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Pelvic floor dysfunctions in women military personnel and veterans: A scoping review

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ADMINISTRATIVE INFORMATION

Support - Department of National Defence.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 June 2024 and was last updated on 20 June 2024.

INTRODUCTION

Review question / Objective This scoping review aims to identify, map and appraise existing evidence for pelvic floor dysfunctions (PFDs) (including urinary and anal incontinence, pelvic organ prolapse and chronic pelvic pain) in women military personnel and veterans. Specific objectives are:

- 1- To assess the prevalence and the severity of the different PFDs in women military personnel and veterans;
- 2- To determine the risk factors related to PFDs in women military personnel and veterans;
- 3- To assess the repercussions of PFDs in terms of quality of life as well as psychological, physical and operational impacts in servicewomen and veterans;
- 4- To evaluate the effects of conservative approaches (e.g. physiotherapy, psychotherapy, physical training), pharmacological interventions, and surgical treatments on signs and symptoms related to PFDs, quality of life, psychological and physical variables as well as operational readiness;

5- To investigate the effects of treatment implementation and mitigation strategies (past and present) of PFD management among women military personnel and veterans;

6- To identify what diagnostic assessments, screening tools, and treatment outcomes are being used.

Background Nearly 47% of women in the general population are suffering from pelvic floor dysfunctions (PFDs) including urinary and anal continence, pelvic organ prolapse and chronic pelvic pain. Not only are these conditions underreported, but they are also related to very debilitating effects on women's quality of life and well-being. Carrying their load of stigma and embarrassment, these conditions lead to psychological distress, such as depression and anxiety as well as sexual dysfunction and conjugal problems. PFDs impact participation in recreational and physical activities, women commonly stop exercising to prevent leakages thereby exposing themselves to higher risk of costly vascular diseases, cancer, obesity and osteoporosis. The

evidence regarding PFDs in the military personnel and Veterans, although limited, is pointing toward a more alarming situation, which may be attributed to the complex and unique biopsychosocial military environment. For instance, urinary incontinence (UI), which includes stress, urgency and mixed UI, appears to be a highly prevalent PFD among military personnel. A preliminary study, conducted by a member of our team, found a prevalence of UI as high as 57% of women in the Canadian Armed Forces (CAF). Stress UI is especially relevant in the military context as it pertains to the involuntary loss of urine during effort or physical exertion (e.g., exercise, sporting activities, occupational tasks), or on sneezing or coughing, and symptoms are worsened by pelvic floor muscle fatigue induced by prolonged physical exertion. Pelvic organ prolapse (POP), which corresponds to a descent, protrusion or herniation of the organs (bladder, uterus, intestine and/or rectum), was diagnosed in 50% of women who participated in a study assessing the impact of airborne school on pelvic health at The United States Military Academy (USMA) from 2003-2005. This is concerning as POP typically occurs in parous postmenopausal women and elderly, and the participants in the USMA study were young nulliparous women (mean age 19 years old). This study examining POP prevalence at the airborne school also identified UI in 19.4% of the sample, indicating pelvic floor stress related to PFDs likely commences during initial military training. The prevalence of women in the CAF experiencing POP symptoms is approximately 14.5%, though it is likely higher as symptoms awareness typically occurs at advanced POP stages. Furthermore, given that sexual trauma and post-traumatic stress are related to the development of chronic pelvic pain, and these events are prevalent among military personnel, the prevalence of chronic pelvic pain is likely high in this population. Hindering adequate management, the literature is sparse when it comes to the various types of PFDs in the military context. Unique physical demands of some military trades (i.e., heavy lifting, jumping, delaying urination, G-force exposure) combine with the psychological stresses to create a need for a multidisciplinary healthcare approach. A comprehensive review of the literature, which includes the findings of the latest North Atlantic Treaty Organization (NATO) study on military sexual trauma, is needed to assess the knowledge base in this area. Further, there are no standardized referral processes, screening, or symptom management plans for pelvic floor related issues in the CAF. This literature review will provide a much-needed start point for service members, clinicians, researchers, and policy makers who support

active-duty service members and veterans of the CAF.

Rationale This review responds to an urgent need to map the evidence and gather information about PFDs in women military personnel and veterans. Not only this review will enable to improve our understanding of PFDs in women military personnel and veterans and to identify literature gaps, but it will also be a steppingstone toward futures studies in this population. Our team will be conducting this review as a part of a larger planned research project. This review will provide clear direction for epidemiological study of PFDs related concerns in military women such as prevalence, severity, related risk and protective factors. Moreover, the existing evidence will outline next steps for more robust research projects such as randomized control trials for evaluating the efficacy of interventions for treating and preventing PFDs. More specifically, we will investigate effectiveness of psychotherapy, physiotherapy, and physical training to treat PFDs in female military and veterans. Our multidisciplinary team is dedicated to making a meaningful impact on the well-being of female military personnel and veterans. Through collaborative efforts and evidence-based practices, we aim to contribute to the improvement of healthcare outcomes and enhance the quality of life for those who serve/have served our country.

METHODS

Strategy of data synthesis This scoping review will be conducted following the Joanna Briggs Institute (JBI) methodology for scoping reviews and reported in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) guidelines. A scoping review design was selected because it has been suggested to be the optimal approach for providing a comprehensive overview of the literature (i.e., empirical research and grey literature [e.g., policy and government reports]), unlike a systematic review design, which is intended to focus on a specific question. The Participant-Concept-Context (PCC) framework will be used as recommended for scoping reviews.

Eligibility criteria Participants: Studies will be included if they involved women* (*see specification section GBA+) military personnel or veterans. Studies will be excluded if they involve minors and women suffering from major medical conditions such as cardiovascular disease, neurological conditions, cancer, and active infections. Studies will be considered eligible if data from the population of interest are presented

separately or if at least 75% of participants enrolled met our eligibility criteria.

Concept: Literature will be included if it investigated PFDs (including urinary and anal incontinence, pelvic organ prolapse, chronic pelvic pain) reported by prevalence/incidence and severity (obj.1). Data derived from both patient-reported outcomes (e.g. questionnaires and diary) and clinician-reported outcomes (e.g. pad test and pelvic organ prolapse quantification) will be considered. Studies investigating risk factors related to PFDs (including pregnancy/parity status, involvement in strenuous activities [i.e., rucking, heavy lifting, parachute or fast-roping, fast boat patrol], military sexual trauma, post-traumatic stress, military occupational specialties, deployment, rank structure, work environment/conditions) in women military personnel or veterans will be included (obj.2). Studies will also be considered if evaluating repercussions of PFDs (obj.3) in women military personnel or veterans including quality of life, psychological and physical impacts (e.g. anxiety, distress, depression, overall health and well-being, sexual health, reduced occupational performance, inability to participate in social life or activities of daily living,) and operational impacts (e.g. missed work, delaying or avoiding occupation related tasks or training [i.e., physical fitness testing, heavy lifting, jumping], need to travel for specialized care). Studies investigating the effects of conservatives (e.g. physiotherapy, psychotherapy, physical training), pharmacological interventions, and surgical treatments on the aforementioned outcomes will be included (obj.4). Any treatment comparator will be eligible such as sham, placebo, waitlist and other active treatment modalities. Studies will also be considered if assessing treatment implementation, healthcare access, and mitigation strategies (i.e. barriers, facilitators) of PFD management among women military personnel and veterans (obj.5).

Context: There will be no restriction in terms of research and data collection setting, geographical location and languages.

Types of sources: This scoping review will consider a variety of study designs, including randomized controlled trials (RCTs), non-RCTs, and before-after studies. In addition, analytical observational studies, including prospective and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be considered for inclusion, as well as descriptive observational study designs, such as case series, individual case reports, and descriptive cross-sectional studies. Qualitative studies will also be included. Narrative, scoping and systematic reviews will be considered to extract all relevant studies.

Data management For data extraction, two independent individuals from a team of seven reviewers will extract relevant information from the full texts, including the study sample, subject demographics (including type of works within the army force), treatment details, data collection time points, outcome measures, dropouts, and findings using a data extraction tool developed by the team. Disagreements will be resolved by consensus, and a third reviewer will be involved.

Reporting results / Analysis of the evidence All study data will be aggregated, and a narrative analysis of included studies will be performed. A narrative report on the findings that will be of relevance to the objectives of this review will be completed. For each review objective, meta-analysis will be performed for exploration purposes if a minimum of 5 studies measured a similar outcome. The data then will be pooled according to the objectives and types of outcomes (e.g. pooled prevalence, pooled mean difference, pooled odds ratio, etc.). Heterogeneity among studies will be assessed by the I² statistic. Statistical heterogeneity was interpreted as low (75%).

Subgroup analyses will be conducted whenever possible to explore the impacts of demographic information such as age, sex, gender, ethnicity, indigeneity, family status, years of service, rank structure, and military occupational specialties.

For data interpretation purposes, the data of this review will be analysed and interpreted in perspectives of different relevant sub-groups of civilians such as women in different stages of their life, women involved in strenuous sports/activities, or in non-military arduous occupations. Similarly, data regarding persons with male biological sex (irrespective of their gender) will be considered for data interpretation. As literature examining pelvic floor health in females employed in certain tasks may be sparse, evidence from male studies will be considered in the interpretation of data when discussing assessing trade-specific risk of pelvic floor dysfunction, injury, or strain. Including this component may also assist in the treatment of individuals who were born as male sex but identify as women.

Language restriction There will be no restriction in terms of languages given the language profile of our research team (e.g. English, French, Spanish, Portuguese, Polish, Turkish, German, Etc.).

Country(ies) involved The affiliated institutions involved of this review are in Canada and the United Kingdom. Articles from all countries will be included in this review.

Other relevant information GBA+ statement – This study aims to map the evidence regarding conditions affecting the female pelvic floor. This review will target adults with no maximal age limit, of all races, indigeneity, and family status. Studies investigating individuals with a female biological sex regardless of their gender identity and sexual orientation will be included. The term “women” is used throughout the text for the sake of conciseness. However, our review aims to be inclusive considering the non-binary aspect of gender identity and sexual orientation. We aim to collect all relevant data about PFDs, sex, and gender to enrich the interpretation of the findings.

Keywords Pelvic floor disorders, pelvic floor dysfunctions, incontinence, pelvic organ prolapse, chronic pelvic pain, military personnel, soldiers, armed forces, soldiers, veterans.

Dissemination plans Once the data analysis is complete, results will be published in peer-reviewed journals and presented at relevant scientific conferences.

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