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Past-year Intimate Partner Violence and Abuse among Regular UK Armed Forces serving and ex-serving personnel: results from the fourth phase of a military cohort study

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Title: Past-year Intimate Partner Violence and Abuse among Regular UK Armed Forces serving and ex-serving personnel: results from the fourth phase of a military cohort study

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Abstract

Purpose: Research from the United States has documented elevated rates of Intimate Partner Violence and Abuse (IPVA) among ex-serving compared to serving Armed Forces personnel; however, studies from other countries are limited and inconclusive. This research therefore examined rates of IPVA use and experience among serving and ex-serving UK Regular Armed Forces personnel and explored factors associated with these outcomes.

Methods: Rates of past-year IPVA use and experience were estimated among 3,127 serving and ex-serving Regular personnel participating in Phase 4 of the King's Centre for Military Health Research cohort study. Univariate and multivariate logistic regression analyses examined sociodemographic, pre-enlistment, military, and adverse mental health outcomes (common mental disorders, probable and complex post-traumatic stress disorder, anger difficulties and alcohol misuse) associated with IPVA use and experience.

Results: The rate of past-year IPVA use was 9.14% among serving and 9.38% among ex-serving personnel, with 15.27% and 14.17% reporting IPVA experience, respectively. There were no differences in overall IPVA rates between serving and ex-serving personnel, with some differences emerging in relation to distinct IPVA behaviours. Younger age, relationship status, increased childhood adversity, Officer rank, and all adverse mental health outcomes were independently associated with higher odds of IPVA use and/or experience, with anger difficulties showing the strongest associations.

Conclusions: This study found little evidence of IPVA risk differences between serving and ex-serving personnel, but pointed to differences in some IPVA behaviours that warrant further exploration. Four in five participants reported no past-year IPVA, but identified rates indicate that IPVA remains an important public health issue among this population. Continued efforts are needed to help identify IPVA use and experience among military populations, while anger

management, alcohol misuse and mental health difficulties represent key areas for prevention efforts and support pathways.

Keywords: Intimate partner violence and abuse; UK military; Veterans; Mental health

1. Background

Intimate partner violence and abuse (IPVA), defined as physical, sexual and emotional abuse and controlling behaviours by an intimate partner (1), is a pervasive public health issue with extensive health, social and economic implications for individuals and society (2). Accumulating research has shown that IPVA is more prevalent among military populations than civilians, with 2.94 times higher odds of IPVA experience [victimisation] and 3.41 times higher odds of IPVA use [perpetration], alongside higher reported rates of recent IPVA experience (20.7% vs 6.2%) and use (12.7% vs 5.7%) (3-5). Efforts to disaggregate these findings by military serving status (i.e. differentiating between serving personnel and those who formerly served) have particularly raised concerns about high IPVA rates among ex-serving personnel. For example, a meta-analysis of population studies, largely conducted in the United States (US), found significantly higher rates of IPVA use among ex-serving compared to serving personnel (31.8% vs. 5.2%), and indicated a potential (though non-significant) difference in IPVA experience rates (24.3% vs. 13.3%) (3). However, understanding of rate differences between serving and ex-serving personnel has been hindered by methodological and sampling heterogeneity across studies, and findings have not been replicated outside of the US, where research on IPVA in military populations remains sparse.

Higher rates of IPVA among ex-serving personnel have been linked to various theoretical perspectives. Military-to-civilian transition theory suggests ex-serving personnel can face vulnerabilities during transition from military to civilian life, due to changes they

experience in lifestyle, cultural differences between military and civilian environments, shifts in identity and separation from military resources and support mechanisms (6, 7). These vulnerabilities can amplify maladaptive responses that personnel and their partners may develop to accumulating occupational stressors during military service, such as frequent relocations, deployments and separations (8, 9). Research has also documented higher prevalence of common mental disorders (CMD), post-traumatic stress disorder (PTSD) and greater alcohol misuse in ex-serving relative to serving personnel (10-12), all of which are factors associated with increased risk of IPVA use and experience (4, 13-15). Additionally, socialisation into military organisational culture may increase risk of inter-personal aggression and violence within the family, through developed expectations of subordination and need for control, as well as the legitimisation and normalisation of violence within military contexts (16, 17). Such patterns may continue into post-Service life (18).

Evidence of higher IPVA risk among ex-serving compared to serving personnel is predominantly based on meta-analyses of studies conducted with serving and ex-serving personnel separately. This poses challenges due to measurement and sampling differences across studies (19, 20), particularly as research with ex-serving personnel has more often leveraged clinical rather than community samples (21). Where differences in IPVA rates have been examined with serving and ex-serving personnel sampled in the same study, findings have been inconclusive. A study conducted in the US found higher rates and frequencies of IPVA use and IPVA experience among ex-serving participants, including elevated rates of bidirectional IPVA (19). In contrast, a study with UK Armed Forces personnel found no differences in IPVA use and experiences between serving and ex-serving personnel (4). Further studies are needed to compare IPVA rates among serving and ex-serving personnel, including to examine differences by type of IPVA (e.g. physical, emotional/psychological/coercive control, sexual IPVA). Studies from outside of the US are of particular interest to the field, given the scarcity of research from diverse national contexts

and the need to inform tailored efforts to identify, prevent and address IPVA among serving and ex-serving populations (3). IPVA prevalence estimates for military populations in one national context may not be applicable to others, given differences in the characteristics of the Armed Forces, the nature of military service and associated stressors (e.g. level of geographic mobility), national and organisational policies and cultures (9).

To address these gaps, this research used data from the fourth phase of a longitudinal study of UK military personnel to examine rates of use and experience of different IPVA types (i.e. physical, emotional/psychological/coercive control, and sexual IPVA) and patterns (unidirectional vs. bidirectional IPVA) among serving compared to ex-serving UK Regular Armed Forces personnel. The study also examined socio-demographic, military and mental health factors associated with IPVA use and experience.

2. Methods

Study design and data

The study analysed data from Phase 4 of the King's Centre for Military Health Research (KCMHR) Health and Wellbeing Cohort Study (12). This longitudinal cohort study, with a focus on understanding the impacts of deployment to Iraq and Afghanistan, has assessed the health and wellbeing of UK serving and ex-serving personnel at four time points: 2004-2006 (Phase 1), 2007-2009 (Phase 2), 2014-2016 (Phase 3) and 2022-2023 (Phase 4) (10, 12, 22, 23). While some participants have been followed up across these four Phases, Phases 2 and 3 also added replenishment samples of personnel who joined since the last data collection period, meaning baseline data were collected at different time points (at sampling). Full details of the previous waves, including sampling strategy, response weighting and data collection procedures, have been detailed previously (10, 22, 23). This study focused on cross-sectional analysis of data from Phase 4 (24), with some measures drawn from previous phases as necessary (see 'Measures' section).

The Phase 4 sample consisted of 4,104 personnel, with an adjusted response rate of 54.6% (12). The sample for this study was limited to serving and ex-serving Regular personnel due to the unique nature of service for those who serve in the Reserves (25). Those with missing data across all IPVA measures (n=96) were excluded, resulting in a final analytical sample of 3,127 participants. While the cohort study still includes serving personnel, the majority were ex-serving (75.66%, n= 2,230), reflecting the transition of some of the original sample to civilian life and that no replenishment sample of serving personnel was included at Phase 4 as the cohort now represents an 'era' cohort broadly representative of those who serving during the conflicts of Iraq and Afghanistan.

Measures

Intimate Partner Violence and Abuse: Measurement of rates of past-year IPVA use and experience were adapted from the British Crime Survey (26). Participants were asked: *"In the past 12 months have you done any of the following to a current or ex-partner?"* (yes/no), with a series of questions covering four types of IPVA use [perpetration] and experience [victimisation] as defined by the World Health Organization (1): emotional/psychological abuse (e.g. belittling, humiliating, frightening and threatening); physical violence (e.g. pushing, holding or pinning down, slapping, kicking, biting); sexual violence (unwanted sexual activity); and controlling behaviours (trying to control partner, e.g. by stopping them from seeing friends or family).

As well as rates of individual IPVA behaviours, variables were constructed for any use or experience of emotional and psychological (EPC) violence (controlling, belittling, frightened/threatened) and any physical or sexual abuse (P/S) violence (pushed/held/slapped, kicked/bit/hit, forced sex). Both variables were coded as "None" if the participant responded "No" to use or experience of any EPC or P/S behaviour, and "Any" if the participant reported using or experiencing at least one EPC or P/S behaviour. Variables of overall IPVA

experience and overall IPVA perpetration were also created, coded "Yes" if the participant reported at least one IPVA use or experience behaviour. If the participant reported "No" to some behaviours but was missing on others, they were recorded as missing. Finally, a variable was constructed to distinguish between patterns of use and experience, coded as either unidirectional IPVA experience, unidirectional IPVA use, and bidirectional IPVA (use and experience reported by the same participant).

Sociodemographic factors: The analysis examined sociodemographic data on sex (male/female, baseline), age (20-39; 40-49; 50-59; 60 and over, Phase 4), educational attainment (no qualification/O level/other qualification; GSCE/A level; Degree, Phase 4), and relationship status (in relationship; not in a relationship, Phase 4). Individuals were asked 'What is your current relationship status?', with respondents who reported being married, in a civil partnership, living with a partner or in a long-term relationship coded as 'in a relationship'. Participants who reported being single and not in a long-term relationship, separated, divorced or widowed were coded as 'not in a relationship'.

Military factors: Military factors included serving status (serving/ex-serving, Phase 4); Service branch (Naval Service [Royal Navy and Marines]; Army; Royal Air Force [RAF], Phase 4); rank (Officer; Non-Commissioned Officer [NCO]; Other Rank, Phase 4); deployed theatre (not deployed to Iraq or Afghanistan; deployed to Iraq or Afghanistan, Phase 3); role on last deployment to Iraq or Afghanistan (combat role; combat support role; combat service support, Phase 3).

Childhood adversity: Participants were asked 16 true/false questions about their experiences (both adverse and protective) during childhood (Phase 3) (27) (e.g., "*I came from a close family*"). Endorsed items were reverse coded as needed, summed to create a vulnerability count: 0−2 (low childhood adversity); 3−5 (moderate); and 6 or more (high).

Mental health: Mental health outcomes included probable CMD, probable PTSD, complex PTSD (CPTSD), and alcohol misuse. Probable CMD caseness was measured by using the 12-item General Health Questionnaire (GHQ-12), which measures symptoms of common psychiatric conditions (28). The cut-off indicating the presence of a probable CMD, such as depression or anxiety, was ≥4 (score range 0-12) (29). To measure probable PTSD, the 20-item self-report PCL-5 was used, with a score of ≥38 defining probable PTSD (overall score range 0-80) (30). The Disturbances in Self-Organisation (DSO) sub-scale from the International Trauma Questionnaire (ITQ) was used to measure CPTSD, scoring as per Cloitre et al. (31). Utilising the DSO ITQ sub-scale, participants must first meet the criteria to be classed as a probable PTSD 'case' but then meet the additional DSO criteria to also be classed as a CPTSD 'case'. Alcohol misuse was determined by scoring 16 or more on the 10-item Alcohol Use Disorders Identification Test (AUDIT-10) (score range 0-40) (32, 33).

Anger: Anger was measured by the Dimensions of Anger Reactions (DAR-5) measure (34). Five questions were asked regarding behaviour from the past four weeks (e.g., "I often find myself getting angry at people or situations") with a 5-point Likert scale including "Not at all", "A little", "Moderately", "Quite a bit", "Very much. Total scores range from 5 to 25, with a cut-off score of 12 or greater indicating difficulty with anger (34).

Analysis

All statistical analyses were performed using the statistical package Stata (Version 18), with analysis estimates weighted to account for sampling and response rates across the phases of the cohort and in Phase 4 (12). Estimates are reported as unweighted counts and weighted proportions with their 95% confidence intervals (CIs). Statistical significance was set at $p < .05$ for all analyses. Following presentation of the sociodemographic and military profile of the sample (Table 1), rates of individual types of IPVA use and experience, as well

as any use or experience, were examined across the sample before stratifying by serving status to compare rates of IPVA types and patterns between serving and ex-serving personnel.

Univariable and multivariable logistic regression analyses were used to explore crude and independent associations between IPVA use and/or experience and sociodemographic, pre-enlistment, military and mental health factors. Due to the low number of serving personnel reporting IPVA outcomes (n=134 any IPVA experience, n=80 any IPVA use), regression analyses were restricted to ex-serving personnel only. Adjusted analyses controlled for *a priori* confounders including sex, age, educational status, relationship status, Service branch and rank. Separate models were fitted for individual mental health factors with *a priori* confounders. A complete-case analysis approach was used for missing data.

Ethical approval

Ethical approval for this study was provided by the UK Ministry of Defence Research Ethics Committee (Ref: 2061/MODREC/21). All participants gave informed consent to before taking part.

3. Results

Respondent characteristics

Most participants were male (n=2,729, 90.09%), with a mean age of 50 years (SD 9.91 years), reported education to degree level (n=1,926, 55.91%) and were in a relationship (n=2,670, 85.09%) (Table 1). The majority of participants were ex-serving (n=2,230, 75.66%), currently/previously served as NCOs (n=1,811, 67.37%), were affiliated with the Army (n=1,781, 60.76%), and deployed to Iraq and/or Afghanistan (n=2,178, 62.92%). Approximately one third of participants (n=626, 32.16%) last deployed to Iraq and Afghanistan in a combat role.

Table 1 Sample sociodemographic and military characteristics (N=3,127)

Characteristic	n	% (weighted)
Sex (baseline)		
Male	2,729	90.09
Female	398	9.91
Age (Phase 4), years		
25-39	548	23.42
40-49	978	32.64
50-59	1,118	30.86
60 and over	483	13.08
Educational attainment (Phase 4)		
None / O level/ other qualification	532	20.19
A level	642	23.90
Degree equivalent or above*	1,926	55.91
Relationship status (Phase 4)		
Currently in relationship	2,670	85.09
Not currently in relationship**	449	14.91
Serving status (Phase 4)		
Serving	897	24.34
Discharged	2,230	75.66
Rank (Phase 4)		
Officer	1,107	22.13
NCO	1,811	67.37
Other Rank	209	10.49
Service branch (baseline)		
Naval Service	561	18.04
Army	1,781	60.76
RAF	785	21.20
Deployed to Iraq and/or Afghanistan (Phase 3)		
No	945	37.08
Yes	2,178	62.92
Deployment role (Phase 3)		
Combat	626	32.16
Combat support	300	13.47
Combat service support	1,252	54.37

NCO = Non-Commissioned Officer; RAF = Royal Air Force.

* Includes University degree, Higher National Certificate/Diploma, National Vocational Qualification and Business and Technology Education Council level 4 and above.

** Includes single & not in a long-term relationship, separated, divorced and widowed.

Self-reported IPVA use and experience

As Table 2 shows, across the overall sample, 14.43% of participants (CI=12.00-16.01%) reported IPVA experience and 9.32% (CI=8.16-10.62%) reported IPVA use. Experiences of emotional, psychological and coercive types of IPVA were more common than physical or sexual IPVA among both serving and ex-serving personnel (13.41%,

CI=12.01-14.94% vs. 2.90%, CI=2.25-3.71%). The same pattern was observed in IPVA use (8.54%, CI=7.42-9.80% vs. 1.65%, CI=1.19-2.28%).

Table 2: Rates of self-reported IPVA use and experience in serving and ex-serving Regular personnel (N=3,127)

	IPVA Experience		IPVA Use	
	n	% (95% CI)	n	% (95% CI)
Any IPVA	432	14.43 (12.00-16.01)	292	9.32 (8.16-10.62)
Any EPC violence	404	13.41 (12.01-14.94)	270	8.54 (7.42-9.80)
Controlling	167	5.46 (4.60-6.47)	28	0.89 (0.58-1.36)
Belittling	355	11.84 (10.52-13.30)	246	7.47 (6.45-8.64)
Frightened/threatened	27	0.97 (0.63-1.50)	18	0.79 (0.47-1.34)
Any P/S violence	78	2.9 (2.25-3.71)	45	1.65 (1.19-2.28)
Pushed, held, slapped	56	2.06 (1.53-2.77)	37	1.38 (0.96-1.97)
Kicked, bit, hit	35	1.39 (0.96-2.03)	*<10*	0.29 (0.14-0.61)
Forced sex	11	0.54 (0.27-1.07)	*<10*	0.16 (0.06-0.43)

Note: Cell counts are unweighted, % and CI are weighted. Cell counts less than 10 have been omitted to preserve anonymity. CI = Confidence Interval. IPVA = Intimate Partner Violence and Abuse; EPC = Emotional/Psychological/Coercive control; P/S = Physical/Sexual.

Comparisons of IPVA rates by serving status indicated there were no significant differences in the rates of IPVA use and experience between serving and ex-serving personnel (IPVA use 9.14%, CI=7.13-11.64 vs. 9.38%, CI=8.02-10.94; IPVA experience 15.27%, CI=12.66-18.30%, 14.17%, CI=12.48-16.04%, respectively; Table 3). Looking at differences across IPVA types, ex-serving personnel reported significantly more experiences of controlling behaviour (7.12%, CI=5.30-9.49% vs. 4.93%, CI=3.99-6.07%) and being pushed, held or slapped by partner (0.86%, CI=0.42-1.75% vs. 2.45%, CI=1.78-3.37%) as suggested by a p value of <0.05. However, this difference cannot be overstated due to low event counts and the respective confidence intervals. Among both serving and ex-serving personnel who reported any IPV, unidirectional experience was the most predominant reported pattern (52.28%, CI=43.43-61.00%; 49.11%, CI=43.22-55.02%; Table 4), followed by bidirectional IPVA (26.34%, CI=19.02-35.35%; 28.10%, CI=22.97-33.87%). There were no statistically significant differences between serving and ex-serving personnel in these IPVA patterns.

Table 3: Rates of self-reported IPVA use and experience among Regulars, by serving status (N=3,127)

	Serving Regulars (n=897, 24.34%)		Ex-Serving Regulars (n=2,230, 75.66%)	
	n	% (95% CI)	n	% (95% CI)
Any IPVA experience	134	15.27 (12.66-18.30)	298	14.17 (12.48-16.04)
Any EPC experience	127	14.22 (11.70-17.17)	277	13.15 (11.52-14.97)
Controlling*	57	7.12 (5.30-9.49)	110	4.93 (3.99-6.07)
Belittling	107	11.72 (9.48-14.4)	248	11.88 (10.31-13.64)
Frightened/threatened	*<10*	---	20	0.95 (0.59-1.55)
Any P/S experience	19	2.26 (1.37-3.73)	59	3.10 (2.33-4.11)
Pushed, held, slapped*	*<10*	---	47	2.45 (1.78-3.37)
Kicked, bit, hit	13	1.51 (0.83-2.74)	22	1.36 (0.85-2.16)
Forced sex	*<10*	---	*<10*	---
Any IPVA use	80	9.14 (7.13-11.64)	212	9.38 (8.02-10.94)
Any EPC use	76	8.47 (6.56-10.89)	194	8.55 (7.25-10.07)
Controlling	*<10*	---	20	0.89 (0.54-1.47)
Belittling	69	7.38 (5.62-9.65)	177	7.50 (6.30-8.91)
Frightened/threatened	*<10*	---	12	0.75 (0.39-1.42)
Any P/S use	10	1.52 (0.80-2.88)	35	1.68 (1.15-2.45)
Pushed, held, slapped	*<10*	---	30	1.51 (1.01-2.26)
Kicked, bit, hit	*<10*	---	*<10*	---
Forced sex	*<10*	---	*<10*	---

Note: * p<0.05. Cell counts unweighted, % and CI weighted. Cell counts less than 10 have been omitted to preserve anonymity. CI = Confidence Interval. IPVA = Intimate Partner Violence and Abuse; EPC = Emotional/Psychological/Coercive control; P/S = Physical/Sexual.

Table 4: Patterns of self-reported IPVA among Regulars who reported any IPVA, by serving status (n=566)

	Serving Regulars (n=172, 25.59%)		Ex-Serving Regulars (n=394, 74.41%)	
	n	% (95% CI)	n	% (95% CI)
Use only	39	21.38 (15.25-29.12)	101	22.79 (18.41-27.86)
Experience only	92	52.28 (43.43-61.00)	186	49.11 (43.22-55.02)
Bidirectional	41	26.34 (19.02-35.35)	107	28.10 (22.97-33.87)

Note: * p<0.05. Cell counts are unweighted, % and CI are weighted. CI = Confidence Interval. IPVA = Intimate Partner Violence and Abuse.

Socio-demographic, pre-enlistment, military and mental health factors associated with self-reported IPVA use and experience among ex-serving personnel

Associations with socio-demographic, pre-enlistment, military and mental health factors were explored among ex-serving personnel only due to low IPVA endorsement among serving personnel. After adjusting for *a priori* factors, ex-serving personnel over 50 years of age had reduced odds of both IPVA experience (50-59 years aOR 0.43, CI=0.27-0.70; 60

years and over aOR 0.31, CI=0.17-0.56) and IPVA use (50-59 years aOR 0.48, CI=0.25-0.91; 60 years and over aOR 0.40, CI=0.20-0.81) compared to those in lower age groups (Table 5; Table 6). Not being in relationship was associated with increased odds of IPVA experience and reduced odds of IPVA use, compared to being in a relationship (IPVA use aOR 0.40, CI=0.22-0.72; IPVA experience aOR 1.70, CI=1.17-2.47). Increased childhood adversity was associated with increased odds of both IPVA experience (moderate adversity aOR 1.72, CI=1.19-2.48; high adversity aOR 1.85, CI=1.24-2.78) and IPVA use (moderate adversity aOR 1.80, CI=1.20-2.70; high adversity 1.94, CI=1.22-3.09). Sex was not significantly associated with either IPVA use or experience.

Among military and deployment factors, rank was the only factor significantly associated with IPVA experience and IPVA use after adjustment, with Officers showing increased odds of both IPVA experience (aOR 1.43, CI=1.01-2.03) and IPVA use (aOR 1.57, CI=1.07-2.31) compared to NCOs. All mental health outcomes were independently associated with both IPVA use, with those meeting caseness for probable CMD, PTSD, CPTSD, anger management difficulties and alcohol misuse having significantly higher odds of using IPVA (anger score 12+ aOR 4.42, CI=2.95-6.63; probable CMD aOR 3.10, CI=2.16-4.43; probable PTSD aOR 2.44, CI=1.50-3.98; probable CPTSD aOR 2.50, CI=1.41-4.43, probable alcohol misuse aOR 2.06, CI=1.24-3.40). Similarly, all mental health factors were independently associated with IPVA experience (anger score 12+ aOR 3.54, CI=2.45-5.10; probable CMD aOR 3.59, CI=2.61-4.92; probable PTSD aOR 3.29, CI=2.19-4.93; probable CPTSD aOR 2.35, CI=1.44-3.82; probable alcohol misuse aOR 2.27, CI=1.46-3.51).

Table 5: Factors associated with IPVA use in ex-serving Regular personnel (n=2,230)

	No IPVA use (n=1,987, 90.62%)	**Any IPVA use (n=212, 9.38%)**	**OR (95% CI)**	**aOR[1] (95% CI)**
Sex				
Male	1,752 (90.45)	190 (9.55)	1.00	1.00
Female	235 (92.32)	22 (7.68)	0.79 (0.45-1.37)	0.75 (0.43-1.32)
Age (in years)				
25-39	252 (87.75)	35 (12.25)	1.00	1.00
40-49	518 (89.36)	66 (10.64)	0.85 (0.51-1.42)	0.74 (0.40-1.40)

	No IPVA use (n=1,987, 90.62%)	Any IPVA use (n=212, 9.38%)	OR (95% CI)	aOR[1] (95% CI)
50-59	797 (92.32)	73 (7.68)	0.60 (0.36-0.98)	0.48 (0.25-0.91)
60 and over	420 (92.55)	38 (7.45)	0.58 (0.33-1.00)	0.40 (0.20-0.81)
Education				
No qual, O level or other	372 (88.84)	47 (11.16)	1.19 (0.79-1.81)	1.33 (0.84-2.09)
A level	442 (92.42)	31 (7.58)	0.78 (0.47-1.28)	0.78 (0.47-1.31)
Degree	1,163 (90.47)	133 (9.53)	1.00	1.00
Relationship status				
In a relationship	1,700 (89.77)	194 (10.23)	1.00	1.00
Not in a relationship	284 (85.62)	18 (4.38)	0.40 (0.23-0.72)	0.40 (0.22-0.72)
Childhood adversity				
Low (<3)	963 (93.35)	84 (6.65)	1.00	1.00
Moderate (3-5)	597 (89.05)	70 (10.95)	1.73 (1.16-2.58)	1.80 (1.20-2.70)
High (6+)	361 (88.31)	47 (11.69)	1.86 (1.19-2.91)	1.94 (1.22-3.09)
Rank				
Officer	606 (88.90)	78 (11.10)	1.29 (0.91-1.82)	1.57 (1.07-2.31)
NCO	1,206 (91.16)	114 (8.84)	1.00	1.00
Other Rank	175 (90.35)	20 (9.65)	1.10 (0.63-1.93)	0.89 (0.45-1.77)
Service branch				
Naval Service	377 (91.70)	40 (8.30)	0.78 (0.50-1.24)	0.86 (0.55-1.36)
Army	1,113 (89.65)	127 (10.35)	1.00	1.00
RAF	497 (92.40)	45 (7.60)	0.71 (0.46-1.10)	0.87 (0.56-1.36)
Deployed to Ir./Afgh.				
No	694 (92.19)	58 (7.81)	0.72 (0.50-1.05)	0.85 (0.57-1.26)
Yes	1,290 (89.49)	154 (10.51)	1.00	1.00
Last deployment role				
Combat	354 (89.12)	45 (10.88)	1.14 (0.71-1.83)	0.95 (0.57-1.61)
Combat support	169 (96.83)	27 (13.17)	1.42 (0.80-2.52)	1.30 (0.72-2.33)
Combat service support	767 (90.35)	82 (9.65)	1.00	1.00
Anger score				
0-11	1,737 (93.19)	140 (6.81)	1.00	1.00
12+	227 (77.04)	71 (22.96)	4.07 (2.79-5.96)	4.42 (2.95-6.63)
CMD				
No	1,520 (93.42)	118 (6.58)	1.00	1.00
Yes	465 (83.31)	94 (16.69)	2.85 (2.01-4.04)	3.10 (2.16-4.43)
Probable PTSD				
No	1,824 (91.50)	176 (8.50)	1.00	1.00
Yes	157 (82.81)	36 (17.19)	2.23 (1.41-3.54)	2.44 (1.50-3.98)
Complex PTSD				
No	1,887 (91.39)	188 (8.61)	1.00	1.00
Yes	97 (82.48)	24 (17.52)	2.29 (1.32-3.96)	2.50 (1.41-4.43)
Alcohol misuse				
No	1,831 (91.33)	176 (8.67)	1.00	1.00
Yes	142 (82.27)	35 (17.73)	2.27 (1.41-3.67)	2.06 (1.24-3.40)

Note: N/% shows number and percentage of respondents in each category reporting any IPVA experience. Cell counts are unweighted, % and CI are weighted. CI = Confidence Interval. IPVA = Intimate Partner Violence and Abuse. OR = Odds Ratio. aOR = Adjusted Odds Ratio. NCO = Non-commissioned Officer. CMD = Common Mental Disorder. PTSD = Post-Traumatic Stress Disorder.

[1] Adjusted for a priori factors - sex, age, relationship status, education level, rank, service branch

Table 6: Factors associated with IPVA experience in serving and ex-serving personnel (n=2,230)

	No IPVA experience (n=1,894, 85.83%)	Any IPVA experience (n=298, 14.17%)	OR (95% CI)	aOR (95% CI) [1]
Sex				
Male	1,682 (86.14)	256 (13.86)	1.00	1.00
Female	212 (82.80)	42 (17.2)	1.29 (0.86-1.95)	1.06 (0.70-1.61)
Age (in years)				
25-39	223 (77.22)	64 (22.78)	1.00	1.00
40-49	478 (82.86)	102 (17.14)	0.70 (0.47-1.05)	0.77 (0.48-1.22)
50-59	776 (89.95)	92 (10.05)	0.38 (0.25-0.57)	0.43 (0.27-0.70)
60 and over	417 (92.22)	40 (7.78)	0.29 (0.18-0.47)	0.31 (0.17-0.56)
Education				
No qual, O level or other	369 (88.81)	46 (11.19)	0.78 (0.52-1.17)	0.73 (0.47-1.13)
A level	404 (82.73)	71 (17.27)	1.30 (0.91-1.85)	1.08 (0.74-1.58)
Degree	1,111 (86.12)	179 (13.88)	1.00	1.00
Relationship status				
In a relationship	1,661 (87.11)	230 (12.89)	1.00	1.00
Not in a relationship	230 (78.42)	67 (21.58)	1.86 (1.30-2.65)	1.70 (1.17-2.47)
Childhood adversity				
Low (<3)	939 (89.67)	112 (10.33)	1.00	1.00
Moderate (3-5)	562 (83.17)	99 (16.83)	1.76 (1.24-2.49)	1.72 (1.19-2.48)
High (6+)	327 (81.91)	75 (18.09)	1.92 (1.31-2.81)	1.85 (1.24-2.78)
Rank				
Officer	584 (86.21)	98 (13.79)	1.12 (0.82-1.53)	1.43 (1.01-2.03)
NCO	1,158 (87.51)	156 (12.49)	1.00	1.00
Other Rank	152 (76.88)	44 (23.12)	2.11 (1.38-3.22)	1.46 (0.88-2.41)
Service branch				
Naval Service	362 (84.76)	52 (12.70)	0.81 (0.55-1.19)	0.86 (0.58-1.27)
Army	1,061 (87.55)	174 (15.24)	1.00	1.00
RAF	471 (87.30)	72 (12.45)	0.79 (0.56-1.12)	0.84 (0.58-1.23)
Deployed to Ir./Afgh.				
No	673 (89.15)	78 (10.85)	0.62 (0.45-0.85)	0.73 (0.52-1.03)
Yes	1,220 (83.55)	218 (16.45)	1.00	1.00
Last deployment role				
Combat	330 (81.75)	65 (18.25)	1.29 (0.86-1.92)	0.99 (0.64-1.53)
Combat support	159 (80.92)	37 (19.08)	1.36 (0.82-2.26)	1.22 (0.71-2.09)
Combat service support	731 (85.24)	116 (14.76)	1.00	1.00
Anger score				
0-11	1,680 (89.35)	196 (10.65)	1.00	1.00
12+	195 (67.31)	99 (32.69)	4.07 (2.90-5.73)	3.54 (2.45-5.10)
Probable CMD				
No	1,491 (90.99)	143 (9.01)	1.00	1.00
Yes	401 (72.39)	155 (27.61)	3.85 (2.84-5.21)	3.59 (2.61-4.92)
Probable PTSD				
No	1,762 (88.05)	231 (11.95)	1.00	1.00
Yes	125 (66.22)	67 (33.78)	3.76 (2.56-5.53)	3.29 (2.19-4.93)
Probable Complex PTSD				
No	1,776 (86.95)	257 (13.05)	1.00	1.00
Yes	117 (74.04)	41 (25.96)	2.34 (1.55-3.52)	2.35 (1.44-3.82)
Alcohol misuse				
No	1,749 (86.91)	249 (13.09)	1.00	1.00
Yes	131 (73.89)	48 (26.11)	2.53 (1.53-3.61)	2.27 (1.46-3.51)

Note: N/% shows number and percentage of respondents in each category reporting any IPVA experience. Cell counts are unweighted, % and CI are weighted. Analyses were adjusted for socio-demographic (sex, age, relationship status, education level) and military (rank, service branch) factors. CI = Confidence Interval. IPVA

= Intimate Partner Violence and Abuse. OR = Odds Ratio. aOR = Adjusted Odds Ratio. NCO = Non-commissioned Officer. CMD = Common Mental Disorder. PTSD = Post-Traumatic Stress Disorder.

[1] Adjusted for a priori factors - sex, age, relationship status, education level, rank, service branch

4. Discussion

This study examined rates and patterns of past-year IPVA use and experience among a large sample of UK Armed Forces personnel, with a focus on differences between serving and ex-serving personnel. Whilst four out of five participants in the study did not report any IPVA use or experience, 15.27% of serving personnel and 14.17% of ex-serving personnel reported a past-year experience of IPVA, with 9.14% of serving and 9.38% of ex-serving personnel reporting use of IPVA. In contrast to existing US literature which has noted higher levels of IPVA use, experience and bidirectional IPVA among ex-serving personnel (3, 19, 20), there were no significant differences in overall IPVA use or experience rates between serving and ex-serving personnel. The results indicated some potential differences, with ex-serving personnel reporting more experiences of controlling behaviour and being pushed, held or slapped by partner, but these differences cannot be overstated based on low event counts and the respective confidence intervals.

Higher prevalence of IPVA among ex-serving personnel has been hypothesised to relate to various factors, including increased difficulties during military-to-civilian transition, limited access to resources and support that are available to serving military families, and reduced barriers to disclosure of IPVA behaviours (6, 7, 35, 36). However, in qualitative research, some military personnel have reported that violent behaviours in their relationships declined after leaving service, as couples spend more time together and develop their conflict resolution skills (17). Ex-serving personnel and their partners may also encounter fewer stressors that are associated with active military service, such as high levels of work-family conflict, frequent relocations and a corresponding isolation from support networks (17, 37).

While rates of IPVA may be similar between the UK serving and ex-serving populations, they may therefore be driven by different pressures and contextual dynamics.

Estimates of IPVA use and experience identified in this research were similar to the only previous existing estimate of IPVA rates among UK Armed Forces personnel, where 12.80% of the sample reported IPVA experience and 9.40% reported IPVA use (4). This previous estimate was based on data collected in 2014-2016 as part of Phase 3 of the longitudinal cohort study utilised in this research (1, 2). An updated estimate of IPVA rates was pertinent given changing characteristics of the study cohort, including older age and a greater proportion of ex-serving personnel, which may have impacted IPVA prevalence in the sample. The similarity in rates identified in this study compared to the previous estimate indicates that IPVA continues to affect a significant minority of UK military serving and ex-serving personnel, despite the introduction of government initiatives such as Defence's No Defence Against Abuse strategy in 2018. Due to methodological and sampling differences, it is challenging to compare these findings with studies from other national contexts. However, the rates of IPVA use and experience in this study were lower than estimates calculated from a meta-analysis of population-based military studies, chiefly conducted in the US (20.7% for recent IPVA experience and 12.7% for recent IPVA use) (3). This may partially be explained by characteristics of this cohort, notably older age, which is associated with reduced IPVA risk (38).

With respect to risk factors associated with IPVA, similar factors were independently associated with both IPVA use and experience. Younger personnel and those with increased childhood adversity had increased odds of experiencing and using IPVA. These findings align with research with other military and civilian samples, which has consistently shown that odds of IPVA use and experience decrease with age and increase for those with experiences of childhood adversity (38-40). Relationship status has also been consistently linked with IPVA use and experience, with married individuals less likely to report IPVA experience than

divorced or separated couples (38). The association between relationship status and IPVA use appears to be complex, as this study indicates that being in a relationship is associated with a decreased risk of IPVA experience but increased risk of IPVA use. This finding may be explained by individuals leaving violent relationships following experiences of IPVA incidents.

Further to serving status, no military factors examined in this study (Service branch, experience of deployment to Iraq and Afghanistan, and role on last deployment to Iraq or Afghanistan) were independently associated with either IPVA use or experience, except for rank. Officers were found to have increased odds of both IPVA experience and IPVA use compared to NCOs. This contrasts with previous UK quantitative research, which has found lower odds of physical and sexual IPVA use as well as post-deployment partner aggression among Officers compared to NCOs (4, 8, 21, 41). Quantitative research has historically been inconclusive about the association of military factors such as rank with IPVA use and experience, even though military factors have been found to play a prominent role in relationship aggression by qualitative studies (17, 18). For example, qualitative research has documented how military hierarchy, command expectations and 'authoritative masculinities'–typically more pronounced among Officers–may underpin a need for control and subordination expectations, thus driving violent and coercive behaviours (17, 42). The influence of military factors such as rank therefore requires careful consideration in future research as well as IPVA prevention and management approaches.

In conflict with earlier research with UK serving and ex-serving personnel who deployed to Iraq and Afghanistan (4, 8), deployment-related factors were not associated with IPVA use and experience. This may indicate that deployment experiences present immediate but not lasting risks to relationship health and family functioning for most; however, a deeper consideration of the nuances of individuals' combat and deployment experience is needed. Notably, this study only recorded deployment to combat operations in Afghanistan (2001 to

2014) and Iraq (2003 to 2011), rather than more contemporary and proximate deployment experiences. Additionally, this study did not explore the impact of military combat-related trauma (i.e. exposure to traumatic experiences during deployment), which is considered a more sensitive measure of deployment experience than combat experience or deployment role, and has been linked to increased risk of both IPVA use and experience (4, 8). Future research should interrogate potential longer-lasting effects of military trauma on IPVA risk, compared to deployment experiences and combat exposure.

All mental health factors were strongly independently associated with both IPVA use and experience, with strongest associations found with anger management difficulties. Probable CMD was the second strongest factor associated with IPVA use, and CPTSD was the second strongest risk factor for IPVA experience. Some differences could be observed in effect sizes. Anger management difficulties were more strongly associated with IPVA use than experience. Probable PTSD and CPTSD were more strongly associated with IPVA experience than use. The relationship between adverse mental health symptoms (particularly PTSD symptomatology such as aggression, agitation and hypervigilance) and IPVA has been subject to a substantial body of research (43). However, relationships between adverse mental health, IPVA use and IPVA experience are complex, with evidence suggesting a causal association in both directions, and understanding of pathways through which mental health challenges may *lead to* IPVA use or experience is still limited (13). Given the enduring impact of the Iraq and Afghanistan conflicts on mental health among military serving and ex-serving personnel (12), links between IPVA use/experience and adverse mental health remain a high-priority area of enquiry and intervention.

While not the focus of this research, two findings from the study also provide impetus to efforts to better understand the complex and gendered nature of IPVA in military populations. Firstly, the study identified that bidirectional IPVA was prevalent in the sample, mirroring studies with military (20) and civilian populations (44). These findings complicate

the common conceptualisation of IPVA as a solely unidirectional, gendered phenomenon perpetrated by men against their female partners (45). Nevertheless, there remains a limited understanding of the dynamics of bidirectional IPVA among military (heterosexual and same-sex) couples, including triggers, individuals' underlying motivations, and the extent to which bidirectional IPVA is symmetrical in severity or impact. Secondly, the presented analyses indicated no significant differences between males and females in relation to both IPVA use and experience. This does not necessarily indicate gender symmetry in IPVA: while rates of IPVA use often appear similar among men and women in military and civilian samples (3, 46), women are more likely to experience IPVA that leads to serious injuries or death, or IPVA that involves systematic, control-motivated aggression (47-49). Further research is needed to explore gendered dynamics of IPVA among military couples, given the influence that the military environment can exert on understanding of gender norms and gender roles (17, 18, 50, 51).

Strengths and limitations

This study provides an important contribution to evidence on the rates and factors associated with IPVA among military populations. Notably, the research expands the limited number of studies on this topic from outside the US and contributes to ongoing debates on differences in IPVA prevalence between serving and ex-serving military personnel. A key strength is the inclusion of serving and ex-serving personnel in the sample, which allowed for a direct comparison of IPVA rates in the two groups. The study utilised a large sample of serving and ex-serving personnel drawn from a prospective longitudinal study of personnel who deployed to Iraq and Afghanistan, enabling a robust understanding of this population. The changing characteristics of the cohort allowed for more in-depth examination of IPVA among ex-serving personnel, in contrast to previous research on IPVA among UK Armed Forces personnel (4, 8). The selected IPVA measure was adopted from other UK national data

sources (26), facilitating future comparison of rates in military and civilian UK populations. Validated measures were used for adverse mental health outcomes which were examined as associated factors.

An important limitation of this study is the reliance on self-reported IPVA use and experience. As shown in existing research, self-reported IPVA use and experience are both subject to substantial under-reporting (e.g. due to fear of recrimination, shame, stigma, resource-related considerations and normalised aggressive relational dynamics that may not be distinguished by participants as abusive) which may partially be mitigated by the use of dyadic data (40, 52). Additional factors may be a cause of under-reporting in the study: it is likely that severe unidirectional abuse is under-reported as victims of severe abuse characterised by high levels of coercive control may not disclose their experiences out of fear of reprisal (53). Serving personnel may be prone to not disclosing IPVA due to stigma and concerns of potential career repercussions, as well as minimisation and normalisation of violence within the military organisational culture (17, 35). Finally, as this sample and military populations more broadly are predominantly male, minimisation of violence, dissociations with masculinity or societal trivialisation of men's IPVA experiences may also affect under-reporting among this population (17, 54, 55).

The current study was limited to exploring rates of past-year IPVA use and experience based on self-reported occurrence of different types of violent acts and dynamics in participants' relationships. It does not provide insight into lifetime experiences of IPVA, the severity of violence used or experienced by participants, or whether reported acts represent one-off incidents or more systemic and recurrent forms of abuse. Exploring different patterns of IPVA across the life-course among military serving and ex-serving personnel is an important avenue for future research, given that diverse patterns and dynamics of IPVA have distinct aetiologies and thus require different intervention approaches (48, 56). Based on the study's data source and the sampling approach, it is likely that lower-severity and one-off

incidents of violence are more prevalent in the sample than severe and systemic abuse. However, patterns and dynamics of IPVA among military populations require further in-depth exploration. Additionally, as participants were asked about IPVA use and experience regardless of their relationship status at the time, the measure did not capture whether the reported IPVA use or experience within the past year relates to different current or past partners.

While the inclusion of both serving and ex-serving personnel is a strength of this study, the low numbers of serving personnel in the sample meant analyses of factors associated with IPVA could not be extended to this population. It should also be acknowledged that the KCMHR cohort study includes personnel who served during the conflicts of Iraq and Afghanistan and may thus not be representative of personnel who joined after 2016 when the last replenishment sample was added to the cohort study, or those who left service prior to 2004.

Several factors which may also be associated with IPVA have not been included in this study due to unavailability of relevant data or low number of participants with relevant characteristics, such as sexual orientation and ethnicity. Research indicates that rates of IPVA experience may be higher and qualitatively different among personnel who are lesbian, gay, bisexual, transexual, queer or have other sexual identities (LGBTQ+) (57) and military and civilian studies identify individuals from ethnic minority groups as at increased risk of IPVA experience (38, 58). Childhood adversity has been examined from a composite perspective in this study. However, studies indicate that a more nuanced perspective may be needed to examine the impacts of childhood adversity on IPVA and relationship outcomes, such as through differentiating between distinct types of adversity (38) and examining the interplay between military factors and childhood adversity (59).

Implications

In 2018, the UK Ministry of Defence released its first Domestic Abuse Strategy, followed by a 2024-2029 Action Plan (60). In 2025, the UK government's new strategy for tackling domestic violence and abuse against women and girls recognised the unique risks faced by military families in relation to IPVA (61). This research provides an up-to-date understanding of IPVA prevalence among military populations in the UK, helping advance these initiatives to address the incidence and impacts of IPVA. Noting similar levels of IPVA use and experience among serving and ex-serving personnel identified in the study, there is a need for IPVA identification and mitigation efforts to be inclusive of the serving and ex-serving community, such as through recognition of IPVA in the delivery of the Veterans Strategy. Across serving and ex-serving populations, efforts should also continue to reduce barriers to help-seeking, including through facilitating cultural change and addressing bureaucratic boundaries between civilian and military justice systems (62). These efforts should be comprehensive across different segments of the military population, given inconclusive evidence about the impact of military factors (e.g. rank, Service branch) on IPVA risk.

The strong association between IPVA and mental health conditions including anger management difficulties, CMD, PTSD and CPTSD emphasises the essential role of healthcare services, charitable services, and welfare workers in the identification and management of IPVA and its impacts. As higher levels of certain adverse mental health persist among UK military serving and ex-serving personnel in comparison to civilian populations, trauma-informed psychological interventions represent an important aspect of effective response to IPVA among these groups. Emerging evidence from the US highlights the value of a broad range of strategies in this context, including training for health providers, case identification and risk management strategies, psychosocial interventions and recovery

services for those who experience IPVA, a number of which have demonstrated effectiveness and thus offer potential lessons for the UK (63, 64). Within the UK, previous research has highlighted the need for providing adequate tools, guidance and training for mental health professionals to facilitate better inquiry about IPVA risk in routine clinical interactions (62). This study reiterates this recommendation, alongside a need for improved cultural competency among civilian services (e.g. General Practitioners) working with ex-serving personnel which can help identify IPVA. Given the strong association of anger difficulties with IPVA use and experience, the study findings also support prevention strategies focused on emotion regulation (65).

Future research should explore effectiveness and implementation of existing IPVA identification and management initiatives in the UK, including to help improve evidence on IPVA screening and interventions focused on military populations outside of the US (63). To support tailored interventions, analysis should also examine whether IPVA rates remain higher in the UK's military population compared to the broader civilian population, particularly in the post-COVID-19 context. Finally, as highlighted previously, future research should further explore the heterogeneous and gendered nature of IPVA dynamics between military personnel and their partners, including to build a more nuanced understanding of unidirectional and bidirectional violence in this population.

5. Conclusion

This study identified similar rates of IPVA among serving and ex-serving personnel, with 9.14% and 9.38% reporting IPVA use, and 15.27% and 14.17% reporting IPVA experience, respectively. Although a small number of differences between serving and ex-serving personnel emerged—such as higher reports of experiencing controlling behaviours and some physical IPVA behaviours among ex-serving personnel—these should be interpreted cautiously due to low event counts and overlapping CIs. The study provides an

important addition to scarce research on military IPVA rates and differences between serving and ex-serving personnel from outside of the US. The overall rates of use and experience in the sample were similar to previous estimates with UK Armed Forces personnel, indicating that IPVA remains an important public health issue among this population, despite the introduction of new strategies and initiatives to address IPVA. Adverse mental health outcomes - including CMD, PTSD, CPTSD - alongside anger management difficulties, alcohol misuse and increased childhood adversity were strongly associated with both IPVA use and IPVA experience. Few military factors were associated with IPVA risk, but higher odds of use and experience were identified among Officers, a finding which requires further exploration in future studies. The results highlight the importance of comprehensive IPVA screening and intervention initiatives across the serving and ex-serving community, alongside emotion-regulation prevention strategies and trauma-informed mental-health-focused support pathways.

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List of abbreviations

AUDIT-10	Alcohol Use Disorders Identification Test (10-item)
CMD	Common Mental Disorder
CPTSD	Complex Post-Traumatic Stress Disorder
DAR-5	Dimensions of Anger Reactions (5-item scale)
DSO	Disturbances in Self-Organisation
EPC	Emotional/Psychological/Coercive control
GHQ-12	General Health Questionnaire (12-item)
IPVA	Intimate Partner Violence and Abuse
ITQ	International Trauma Questionnaire
KCMHR	King's Centre for Military Health Research
NCO	Non-Commissioned Officer
OR	Other Rank
P/S	Physical/Sexual violence
PCL-5	PTSD Checklist for DSM-5
PTSD	Post-Traumatic Stress Disorder
RAF	Royal Air Force
US	United States

Declarations

Ethics approval and consent to participate: Ethical approval for this study was provided by the UK Ministry of Defence Research Ethics Committee (Ref: 2061/MODREC/21). The study was conducted in accordance with the ethical principles of the Declaration of Helsinki and all applicable institutional requirements. All participants gave informed consent to before taking part.

Consent for publication: Not applicable.

Availability of data and materials: The datasets generated and/or analysed during the current study are not publicly available due to the nature of the population under study, but are available from the authors on reasonable request.

Competing interests: LS is employed as a Research Leader at RAND Europe, a non-profit research institute, and is funded by the Economic and Social Research Council (ESRC) at King's College London. This work has been undertaken only in her capacity as a PhD researcher at King's College London. MLS is currently funded by the Economic and Social Research Council (ESRC), UKRI Fellowship, hosted at the Centre for National Training and Research Excellence in Understanding Behaviour (Centre-UB) and seconded into the Cabinet Office, UK Government. MLS is currently a Visiting Senior Research Fellow at King's College London and Senior Behavioural Research Fellow at the University of Birmingham. This work has been undertaken only in her capacity as a Visiting Senior Research Fellow at King's College London and Senior Behavioural Research Fellow at the University of Birmingham, and not in any other capacity listed. The views expressed in this publication are those of the author(s) and not necessarily those of the ESRC, or the Cabinet Office - UK Government. SAMS is supported by the National Institute for Health and Care Research (NIHR) Maudsley Biomedical Research Centre at South London and Maudsley NHS Foundation Trust and funded by the National Institute for Health and Care Research, NIHR

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