans. *Journal of Women and Social Work, 30*(2), 187–199. <https://doi.org/10.1177/0886109914555219>
- Dobie, D. J., Kivlahan, D. R., Maynard, C., Bush, K. R., Davis, T. M., & Bradley, K. A. (2004). Posttraumatic stress disorder in female veterans: Association with self-reported health problems and functional impairment. *Archives of Internal Medicine, 164*(4), 394–400. <https://doi.org/10.1001/archinte.164.4.394>
- Dodds, C. D., & Kiernan, M. D. (2019). Hidden veterans: A review of the literature on women veterans in contemporary society. *Illness, Crisis & Loss, 27*(4), 293–310. <https://doi.org/10.1177/1054137319834775>
- Edens, E. L., & Rosenheck, R. A. (2012). Rates and correlates of pathological gambling among VA mental health service users. *Journal of Gambling Studies, 28*, 1–11. <https://doi.org/10.1007/s10899-011-9239-z>
- Edwards, P., & Wright, T. (2019). *No Man's Land: Research study to explore the experience & needs of women veterans in the UK*. <https://static1.squarespace.com/static/5829ccde2e69cf19589499ac/t/5d6d386d21083d00012a670a/1567438965062/No+Mans+Land+Final+TW+1.pdf>
- Eichler, M. (2014). Militarized masculinities in international relations. *Brown Journal of World Affairs, 21* (1), 81–93. <https://www.jstor.org/stable/24591032>
- Fear, N. T., Jones, M., Murphy, D., Hull, L., Iversen, A. C., Coker, B., Machell, L., Sundin, J., Woodhead, C., Jones, N., Greenberg, N., Landau, S., Dandeker, C., Rona, R. J., Hotopf, M., & Wessely, S. (2010). What are the consequences of deployment to Iraq and Afghanistan on the mental health of UK armed forces? A cohort study. *The Lancet, 375*(9728), 1783–1797. [https://doi.org/10.1016/S0140-6736\(10\)60672-1](https://doi.org/10.1016/S0140-6736(10)60672-1)
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American journal of preventive medicine, 14*(4), 245–258. [https://doi.org/10.1016/S0749-3797\(98\)00017-8](https://doi.org/10.1016/S0749-3797(98)00017-8)
- Finlay, A. K., Owens, M. D., Taylor, E., Nash, A., Capdarest-Arest, N., Rosenthal, J., Blue-Howells, J., Clark, S., & Timko, C. (2019). A scoping review of military veterans involved in the criminal justice system and their health and healthcare. *Health and Justice, 7*(1), 6. <https://doi.org/10.1186/s40352-019-0086-9>
- Forbes, D., Alkemade, N., Mitchell, D., Elhai, J. D., McHugh, T., Bates, G., Novaco, R. W., Bryant, R., & Lewis, V. (2014). Utility of the dimensions of anger reactions-5 (DAR-5) scale as a brief anger measure. *Depression and Anxiety, 31*(2), 166–173. <https://doi.org/10.1002/d.22148>

- Fox, J., & Pease, B. (2012). Military deployment, masculinity and trauma: Reviewing the connections. *Journal of Men's Studies*, 20(1), 16–31. <https://doi.org/10.3149/jms.2001.16>
- Freedly, J. R., Magruder, K. M., Mainous, A. G., Frueh, B. C., Geesey, M. E., & Carnemolla, M. (2010). Gender differences in traumatic event exposure and mental health among veteran primary care patients. *Military Medicine*, 175(10), 750–758. <https://doi.org/10.7205/MILMED-D-10-00123>
- Frueh, B. C., Grubaugh, A. L., Acierno, R., Elhai, J. D., Cain, G., & Magruder, K. M. (2007). Age differences in posttraumatic stress disorders, psychiatric disorders, and healthcare service use among veterans in veteran affairs primary care clinics. *The American Journal of Geriatric Psychiatry*, 15(8), 660–672. <https://doi.org/10.1097/01.JGP.0000260855.42209.31>
- Gamache, C., Rosenheck, R., & Tessler, R. (2003). Overrepresentation of women Veterans among homeless women. *American Journal of Public Health*, 93(7), 1132–1136. <https://doi.org/10.2105/AJPH.93.7.1132>
- Godfrey, R., Lilley, S., & Brewis, J. (2012). Biceps, bitches and borgs: Reading Jarhead's representation of the construction of the (masculine) military body. *Organization Studies*, 33(4), 541–562. <https://doi.org/10.1177/0170840612443458>
- Goldberg, D., & Williams, P. (1988). *A users' guide to the general health questionnaire*. NFER-Nelson.
- Goldzweig, C. L., Balekian, T. M., Rolon, C., Yano, E. M., & Skekelle, P. G. (2006). The state of women's veterans' health research: Results of a systematic literature reviews. *Journal of General Internal Medicine*, 21(S3), S82–S92. <https://doi.org/10.1111/j.1525-1497.2006.00380.x>
- Hamilton, A. B., Poza, I., & Washington, D. L. (2011). "Homelessness and trauma go hand-in-hand": Pathways to homelessness among women veterans. *Women's Health Issues*, 21(4), SS203–SS209. <https://doi.org/10.1016/j.whi.2011.04.005>
- Hassija, C. M., Jakupcak, M., Maguen, S., & Shipherd, J. C. (2012). The influence of combat and interpersonal trauma on PTSD, depression, and alcohol misuse in U.S. Gulf War and OEF/OIF women veterans. *Journal of Traumatic Stress*, 25(2), 216–219. <https://doi.org/10.1002/jts.21686>
- Hoffmire, C. A., Kemp, J. E., & Bossarte, R. M. (2015). Changes in suicide mortality for veterans and nonveterans by gender and history of VHA service use, 2000–2010. *Psychiatric Services*, 66(9), 959–965. <https://doi.org/10.1176/appi.ps.201400031>
- Hoggatt, K. J., Jamison, A. L., Lehavot, K., Cucciare, M. A., Timko, C., & Simpson, T. L. (2015). Alcohol and drug misuse, abuse, and dependence in women veterans. *Epidemiologic reviews*, 37(1), 23–37. <https://doi.org/10.1093/epirev/mxu010>
- Hughes, M. E., Waite, L. J., Hawkey, L. C., & Cacioppo, J. T. (2004). A short scale for measuring loneliness in large surveys: Results from two population-based studies. *Research on Aging*, 26(6), 655–672. <https://doi.org/10.1177/0164027504268574>
- Hundt, N. E., Barrera, T. L., Robinson, A., & Cully, J. A. (2014). A systematic review of cognitive behavioral therapy for depression in veterans. *Military Medicine*, 179(9), 942–949. <https://doi.org/10.7205/MILMED-D-14-00128>
- Jones, N., Greenberg, N., Phillips, A., Simms, A., & Wessely, S. (2019). Mental health, help-seeking behaviour and social support in the UK Armed Forces by gender. *Psychiatry*, 82(3), 256–271. <https://doi.org/10.1080/00332747.2019.1626200>
- Jones, N., Jones, M., Greenberg, N., Philips, A., Simms, A., & Wessely, S. (2020). UK Military women: Mental health, military service, and occupational adjustment. *Occupational Medicine*, 70(4), 235–242. <https://doi.org/10.1093/occmed/kgaa019>

- Kovitz, M. (2003). The roots of military masculinity. In P. Higate (Ed.), *Military masculinities: Identity and the state* (pp. 1–14). Praeger Publishers.
- Lehavot, K., Katon, J. G., Chen, J. A., Fortney, J. C., & Simpson, T. L. (2018). Post-traumatic stress disorder by gender and veteran status. *American Journal of Preventative Medicine, 54*(1), e1–e9. <https://doi.org/10.1016/j.amepre.2017.09.008>
- Maguen, S., Luxton, D. D., Skopp, N. A., & Madden, E. (2012). Gender differences in traumatic experiences and mental health in active duty soldiers redeployed from Iraq and Afghanistan. *Journal of Psychiatric Research, 46*(3), 311–316. <https://doi.org/10.1016/j.jpsychires.2011.11.007>
- Masho, S. W., & Ahmed, G. (2007). Age at sexual assault and posttraumatic stress disorder among women: Prevalence, correlates and implications for prevention. *Journal of Women's Health, 16*(2), 262–271. <https://doi.org/10.1089/jwh.2006.M076>
- McCauley, H. L., Blosnich, J. R., & Dichter, M. E. (2015). Adverse childhood experiences and adult health outcomes among veteran and non-veteran women. *Journal of Women's Health, 24*(9), 723–729. <https://doi.org/10.1089/jwh.2014.4997>
- Ministry of Defence (2018). Research and analysis: Army sexual harassment report and action plan 2018. <https://www.gov.uk/government/publications/army-sexual-harassment-report-and-action-plan-2018>
- Ministry of Defence (2019). Population projections: UK Armed Forces Veterans residing in Great Britain, 2016 to 2028. <https://www.gov.uk/government/publications/population-projections-uk-armed-forces-veterans-residing-in-great-britain-2016-to-2028>
- Monteith, L. L., Holliday, R., Schneider, A. L., Miller, C. N., Bahraini, N. H., & Forster, J. E. (2021). Institutional betrayal and help-seeking among women survivors of military sexual trauma. *Psychological Trauma: Theory, Research, Practice, and Policy, 13*(7), 814–823. <https://doi.org/10.1037/tra0001027>
- Morland, L. A., Mackintosh, M. A., Rosen, C. S., Willis, E., Resick, P., Chard, K., & Frueh, B. C. (2015). Telemedicine versus in-person delivery of cognitive processing therapy for women with posttraumatic stress disorder: A randomized noninferiority trial. *Depression and Anxiety, 32*(11), 811–820. <https://doi.org/10.1002/da.22397>
- Murphy, D., Ross, J., Ashwick, R., Armour, C., & Busuttill, W. (2017). Exploring optimum cut-off scores to screen for probably posttraumatic stress disorder within a sample of UK treatment-seeking veterans. *European Journal of Psychotraumatology, 8*(1), 1398001. <https://doi.org/10.1080/20008198.2017.1398001>
- NATO. (2015). *Summary of the national reports of NATO member and partner nations to the NATO committee on gender perspectives*. https://www.nato.int/cps/ie/natohq/news_140013.htm
- Nuciari, M. (2006). Women in the military. In G. Caforio (Ed.), *Handbook of the sociology of the military* (pp. 279–297). Springer Publishing.
- Rhead, R., MacManus, D., Jones, M., Greenberg, N., Fear, N., & Goodwin, L. (2020). Mental health disorders and alcohol misuse among UK military veterans and the general population: A comparison study. *Psychological Medicine, 1*–11. <https://doi.org/10.2139/ssrn.3399611>
- Rosen, L. N., Knudson, K. H., & Fancher, P. (2003). Cohesion and the culture of hypermasculinity in U.S. Army Units. *Armed Forces & Society, 29*(3), 325–351. <https://doi.org/10.1177/0095327X0302900302>
- Rutheford, S., Schneider, R., & Walmsley, A. (2006). *A quantitative and qualitative research into sexual harassment in the Armed Forces*. <https://webarchive.nationalarchives.gov.uk/20121018171845/> and <http://www.mod.uk/NR/rdonlyres/538E55EE-9CA4-4177-9A0B-6853A431B283/0/20060522SRReport.pdf>

- Schaffer, B. J. (2014). Female military veterans: Crime and psychosocial problems. *Journal of Human Behaviour in the Social Environment*, 24(8), 996–1003. <https://doi.org/10.1080/10911359.2014.953415>
- Simkus, K., Hall, A., Heber, A., & VanTil, L. (2019). *2019 Veteran Suicide Mortality Study: Follow-up period from 1976 to 2014*. <https://www.veterans.gc.ca/eng/about-vac/research/research-directorate/publications/reports/veteran-suicide-mortality-study-2019#exec-summary>
- Sims, C. S., Drasgow, F., & Fitzgerald, L. F. (2005). The effects of sexual harassment on turnover in the military: Time-dependent modelling. *Journal of Applied Psychology*, 90(6), 1141–1152. <https://doi.org/10.1037/0021-9010.90.6.1141>
- Skinner, K. M., Kressin, N., Frayne, S., Tripp, T. J., Hankin, C. S., Miller, D. R., & Sullivan, L. M. (2000). The prevalence of military sexual assault among female veterans' administration outpatients. *Journal of Interpersonal Violence*, 15(3), 291–310. <https://doi.org/10.1177/088626000015003005>
- Spitzer, R. L., Kroenke, K., & Williams, J. B. (1999). Validation and utility of a self-report version of PRIME-MD: The PHQ primary care study. *JAMA*, 282(18), 1737–1744. <https://doi.org/10.1001/jama.282.18.1737>
- Stevellink, S. A., Jones, M., Hull, L., Pernet, D., MacCrimmon, S., Goodwin, L., MacManus, D., Murphy, D., Jones, N., Greenberg, N., Rona, R. J., Fear, N. T., & Wessely, S. (2018). Mental health outcomes at the end of the British involvement in the Iraq and Afghanistan conflicts: A cohort study. *The British Journal of Psychiatry*, 213(6), 690–697. <https://doi.org/10.1192/bjp.2018.175>
- Street, A. E., Gradus, J. L., Giasson, H. L., Vogt, D., & Resick, P. A. (2013). Gender differences among veterans deployed in support of the wars in Afghanistan and Iraq. *Journal of General Internal Medicine*, 28(2), 556–562. <https://doi.org/10.1007/s11606-013-2333-4>
- Tanielian, T., & Jaycox, L. H. (Eds.). (2008). *Invisible wounds of war: Psychological and cognitive injuries, their consequences, and services to assist recovery*. RAND Corporation.
- Turchik, J. A., & Wilson, S. M. (2010). Sexual assault in the U.S. Military: A review of the literature and recommendations for the future. *Aggressive and Violent Behaviour*, 15(4), 267–277. <https://doi.org/10.1016/j.avb.2010.01.005>
- Washington, D. L., Bean-Mayberry, B., Riopelle, D., & Yano, E. M. (2011). Access to care for women veterans: Delayed healthcare and unmet need. *Journal of General Internal Medicine*, 26(2), S655–S661. <https://doi.org/10.1007/s11606-011-1772-z>
- Washington, D. L., Kleimann, S., Michelini, A. N., Kleimann, K. M., & Canning, M. (2007). Women veterans' perceptions and decision-making about Veterans Affairs health care. *Military Medicine*, 172(8), 812–817. <https://doi.org/10.7205/MILMED.172.8.812>
- Washington, D. L., & Yano, E. M. (2013). PTSD Women veterans' prevalence of PTSD care. *Journal of General Internal Medicine*, 28(10), 1265. <https://doi.org/10.1111/j.1525-1497.2006.00369.x>
- Washington, D. L., Yano, E. M., Simon, B., & Sun, S. (2006). To use or not to use: What influences why women veterans choose VA health care. *Journal of General Internal Medicine*, 21(S3), S11–S18. <https://doi.org/10.1111/j.1525-1497.2006.00369.x>
- Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, T., Marx, B. P., & Schnurr, P. (2013). The PTSD Checklist for DSM-5 (PCL-5) 2013 Scale available from the National Center for PTSD.
- Westermeyer, J., Canive, J., Thuras, P., Oakes, M., & Spring, M. (2013). Pathological and problem gambling among veterans in clinical care: Prevalence, demography, and clinical correlates. *The American Journal on Addictions*, 22(3), 218–225. <https://doi.org/10.1111/j.1521-0391.2012.12011.x>

- Wolff, K. B., & Mills, P. D. (2016). Reporting military sexual trauma: A mixed-methods study of women veterans' experiences who served from World War II to the war in Afghanistan. *Military Medicine*, *181*(8), 840–848. <https://doi.org/10.7205/MILMED-D-15-00404>
- Wright, S. M., Craig, T., Campbell, S., Schaefer, J., & Humble, C. (2006). Patient satisfaction of female and male users of Veterans Health Administration services. *Journal of General Internal Medicine*, *21*(3), S26–S32. <https://doi.org/10.1111/j.1525-1497.2006.00371.x>
- Yalch, M. M., Hebenstreit, C. L., & Maguen, S. (2018). Influence of military sexual assault and other military stressors on substance use disorder and PTS symptomology in female military veterans. *Addictive Behaviors*, *80*, 28–33. <https://doi.org/10.1016/j.addbeh.2017.12.026>
- Yan, G. W., McAndrew, L., D'Andrea, E. A., Lange, G., Santos, S. L., Engel, C. C., & Quigley, K. S. (2013). Self-reported stressors of National Guard women veterans before and after deployment: The relevance of interpersonal relationships. *Journal of General Internal Medicine*, *28*(2), S549–S555. <https://doi.org/10.1007/s11606-012-2247-6>
- Yano, E. M., Hayes, P., Wright, S., Schnurr, P. P., Lipson, L., Bean-MayBerry, B., & Washington, D. L. (2010). Integration of women veterans into VA quality improvement research efforts: What researchers need to know. *Journal of General Internal Medicine*, *25*(1), 56–61. <https://doi.org/10.1007/s11606-009-1116-4>