How can health services better meet the needs of UK female veterans?

Systematic Review Protocol

Produced by	Peninsula Technology Assessment Group (PenTAG) University of Exeter Medical School
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1. INTRODUCTION AND BACKGROUND

1.1. Introduction and background

Military service involves operational activities associated with significant stressors that have implications for physical and mental health, in addition to the pressure of being away from family and friends for extended periods of time[1]. Data from the 2017 MOD Annual Population Survey[2], suggested that 11% of UK veterans are female, and there is evidence that this is increasing, with projections of 13% by 2028[3]. It has been well documented that female veterans are more likely than male veterans and females in the general population to experience poor mental, physical and reproductive health,[4-7] although this is likely to be condition specific (e.g. there is some evidence that female veterans are less likely than male veterans[7], but more likely than female civilians[4], to experience post-traumatic stress disorder [PTSD]).

Several reviews exist on the health and wellbeing of female veterans, but none have provided an in depth and critical analysis of the most recent evidence for how services can best meet the needs of UK female veterans. The largest and most recent review by Goldstein et al. (2025)[8] did not include UK studies or discuss the results from the studies, instead mapping 932 health and social care studies on female veterans from the USA. The review highlighted the maturity of this research in the USA, finding studies in a broad number of areas, including: prevalence, risk and associations, screening and detection of health conditions, care utilisation and access, care needs and preferences, care organisation and delivery, interventions and programmes, research methods and social issues.

Indeed, it is clear that the research literature for female veterans is heavily dominated by studies based in the USA. A scoping review of literature documenting the lived experiences of female veterans by Dodds and Keirnan (2019)[9] did not find any UK-based studies. Since then, another scoping review by Bailey et al. (2023)[10], which had no geographical limits and covered research on utilisation of services, barriers to service access, and service improvement initiatives for female veterans (i.e. not limited to health and well-being) identified 125 studies worldwide and showed that evidence from the UK has started to emerge. However, many of the included studies appeared to go beyond the scope of the review (i.e. comparing risk in female veterans with other populations), and although a detailed narrative synthesis was provided, it was unclear how the studies were selected for this synthesis. A more in-depth and systematically conducted review, by Campbell and Murphy (2023)[11] focused specifically on interventions for PTSD due to military sexual trauma (MST). Although 12 studies were identified, they were all based in the

USA. To address this gap, the authors followed their review with an interview-based qualitative study investigating PTSD help-seeking and treatment experiences for 19 UK female veterans.

A UK-specific scoping review by Godier-McBard (2021)[4], known as the We Also Served report, identified 50 studies on the health and well-being of female veterans in the UK (plus selected studies from Five Eyes Alliance countries and MoD statistics and service data in order to make comparisons and identify gaps). This provided an outline of the literature between 2000 and 2020, confirming that most of the literature on UK female veterans' health and wellbeing was on prevalence of conditions, investigations into whether female veterans were at increased risk of poor health than other populations, and factors associated with increased risk within the female veteran population. At this point, there was a paucity of UK-based studies looking at the needs and preferences of female veterans, barriers to and facilitators of service access and help-seeking, service delivery and improvement initiatives, or interventions aimed specifically at female veterans. To partially address this, the authors went on to report a qualitative interview-based study on 13 subject matter experts (SMEs) who work with UK ex-servicewomen.

Following the We Also Served report and qualitative study, Hooks et al. (2023)[12] interviewed 85 UK female veterans to investigate the impact of military service on a broad range of aspects of health and social care, including barriers and facilitators to services, support needs and preferences (including for health and wellbeing, but also covering housing, employment and social needs), veteran identity and access to information.

As part of the James Lind Alliance (JLA) Priority Setting Partnership for Veterans' health, more than 1000 veterans, family members and carers and healthcare providers discussed priorities for veterans' health research and identified the need for understanding health provision (including opportunities for improvement and development) for female veterans to be a priority. Accordingly, the National Institute for Health and Care Research (NIHR) commissioned this systematic literature review (SLR) to better understand the literature on the effectiveness, utilisation and improvement of health and wellbeing services for female veterans.

This document outlines the protocol for the SLR, including specifying the evidence that will be sought and how it will be considered.

1.2. Objectives

The objective of the review set by the JLA was to answer:

What is the current provision of UK health services for female veterans, and what are the opportunities for improvement and development?

Following scoping, and in consultation with stakeholders at the MoD, two research questions were devised to meet the review objective:

Research question #1 (Q1): *What is the evidence for the effectiveness of services, programmes and interventions aimed at improving the health of female veterans in the UK?* This question will include evidence on the effectiveness of:

- Female-specific services, programmes and interventions for veterans, aimed at improving physical or mental health conditions
- Health-related services aimed at all veterans, that clearly investigate differences in effectiveness for female versus male veterans
- Services, programmes and delivery initiatives aimed at improving access (including utilisation and availability of services) to health services for female veterans

The results of Q1 will aim to develop a map of the evidence that has been produced to understand ways to best support the health of UK female veterans. Evidence will be taken from the UK, but also from the most relevent international studies (those based in Europe and the Five Eyes Alliance nations, minus USA). This will allow consideration of gaps in the available UK evidence and priority needs for future research.

Research question #2 (Q2): *What are the needs and preferences of female veterans in the UK, and professionals working with this population, with regards to health-related services?* This question will include research on:

- Opinions and preferences surrounding healthcare needs
- Challenges with access to health-related services (including barriers and facilitators)
- Challenges in developing and delivering services for female veterans

For Q2, studies will be limited to those based on UK veterans in order to identify the needs and preferences of veterans within the policy target area. The results of Q2 will be used to identify the gaps in the Q1 evidence base and to suggest priorities for future research and intervention.

While the two research questions involve consideration of different evidence types, evidence to support both will be sought within a single SLR.

2. EVIDENCE REVIEW

The SLR will be conducted according to established best practice methods for SLRs[13, 14] and reported according to the PRISMA statement[15]. If required, some pragmatic prioritisation according to pre-specified criteria may become necessary (i.e. if a large body of relevant evidence is found; see section 2.4). In this eventuality, SLR methods will be followed to ensure that prioritisation is reported in a transparent and reproducible manner. The protocol is registered on the PROSPERO database as record number #CRD420251162422.

2.1. Inclusion criteria

Inclusion and exclusion criteria for each research question are reported in Table 1, and further described in sections 2.1.1 to 2.1.6 below.

2.1.1. Population

The population for Q1 will be female veterans of all ages residing in the UK, Europe, or the Five Eyes Alliance nations (but not the USA). The decision was made (during scoping in consultation with stakeholders at the MoD) to exclude studies based in the USA due to the dominance of research within the USA, stark differences in healthcare provision for veterans in the USA compared to the UK, and the recent publication of a large scoping review of relevant studies from the USA[8]. Scoping for this project indicated that relevant research from other nations with more similar healthcare systems to the UK, including the other (non-USA) Five Eyes Alliance nations may be limited, but mapping this is important to fully understand the totality of the evidence in this area and the gaps in the UK literature. For Q2, only studies based on UK veterans will be included.

Veterans are defined as anyone who has served for at least one day in the Armed Forces (Regular or Reserve) or merchant mariners who have seen duty on legally defined military operations. Studies based on females in active service will be excluded (due primarily to differences in healthcare provision for active service military personnel and those who have left the service). To cover those likely to experience similar biological and/or social health outcomes and to ensure inclusion, female will be defined as those assigned female at birth (i.e. based on sex characteristics) and those who identify as a woman (including trans women and intersex women).

Studies where the participants are service providers, relatives or friends will be included if the focus of the research and the outcomes are about female veterans.

2.1.2. Intervention

For Q1, studies must include health-related services or interventions, including but not restricted to female-specific services, where the aim is to either evaluate the effectiveness of a service, intervention or programme, or to improve access or availability of a health-related service to female veterans. This will include studies that aim to increase the proportion of female veterans who seek health-related support, or increase the availability, suitability, or accessibility of the service for female veterans. Health-related services, interventions and programmes are defined as those designed for the improvement or treatment of mental or physical health. This definition was kept broad to encompass key areas of health that are most relevant to female veterans (i.e. mental health includes all common mental health conditions, including trauma-based conditions; physical health includes reproductive health and musculo-skeletal (MSK) health as well as general chronic conditions). Co-morbid conditions are included. Where an effectiveness study is not female-specific (i.e. it is aimed at all veterans) then it must clearly be aimed at investigating differences between female versus male veterans or have clear separate findings for female veterans that differ from the male veterans or from the overall study population.

For Q2, studies must be focused on health-related services or interventions but can have a broad scope (e.g. health, employment, housing, education and training) if outcomes relevant to health are separately considered. In these cases, only the health-related outcomes will be included (see section 2.1.4).

Table 1: Inclusion and exclusion criteria

	Q1: effectiveness or services		**Q2: needs and preferences**	
	Inclusion criteria	Exclusion criteria	Inclusion criteria	Exclusion criteria
Population	Female veterans of any age (defined as someone who has served for at least one day in the Armed Forces (Regular or Reserve) or merchant mariners who have seen duty on legally defined military operations) from the UK, Europe, Canada, Australia, New Zealand Inclusive of those who: • Were assigned female at birth based on sex characteristics • Identify as a woman (including trans women and intersex women) Studies where the participants are service providers, relatives or friends will be included if the focus of the research and the outcomes are about female veterans	Currently serving members of the Armed Forces Studies where <80% of the population are female (if subgroup data for female veterans are not provided) Studies set in other countries	UK female veterans of any age (defined as someone who has served for at least one day in the Armed Forces (Regular or Reserve) or merchant mariners who have seen duty on legally defined military operations) Inclusive of those who: • Were assigned female at birth based on sex characteristics • Identify as a woman (including trans women and intersex women) Studies where the participants are service providers, relatives or friends will be included if the focus of the research and the outcomes are about female veterans	As with Q1
Intervention	Health-related services or interventions including: • Female-specific services, programmes and interventions aimed at improving physical or mental health conditions • Health-related services aimed at all veterans that clearly investigate differences in effectiveness for female versus male veterans • Services, programmes and delivery initiatives aimed at improving access (including utilisation and availability of	Interventions or services with no health or well-being element (e.g. limited to housing, employment, education and training) Publications that do not state in the title/abstract that they investigate	Studies focused on healthcare needs or on utilisation or access to health-related services or interventions, including both general and female-specific services	As with Q1

	Q1: effectiveness or services		Q2: needs and preferences	
	Inclusion criteria	Exclusion criteria	Inclusion criteria	Exclusion criteria
	services) to health services for female veterans	female veterans or differences in effectiveness for female veterans compared with male veterans		
Comparators	A wide range of comparators will be considered, including but not limited to: • No intervention or service • Current service provision • Comparison with an earlier period (i.e. before and after studies)	N/A	No comparator required	N/A
Outcomes	Any outcomes related to improvements in mental or physical health, including: • Patient-reported outcomes • Clinician-reported outcomes • Changes based on tests Improvement in access, availability or utilisation of health-related services, including: • Number or proportion seeking support • Number or proportion obtaining support • Increase in the availability of treatments or support (e.g. number of sessions available to female veterans)	Other outcomes (e.g. prevalence of health conditions in female veterans, being female as a risk factor for health conditions)	Any qualitative or quantitative outcomes related to the health needs or preferences of female veterans, including: • Opinions and preferences surrounding healthcare needs • Challenges with access to health-related services (including barriers and facilitators) • Challenges in developing and delivering services for female veterans Studies with a broad scope (e.g. health, employment, housing, education and training) will be included if outcomes relevant to health are separately reported. Only the health-related outcomes will be eligible for inclusion	As with Q1

	Q1: effectiveness or services		**Q2: needs and preferences**	
	Inclusion criteria	Exclusion criteria	Inclusion criteria	Exclusion criteria
	• Increase in the perceived suitability of services (e.g. satisfaction, willingness to engage, perceived value)			
Study design	Experimental or observational primary research studies, including: • RCTs • CCTs • Comparative cohort studies • Single-group before and after studies Relevant systematic or scoping reviews will be used to identify studies and then excluded	Retrospective database studies (e.g. designed to determine prevalence of health conditions in female veterans or assessing being female as a risk factor for health conditions) Case reports, opinion articles and non-systematic reviews	Interview or survey-based primary research studies (qualitative, quantitative or mixed methods) Relevant systematic or scoping reviews, including those published as reports, might be included if prioritisation becomes necessary	As with Q1
Publication	English language publications Studies published after Jan 2010	Studies published in other languages Studies published in 2009 or earlier	As with Q1	As with Q1

Abbreviations: CCTs, controlled clinical trials; N/A, not applicable; Q1, question 1; Q2, question 2; RCTs, randomised, controlled trials; UK, United Kingdom; USA, United States of America

2.1.3. Comparators

For studies evaluating the effectiveness of interventions or improving access (utilisation or availability) to services for female veterans, a broad range of comparators will be considered appropriate. This is because a large number of studies is not expected and, therefore, it is important to ensure all potentially relevant evidence is included. Comparators may include no intervention or service, current provision of care, or comparison with an earlier time period (e.g. before and after an initiative to improve access to a service). For Q2, a comparator is not expected or required.

2.1.4. Outcomes

Included outcomes vary according to the research question. For Q1, included effectiveness outcomes are those that evaluate improvements in mental or physical health, including patient- and clinician- reported outcomes (e.g. rating scales, changes in symptoms, changes in experiences of the health condition, or in quality of life) and health-related changes based on tests (diagnostic tests or tests of symptoms). For studies investigating improving access, availability or utilisation of health-related services, outcomes include the number or proportion of female veterans seeking support, the number or proportion obtaining support, increases in the availability of treatments or support, and increases in the perceived suitability of services.

For Q2, included outcomes may be qualitative or quantitative data on the needs and preferences of female veterans with regards to health-related services. Barriers and facilitators to accessing these services are included, as are data on challenges experienced when developing and delivering these services to female veterans.

For Q1, outcomes must relate to female veterans from the UK, the rest of Europe or the Five Eyes Alliance nations (with the exception of the USA), and for Q2 outcomes must relate to UK female veterans; in both cases >=80% of the sample or subgroup data must fit these criteria. For both questions, outcomes may be obtained through relatives, friends or service providers (e.g. health professionals) working with female veterans. All other outcomes in female veterans (such as those relating to prevalence, or those investigating being a female veteran as a risk factor for health conditions) are outside of scope and excluded.

2.1.5. Study design

Included study designs vary according to the research question. For Q1, included study designs are comparative or non-comparative experimental or observational primary research studies

(i.e. RCTs, CCTs, comparative cohort studies and single-group before and after studies). For Q2, included study designs are interview or survey-based primary research studies (qualitative, quantitative or mixed methods). For both questions, case reports, opinion articles and non-systematic reviews will be excluded. For both questions, relevant systematic reviews and systematically conducted scoping reviews will be used to identify primary studies. For Q1, these reviews will then be excluded; for Q2, systematic and scoping reviews and reports might be included, depending on the volume of evidence identified (see Section 2.4 for prioritisation processes).

2.1.6. Publication type

Only studies published in English will be included. Searches will be limited to studies published since Jan 2010. This is because older studies in this area are unlikely to exist and, in any case, would be less likely to be relevant to the current healthcare climate (including treatment and technological advances) or to the evolving veteran population (due in part to the changes in military roles for women over this time such as inclusion in close combat roles from 2016 and all roles from 2018).

2.2. Search strategy

A broad strategy will be used to identify relevant studies. Searches will be undertaken in seven bibliographic databases: Medline (Ovid), Embase (Ovid), APA PsycInfo (Ovid), Cochrane (Wiley), Web of Science (Clarivate), ASSIA (ProQuest) and PTSD Pubs (Proquest). The two research questions will be addressed in one search strategy and results for each question will be determined during screening. The search strategy will include terms for women veterans, terms for service delivery, qualitative research or evaluations of interventions (including RCTs), along with terms for the United Kingdom, Europe and the Five Eyes nations (apart from the USA), limited to publications from 2010 onwards. See Appendix 1 for a sample literature search strategy in Medline. Results will be downloaded into Rayyan[16] and deduplicated before screening.

Supplementary literature searching will be conducted as determined by the needs of the project after the assessment of the key identified papers. This will include checking reference lists of included SLRs, citation chasing, and web searching for unpublished material and policy documents. It is noted that searching for unpublished materials may be useful for identifying evaluations of studies that did not result in positive findings and were therefore not submitted for publication in peer-reviewed journals. The Centre for Military Women's Research at Anglia Ruskin

University, UK, will be contacted to identify further studies. Other authors may be contacted for further clarification where needed.

2.3. Study selection

A two-stage screening process will be used. First all titles and abstracts retrieved from electronic searches and from any other sources (including additional records identified from relevant reviews) will be assessed against the review inclusion criteria. Second, those articles included at the first stage will be obtained in full and rescreened against the inclusion criteria. Those meeting all inclusion criteria will be included in the review. At both stages all records will be screened independently by two reviewers.

Where a large body of evidence is identified, evidence prioritisation will be used to focus the SLR towards the evidence that is most relevant to the research question and SLR objectives. This will be conducted using a pre-specified prioritisation process, described in Section 2.4.

2.4. Prioritisation

For both questions, studies will be ordered according to relevance to the research question, with more recent studies based in the UK and conducted using robust methods prioritised for inclusion. Studies that address key gaps in the evidence base will also be prioritised (e.g. studies in minority female populations, studies reporting outcomes for health conditions and settings not otherwise covered). Publications will be included in the review until the results reach thematic saturation (i.e. new studies do not add additional information or understanding towards the research question).

If a large evidence base is identified for Q2, systematic and well conducted scoping reviews and non-peer reviewed reports will be included in the review (as opposed to only using these to identify and include primary research studies). Primary research studies published since the publication of these reviews and reports, or outside of their scope, will be included.

2.5. Data extraction strategy

Data will be extracted into pre-designed data extraction tables. These will be piloted on a representative sample of studies and revised prior to use. Data extraction will be conducted by one reviewer and all outcome data will be reviewed by a second reviewer.

For Q1, data extraction tables will be designed to cover details about the publication (first author, year, country, publication type), study methods (details about population, intervention, comparator, outcomes and study design) and the results for all relevant outcomes.

For Q2, data extraction tables will be designed to cover only key information about methods, limitations and outcomes. As this evidence is primarily intended to identify evidence gaps in Q1, data extraction of study details will be targeted towards the key information needed only.

2.6. Quality assessment strategy

Risk of bias (ROB) assessment will be conducted for studies included in Q1. The assessment will be conducted by one reviewer and discussed with a second reviewer, where required. The following tools will be used for ROB assessments: the Centre for Reviews and Dissemination (CRD) tool for RCTs[13]; the Newcastle Ottawa Scale for non-randomised comparative designs[17]; and the Methodological Index for Non-Randomized Studies (MINORS) tool for single-arm, before and after studies[18]. These ROB assessments will be considered in any narrative synthesis of the evidence base.

For Q2, a full ROB assessment will not be conducted. Instead, the quality of studies will be considered by documenting the key limitations of the included studies and considering these as part of a narrative synthesis.

2.7. Methods of synthesis/analysis

The evidence will be considered in a narrative synthesis. This will be accompanied by summary tables of the extracted data. Where possible, the evidence will be synthesised separately for mental and physical health areas, with a more detailed condition-specific breakdown where possible. As part of the narrative synthesis, a comparison between the studies identified for Q1 and the needs and preferences and challenges faced by female veterans under Q2 will be made. This will enable the gaps in the research evidence to be documented and suggestions for service development and improvement to be made. To further investigate the gaps in the UK literature, the quantity of evidence from each country will be compared against the findings from the USA scoping review by Goldstein et al. (2025)[8].

Consideration will only be given to meta-analysis where there are three or more studies for the same purpose, that evaluate the same or highly similar interventions. The similarity of interventions will be judged pragmatically by the reviewers and will be based on the following factors: specific components of the intervention, anticipated mechanisms of action, delivery

methods (including setting). Indirect treatment comparison is considered outside of the scope of this review and, if this appears to be feasible, will be discussed as a recommendation for further research.

3. STAKEHOLDER INVOLVEMENT

During the development of the SLR, PenTAG will meet with representatives at the MoD to discuss progress and to consult on key decisions, including to guide interpretation of the evidence. Representatives at the MoD may wish to consult with stakeholders with an interest in the topic to inform their feedback during these meetings, for example NHS England, the Department of Health and Social Care (DHSC), and veterans, their families and carers who participated in the JLA Priority Setting Process. Following preparation of the draft report summarising the methods and findings of the SLR, the report will be circulated to relevant stakeholders by the MoD for feedback. The length of time given to stakeholders to read and submit their comments, and the format in which these will be requested, can be agreed once the draft findings of the SLR are realised. Following the receipt of comments from stakeholders, PenTAG will collate these and provide a written response to contributors as well as use these to inform any edits to the final SLR report.

4. COMPETING INTERESTS OF AUTHORS

PenTAG has no conflicts of interest relevant to this research.

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Appendix: Literature search strategy (Medline)

Ovid MEDLINE(R) ALL <1946 to September 29, 2025>

1 Veterans/ 24870

2 veteran*.ti,ab,kf. 51523

3 (army or military or marine* or soldier* or navy or force* or "service person*" or " service people" or "service man" or "service men" or "service woman" or "service women" or troop* or "merchant mariner").ti,ab,kf. 790254

4 (ex or long or former or previous* or length or past).ti,ab,kf. 5653871

5 3 and 4 169826

6 1 or 2 or 5 221268

7 exp Women/ 47727

8 Female/ 10367307

9 (woman or women or female*).ti,ab,kw. 2741673

10 ("sexual minorities" or "sexual minority").ti,ab,kf. 6302

11 Sex Factors/ or gender identity/ or femininity/ or exp Women's Health/ 344473

12 exp Women's Health Services/ 6905

13 (girl* or mother* or widow*).ti,ab,kf. 477221

14 or/7-13 11007000

15 exp "Surveys and Questionnaires"/ or (surve* or checklist* or questionnaire*).ti,ab,kf. 2595034

16 evaluation study/ 267778

17 evaluation studies as topic/ or program evaluation/ or validation studies as topic/ or ((pre- adj5 post-) or (pretest adj5 posttest) or (program* adj4 evaluat*)).ti,ab. or (effectiveness or intervention).ti. 646601

18 qualitative:.tw. 451388

19 experience:.mp. 1598925

20 interview:.mp. 567219

21 or/15-20 4986963

22 exp randomized controlled trial/ 648939

23 controlled clinical trial.pt. 95742

24 randomized.ab. 711026

25 placebo.ab. 262444

26 drug therapy.fs. 2856476

27 randomly.ab. 469979

28 trial.ab. 776846

29 groups.ab. 2921591

30 or/22-29 6420165

31 exp animals/ not humans/ 5380029

32 30 not 31 5632140

33 21 or 32 9401331

34 exp australasia/ or exp europe/ or exp united kingdom/ or exp canada/ or exp Russia/ 2040833

35 ("five eyes" or "5 eyes").ti,ab,kf. 5410

36 European Union/ 18647

37 ("national health service" or nhs).ti,ab,kf. 56873

38 (europe* or "united kingdom" or uk or "great britain" or england or scotland or wales or ireland or canada or "new zealand" or australia or australasia or france or germany or spain or

portugal or sweden or norway or finland or denmark or belgium or austria or germany or czech* or greece or iceland or italy or baltic or estonia or hungary or latvia or lithuania or luxembourg or croatia or netherlands or poland or scandinavia or slovakia or slovenia or switzerland or turkey or russia or ukraine or romania or belarus or bulgaria or serbia or bosnia or moldova or lithuania or albania or latvia or macedonia or estonia or montenegro or malta or andorra or liechtenstein or monaco or "san marino" or "holy see" or vatican or cyprus or gibraltar or caucasus or kazakhstan).ti,ab,kf. 1689737

39 34 or 35 or 36 or 37 or 38 2902017

40 6 and 14 and 33 and 39 3792

41 limit 40 to yr="2010 -Current" 2554