



Joint Federal Research Funding for Military Personnel and Veterans

Project Report Summary Template

Funding Opportunity
Comprehensive literature review of pelvic floor dysfunction in Canadian Armed Forces women
Brief Overview
Pelvic floor dysfunctions (PFDs) place a substantial burden on female military personnel and Veterans. As the first comprehensive scoping review to map the evidence pertaining to prevalence, risks, repercussions and treatments of PFDs in this population, several areas for action were identified. A total of 123 publications were included in this review, with nearly all (114) coming from the United States. Overall, the prevalence of PFDs was high, with urinary incontinence being the most common, impacting 10--83% of servicewomen (including sub-groups). Chronic pelvic pain, pelvic organ prolapse and sexual dysfunction were also prominent in the literature. Risks for PFDs included age, race, parity status, post-traumatic stress disorder, depression, military sexual trauma, non-commissioned rank and years of service within the military. The main repercussions of PFDs were negative impacts of quality of life, intentional dehydration, and changing military occupation or discontinuing military service. The research on treatments was limited with a preliminary body of evidence suggesting benefits for some treatments for PFDs (e.g. pelvic floor muscle exercises for urinary incontinence, mindfulness for pain) Ultimately, military service appears to increase the likelihood of developing PFDs and the repercussions have considerable implications for quality of life and operational readiness, including release from military service. Limited data are available on preventive or therapeutic strategies to address these conditions.
What is this Research About?
This scoping review aimed to map existing evidence for PFDs in female military personnel and Veterans. The specific objectives were: 1. To assess the prevalence and the severity of the different PFDs; 2. To determine the risk factors related to PFDs; 3. To assess the repercussions of PFDs in terms of quality of life, psychological and physical health as well as operational readiness; 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 of PFD management; 6. To identify what diagnostic assessments, screening tools, and treatment outcomes are being used.
What did the Research Do?
This scoping review followed the Joanna Briggs Institute methodology for scoping reviews and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Extension for Scoping Reviews. The review was registered a priori on the International Platform of Registered Systematic Review and Meta-analysis Protocols (INPLASY) (INPLASY202460078). Publications from peer-reviewed sources and grey literature (including government reports) were searched from inception to July 2024 from the following databases Amed (EBSCO), CINAHL(EBSCO), APA PsycInfo (EBSCO), Sportdiscus (EBSCO), Medline (EBSCO), Embase, Pedro, Cochrane library, and Military database (ProQuest). Conference abstracts, internal defence networks, and snowball methods were also applied to retrieve relevant publications. The publications retrieved from the search

were then screened for relevance, first by title and abstract then by full text, by at least two reviewers, and data were extracted from the remaining texts, again by at least two reviewers. Though all nations, languages, and genders were included in the search, the 123 publications that met the inclusion criteria (i.e., comprehensive search strategy pertaining to pelvic floor dysfunction among female military or Veterans) were in English and 114 were from the United States. The remaining publications came from Australia (4), Canada (4), and the United Kingdom (1).

The included publications were categorized in accordance with the project aims: prevalence, risk factors, repercussions on quality of life, psychological health, physical health and operational readiness, effects of treatments, treatment implementation, and the diagnostic assessments, screening tools and treatment outcomes were summarized.

What did the Research Find?

1. The prevalence of PFDs is high among female military and Veteran personnel (data from surveys and studies using validated questionnaires: urinary incontinence [10-83%] chronic pelvic pain [9% - 27%], pelvic organ prolapse [15% - 54%], sexual dysfunction [8% - 60%]).
2. Several factors related to PFD risk in servicewomen and Veterans are consistent with the general population; increased age, parity, and body mass index (BMI) were all associated with increased risk of urinary incontinence, anal incontinence, pelvic organ prolapse, pelvic pain, and PFD (non-specified). Race was also important when examining PFD risk among military populations, with black race and minorities being more likely to experience PFDs, pelvic pain and overactive bladder syndrome but urinary incontinence was more prevalent for white race. The literature also highlighted military specific exposures increasing PFD susceptibility such as enlisted or non-commissioned rank structure, austere environments on field exercise and deployment, with years of military service being strongly associated with the development of PFDs. PTSD, depression, or anxiety were all associated with urinary incontinence, pelvic pain, and sexual dysfunction. While the relationship between poor mental health outcomes and PFDs is also seen in non-military populations, when direct comparisons were made, PFD was more likely in those with military specific trauma than non-military contexts. Moreover, history of military sexual trauma greatly increased likelihood of UI (specifically urgency urinary incontinence, mixed urinary incontinence, and nocturnal enuresis), lower urinary tract symptoms, pelvic pain, and sexual dysfunction.
3. The repercussions of PFDs within the military Veteran population are vast. PFDs negatively affect quality of life, daily activities, and mental health, with symptom severity linked to poorer outcomes. Coping strategies such as intentional dehydration are commonly used, especially during training and deployment. Operationally, UI interferes with physical activities and work, contributing to changes in military occupation specialty and even discontinuation of service. These findings highlight both health and retention implications for female personnel.
4. Evidence on treatments for PFDs in military and Veteran populations is limited, with no RCTs demonstrating efficacy. Within-group improvements or case report benefits were noted for pelvic floor muscle exercises/bladder training (urinary incontinence), mindfulness (chronic pelvic pain), psychological approaches (sexual dysfunction) and manual therapy and exercise (low back, abdominal, pelvic pain).
5. This review signals a glaring literature gap in treatment utilization, and outcomes for PFDs within the military and Veteran population.
6. Almost half of the studies used medical records for data collection and only 20 (16%) sources used validated questionnaire or tools to assess the PFD of interest. No validated tool or questionnaire was developed for the military specifically.

What does this Research Mean?

PFDs are prevalent among female military personnel and Veterans, especially those who served in the military for more than 10 years, have PTSD, experienced MST, employed in non-commissioned ranks and have given birth.. The negative impact these disorders have on quality of life, exercise participation, and mental health signal an opportunity to greatly improve the wellbeing of females who serve their country. Considering that PFDs can also drive service members to change military occupation specialty or discontinue military service, investing in initiatives aimed at improving pelvic health could aid in the retention of female personnel. Though, the literature suggests little has been done in the way of prevention or treatment of these conditions. The evidence indicates military service significantly increases the likelihood of PFD and ongoing surveillance of incidence, severity, risks, repercussions, and treatment outcomes are desperately needed.

Sources

In addition to the references presented in the review, we have identified some resources that could be helpful for stakeholders and female military personnel and Veterans:

The international consultation of incontinence publishes every three years a textbook with the most updated evidence on prevalence, pathophysiology and treatments of PFDs.

Cardozo, L, Rovner, E, Wagg, A, Wein, A, Abrams, P. (Eds) Incontinence 7th Edition (2023). ICI-ICS. International Continence Society, Bristol UK, ISBN: 978-0-9569607-4-0. (link [ICS | Incontinence 7th Edition](#))

The Agency for Healthcare Research and Quality offers some resources for continence care: [Tools and Resources to Help Improve Urinary Incontinence Care for Women | Agency for Healthcare Research and Quality](#)

Information and handouts about chronic pelvic pain are also available from the International Pelvic Pain Society website: [Informational IPPS Handouts about Pelvic Pain - IPPS](#) and [Chronic Pelvic Pain | Pelvic Pain Education Program](#)