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Top Left: Capt. Jennifer Casey, Public Affairs Officer for the Canadian Forces Snowbirds, was killed May 17, 2020, when the CT-114 Tutor jet in which she as a passenger crashed shortly after take-off in Kamloops, B.C. Casey was a driving force behind Operation INSPIRATION, a series of fly-overs across Canada to salute not only frontline and essential workers, but also all Canadians doing their part to slow the spread of the COVID-19 virus. *Photo by Derek Heyes/Hazer's Flightline*

Top Right: Aviator Connor Larivière, a medical technician from the 41st Canadian Forces Health Services Center, converses with a resident of Sainte-Anne Hospital in Montreal, QC, during Operation LASER on May 15, 2020. *Photo by Cpl. Genevieve Beaulieu/Valcartier Imaging Section*

Bottom Right: Pallbearers carry the remains of Sub.-Lt. Abbigail Cowbrough during a repatriation ceremony at 8 Wing Trenton on May 6, 2020. Cowbrough and five other Canadian Armed Forces members died when the CH-148 Cyclone helicopter they were flying in crashed into the Ionian Sea off the coast of Greece Apr. 29, 2020. Also killed were: Capt. Brenden Ian MacDonald, Capt. Kevin Hagen, Capt. Maxime Miron-Morin, Sub.-Lt. Matthew Pyke and Master Corporal Matthew Cousins. *Photo by Master Corporal Jennifer Kusche/8 Wing Imaging Trenton*

Bottom Left: A Veteran of the Royal 22nd Regiment (left), and Lt. Adolph Bolivard, infantry officer from the 4th Battalion, Royal 22nd Regiment (Châteauguay), greet each other at the Yvon-Brunet Accommodation Center during Operation LASER in Montreal, QC, May 23, 2020. *Photo by Aviator Zamir Muminiar/ 2nd Canadian Division Imaging*

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The changing face of the military in Canada

In the 12th issue of the *Journal of Military, Veteran and Family Health* (*JMVFH*), insight is provided into a wide variety of topics about the challenges faced by Canadian Armed Forces (CAF) members, Veterans, and their families, such as homelessness, the military to civilian transition process, evaluation of posttraumatic stress disorder (PTSD) checklists for CAF personnel, and the use of synthetic cannabinoids to manage PTSD nightmares. JMVFH also discusses family and gender and looks at how military families are depicted and defined in literature.

As one of the few publications to explicitly include military family members in its mandate, *JMVFH* prides itself in leading the charge when it comes to research for, and about, military families. It has become increasingly obvious in recent years that a portion of the journal's beneficiary population – namely dual-service couples, single parents, couples without children, and unmarried and same-sex relationships – are under-represented in existing literature. This editorial highlights the need to increase the scope of research about families and gender.

A four-country report produced by the Canadian Institute for Military and Veteran Health Research's Military Families Working Group in 2018 found the most commonly represented military family structure is a heteronormative union between a male serving member and his female civilian spouse during which they have children. However, for the CAF, as well as the general population, this image may no longer be accurate. A 2018 report released by the Vanier Institute of the Family showed only 66% of census families in Canada included a married couple, 16% were lone-parent families, 12% of same-sex couples were raising children, and multi-generational households were the fastest-growing household type in the country between 2001 and 2016.

As Lynda Manser states in her article (Pg. 120), "The state of military families in Canada: A scoping review," military families are not a single distinct entity. As of 2017, there were 63,269 Regular Force members employed by the CAF, of which 54% were aged 35 years or younger. A total of 44% were single and 53% did not have children. This is unsurprising, considering adults aged 20–39 years have shown a propensity to opt out of having children entirely in the last decade, according to Statistics Canada's 2011 General Social Survey: Overview of Families in Canada.

Those who do have children are doing so later in life. As of 2016, the average age of a first birth was 29.2 years for women and 32.2 years for men. The total number of children per family has also decreased, from an average of 3.9 in the 1960s to 1.5 in 2016. Among the reasons for this, according to Statistics Canada, is that women have delayed childbearing to pursue educational and employment opportunities. According to the Department of National Defence, women accounted for 15.6% of the Regular Force and 16.5% of the Reserve Force in Canada in 2020.

It is clear from Manser's work that, in order to provide support to military families in Canada, more information is needed about the full spectrum of CAF family types. For example, more research on dual-service couples is required; as Manser's data shows female Regular Force members are much more likely to be in a legal relationship with another CAF member than their male counterparts. Military families that include dependents with differing needs are also under-represented in literature, despite the fact 1,750 members declared having dependents other than spouses or children (i.e., parents or siblings) in 2017.

Heidi Cramm's article (Pg. 50), "Charting a course to support military families navigating service systems for children with Autism Spectrum Disorder: A qualitative study," highlights military families in Canada that include children with special needs. The article discusses how these families typically require more frequent and broad access to educational and health care services, which can be disrupted or discontinued due to the high level of mobility inherent in the military lifestyle. Navigating health systems for dependents with special needs can result in caregiver burden and take its toll on military families.

In her article (Pg. 85), "Are we family? A scoping review of how military families are defined in mental health and substance use research," Rachael Gribble addresses how policies enacted by defence departments often favour a stereotypical military family structure and do little to account for same-sex relationships, despite the fact many military personnel identify as LGBTQ2+.

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In 1992, the Canadian military repealed a law that made homosexuality a violation punishable by release. Since then, same-sex couples have been married in military chapels and same-sex common-law partners qualify for the same benefits as their heterosexual counterparts. Unfortunately, literature has yet to catch up, with LGBTQ2+ personnel often absent in military family research due to either implicit or explicit exclusion from studies, or narrow definitions of sex and gender.

Jennifer Lee's article (Pg. 26), "Correlates of perceived military to civilian transition challenges among CAF Veterans," states the majority of Veterans released from the CAF in 2016 were between the ages of 30 and 49 years, and approximately half (49.6%) were medically released. Few studies are focused on male partners acting as caregivers to female Veterans, same-sex Veteran couples, single Veterans, children and other family members caring for elderly Veterans, or parents and other family members caring for younger Veterans. Consequently, a strong military identity may make it hard for female Veterans to assume a traditional civilian female identity, leading them to feel isolated.

Tanya Oakley's article (Pg. 60), "Gendered differences in clinical presentation among treatment-seeking Veterans and CAF personnel," highlights the diverse range of issues that are clinically relevant for – and may complicate the treatment of – female Veterans. These issues include the impact of childhood trauma, which has implications for the development of subsequent mental health conditions including an increased risk of depression, anxiety, PTSD, suicide, and substance use. These factors can complicate personal relationships for Veterans and, inevitably, impact the appearance and definition of their families.

Military families are linked by a shared identity and culture, but future research needs to go further and be challenged to consider more inclusive definitions of family. This will ensure literature accurately reflects the experiences, needs, and strengths of this increasingly diverse community. Attention must be paid to intentionally including different family structures in data collection, so that research will correctly represent the changing nature of CAF families. This includes more time and effort dedicated to single members, unmarried members, couples without children, single parents, those caring for family members with special needs, dual-serving couples, and families of LGBTQ+ personnel.

JMVFH authors have their fingers on the pulse of the military and Veteran communities, both in Canada and abroad. They are constantly breaking new ground in their research, including research about the makeup of military families. For this reason, there is no doubt *JMVFH* authors will be at the forefront of changing the face of research for those who serve, those who have served, and their families.

Stéphanie A.H. Bélanger, CD, PhD, and
David Pedlar, PhD
Co-Editors-in-Chief, JMVFH

RESEARCH

Use of a synthetic cannabinoid (nabilone) in the ongoing management of posttraumatic stress disorder nightmares in the Canadian Armed Forces: Results of an anonymous online survey

Carmen Meakin[a], George Fraser[a], Denis Boisvert[a] and Carol Miller[a]

ABSTRACT

Introduction: The synthetic cannabinoid nabilone has shown promise in the management of posttraumatic stress disorder (PTSD) nightmares. To date, three clinical papers have been published showing positive results in nightmare suppression in civilian and military populations. This medication came on the market as an antiemetic. Nabilone has been used on an off-label basis at the Canadian Forces Operational Trauma and Stress Support Centre (OTSSC) in Ottawa for over a decade for PTSD nightmares. To date, there are no published reports of the ongoing experiences of patients who have been prescribed this medication for nightmare suppression. This research was conducted with the intent to fill this gap in the literature. **Methods:** An anonymous online survey was conducted in order to obtain a better understanding of the clinical effects experienced by those who continued taking nabilone. Eligible participants were active military members diagnosed with PTSD who were prescribed nabilone for the suppression of chronic nightmares. **Results:** Sixty military members responded to questions related to their ongoing experience using nabilone. Prior to taking nabilone, they had suffered from PTSD nightmares for an average of seven years. Suppression of nightmares was reported by 73% of respondents who continued taking nabilone. A small proportion self-discontinued nabilone to determine whether the medication was still needed. Of those who discontinued, most reported a return of nightmares an average of 1 week later; however, not all experienced a recurrence of nightmares. These findings support attempting a reduction or cessation at some point during treatment. For those who continued to experience nightmares, suppression was achieved with similar dosages to those previously prescribed; this suggests that nightmares are chronic and may need a longer duration of treatment. **Discussion**: This is the first survey to capture data for nabilone as a PTSD nightmare treatment beyond seven weeks. The results of this survey conform to the existing literature showing the efficacy of nabilone, a synthetic cannabinoid, as having a positive effect on nightmare suppression.

Key words: cannabinoids, experience, mental disorders, mental health, military personnel, nabilone, nightmares, night sweats, posttraumatic stress disorder, PTSD, treatment

RÉSUMÉ

Introduction : La nabilone, un cannabinoïde synthétique, est prometteur pour la prise en charge des cauchemars causés par un état de stress post-traumatique (ÉSPT). Jusqu'à présent, trois articles cliniques publiés en ont démontré les résultats positifs sur la suppression des cauchemars au sein des populations civiles et militaires. Ce médicament a été mis en marché sous forme d'antiémétique. Depuis plus d'une décennie, les Centres de soutien pour trauma et stress opérationnels (CSTSO) des Forces armées canadiennes recourent à la nabilone dans un emploi conforme ou non conforme à l'étiquette pour traiter les cauchemars causés par l'ÉSPT. Jusqu'à présent, aucun rapport publié ne porte sur les expériences continues des patients à qui on a prescrit ce médicament pour supprimer les cauchemars. Le présent article a été rédigé pour corriger cette lacune. **Méthodologie :** Les chercheurs ont réalisé un sondage anonyme en ligne pour mieux comprendre les effets cliniques de la nabilone en continu. Les participants admissibles étaient des militaires actifs présentant un ÉSPT diagnostiqué qui avaient reçu une ordonnance de nabilone pour traiter des cauchemars chroniques. **Résultats :** Soixante militaires ont répondu à des questions sur leur expérience continue de la nabilone. Avant de commencer à en prendre, ils avaient souffert de cauchemars causés par l'ÉSPT pendant une période moyenne de sept ans. La prise continue de nabilone a favorisé la suppression des cauchemars chez 73% des répondants. Quelques répondants ont décidé d'eux-mêmes d'arrêter leur traitement pour vérifier s'ils en avaient encore besoin. La plupart

a Canadian Forces Health Services Centre, Department of National Defence, Ottawa, Ontario, Canada

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d'entre eux, mais pas tous, ont constaté la reprise des cauchemars en moyenne une semaine plus tard. Ces observations appuient l'idée de tenter de réduire la médication ou d'y mettre un terme à un moment ou un autre du traitement. Ceux qui ont recommencé à faire des cauchemars ont pu s'en débarrasser en recommençant à prendre des doses semblables aux précédentes. Ainsi, les cauchemars seraient chroniques et pourraient nécessiter un traitement de plus longue durée. **Discussion** : Ce sondage est le premier à saisir des données sur la nabilone pour traiter les cauchemars causés par l'ÉSPT au-delà de sept semaines. Les résultats confirment les publications démontrant l'effet positif de la nabilone, un cannabinoïde synthétique, sur la suppression des cauchemars.

Mots-clés : cannabinoïdes, cauchemars, ÉSPT, état de stress post-traumatique, expérience, nabilone, personnel militaire, santé mentale, sueurs nocturnes, traitement, troubles mentaux

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INTRODUCTION

A cumulative incidence study of posttraumatic stress disorder (PTSD) and other mental disorders was conducted by the Canadian Armed Forces (CAF). Results indicate that 8% of service members deployed to Afghanistan received a diagnosis of PTSD.[1] One of the enduring symptoms of PTSD is disabling and prolonged nightmares.

The current pharmacologic treatment options for PTSD are non-specific, and at best, have partial efficacy regarding some of the known symptom clusters of this disorder. Current treatment options do not adequately treat the intrusion phenomena, such as nightmares, though some success has been reported with use of prazosin, which has been used by the American military.[2,3] In contrast to those findings, the *New England Journal of Medicine* published a study in 2018 on Veterans with chronic PTSD and frequent nightmares. The results of this 26-week trial failed to show a benefit of prazosin over placebo in reducing the frequency and intensity of trauma-related nightmares.[4] Marijuana was legalized in Canada on October 17, 2018, under the Cannabis Act (Bill C-45), and it is legal in some U.S. states; therefore, there may be a role for cannabis as a possible agent in the treatment of PTSD, although studies might be needed. In the existing literature, a 2014 article by Roitman et al. reported that using 5 mg Δ-9 tetrahydrocanabinol (THC) showed a global improvement in PTSD symptoms and noted that it was well tolerated. This article references previous work by an author of our article, noting that the beneficial effects of Δ-9 THC on sleep and nightmares reflects previous findings by Fraser who reported on similar effects with nabilone in chronic PTSD.[5]

Nabilone is an option for persistent PTSD-related nightmares. This synthetic cannabinoid acts on the endocannabinoid system. The role of the endocannabinoid system in the central nervous system may hold important ramifications for the understanding and treatment of PTSD.[6,7] Nabilone was initially found to be successful in managing severe nausea in cancer patients undergoing chemotherapy.[8] It has also been used on an off-label basis for neuropathic pain[9]and has been successfully used off-label in Canada since 2004 for PTSD nightmares. Anecdotal evidence on a cohort of 47 patients first suggested a role for this medication in the management of treatment-resistant nightmares in PTSD.[10] Following this, a retrospective study[11] and a randomized, double-blind, placebo-controlled cross-over design study[12] also showed that nabilone was useful for managing PTSD-related nightmares. Nabilone is currently prescribed in the CAF for patients diagnosed with PTSD who experience disruptive ongoing nightmares. Although supported by clinical observations, there is, to the knowledge of the authors, no data supporting the long-term efficacy once treatment has been initiated.[13]

Nabilone was designed as a synthetic cannabinoid. It does not test positive in urine tests for THC, there is no history of dependence, nor is there a significant euphoric effect. Additionally, there is no street value or reports of lethal overdoses.[14]

METHODS

The objective of the survey was to obtain a better understanding of the clinical effects experienced by those who continued taking nabilone. The authors were primarily interested in finding out what happened over time to the dose, therapeutic effects, and side effects. They wanted to know if nabilone had been discontinued for any reason. Inquiries were made regarding driving and any concerns about its relation to cannabis. An open-ended question about personal experiences while taking nabilone was included.

All eligible participants were active military members diagnosed with PTSD who had chronic nightmares and had been prescribed nabilone. The target population were patients (n = 150) who had been prescribed nabilone at the Ottawa Operational Trauma

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and Stress Support Centre (OTSSC) in the past three years. Recruiting was done through posters as well as small business cards at the Canadian Forces Health Services Centre, Ottawa. Individuals self-identified and participated by choice. No individual recruiting was done. A secure Canadian version of FluidSurveys (now part of SurveyMonkey, http://fluidsurveys.com/) was used and participants were directed to complete the anonymous online survey through the site. Questions were posed in a multiple-choice format consisting of 22 questions. Respondents were not obliged to answer all the questions, resulting in a variable number of responses. A modified Clinical Global Impression Scale was used to estimate the therapeutic effect and the side-effect load.[15] There was no compensation or remuneration of any type for those who participated. The survey took place over a nine-month period.

The survey was endorsed by the Surgeon General's Health Research Program and Ethics approval was granted by the Defence Research and Development Canada (DRDC) Human Research Ethics Committee (HREC).

RESULTS

Based on an estimate of 150 patients who were prescribed nabilone, 60 patients completed the survey. All were receiving evidence-based treatment for PTSD consisting of psychotropic medications and psychotherapy. Of the 60 respondents, 53 were still taking nabilone. Although seven patients had stopped treatment prior to the survey, they did complete the survey. Thirteen patients also stopped treatment in order to determine whether they still needed it. Those who stopped were asked further questions about their experience with discontinuation of the drug. Twelve of 13 who stopped the medication after a period of success had a recurrence of nightmares. Those who discontinued the medication reported a return of nightmares an average of one week later, with the earliest return of nightmares one night after cessation. When the medication was restarted, nightmare suppression was achieved with similar dosages to those previously prescribed. A return of nightmares suggests that nabilone acts primarily to suppress nightmares and may need to be continued. However, since not all experienced a recurrence of nightmares, this supports attempting a reduction or cessation at some point during treatment. The recurrence of nightmares following cessation of treatment suggests that nightmares are chronic and may need a longer duration of treatment.

The length of nabilone treatment varied, ranging from less than six months to greater than 24 months, at the time of the survey. Half of the respondents had taken it for less than a year and the remaining half had been taking it for more than a year (see Table 1).

Prior to starting nabilone, the average length of occurrence of PTSD nightmares in our sample was seven years (SD = 7.15, median = 5, range = 35, n = 60). An average of seven years suggests that nightmares are chronic and difficult to treat. The average dose of nabilone was 2.46 mg (SD = 1.76, median = 2, range = 7.5, n = 51). The dose ranged from 0.5 mg to 8 mg. We noted an average higher dose for those who had been on it longer. The issue of tolerance could not be determined due to the limits of the survey design.

When respondents were asked how they would currently rate the effect of nabilone on their nightmares, the majority (73%) reported a marked improvement in their symptoms, with complete, or nearly complete, remission of all symptoms as rated, according to the Clinical Global Impressions (CGI) scale. The majority of the remaining respondents reported a moderate improvement, while a smaller number noted minimal or slight improvement. None of the respondents felt their symptoms were either unchanged or worse (see Table 2).

Regarding side effects, 25% of respondents reported none. The majority reported mild but tolerable side

Table 1. Length of nabilone treatment

Total number of responses	58
Length of treatment (months)	**No. (%)**
< 6	19 (33)
6–12	10 (17)
12–24	20 (34)
> 24	9 (16)

Table 2. Therapeutic effects of nabilone treatment

Total number of replies	52
Therapeutic effect	**No. (%)**
Marked – Vast improvement. Complete or nearly complete remission of all symptoms	38 (73)
Moderate – Decided improvement. Partial remission of symptoms	13 (25)
Minimal – Slight improvement which doesn't alter status of care of patient	1 (2)
Unchanged or worse	0

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effects (46%); and a few (8%) attributed side effects that interfered with their functioning (see Table 3).

Other notable benefits related to the use of nabilone were reported by the 52 respondents; individuals were given the opportunity to report on more than one benefit. Forty of the respondents reported less or no night sweats, 33 reported better sleep, and 19 reported fewer or no flashbacks. Better mood was reported by 13 respondents and 8 individuals were able to decrease or stop other medications. A smaller number of individuals reported better pain control (6) as well as reduced anxiety (3) (see Table 4).

When asked whether their use of nabilone impaired their ability to drive a vehicle, the majority answered "no." An analysis of survey responses showed that none of those who reported impairment in driving needed to discontinue nabilone. If there are concerns about impairment, the patient should be advised to discuss this with their practitioner. Options may include taking the medication earlier in the evening, dose adjustment or discontinuation of the medication. In our survey, none of the respondents discontinued nabilone due to driving concerns.

Table 3. Side effects of nabilone treatment

Total number of replies	52
Side effects	**No. (%)**
None	13 (25)
Mild and tolerable	24 (46)
Moderate but not interfering with functioning	11 (21)
Important and interfering with functioning	4 (8)

Table 4. Other benefits of nabilone treatment

Total number of replies	52
Benefit(s)*	**No.**
Less or no night sweats	40
Better sleep	33
Less or no flashbacks	19
Better mood	13
Able to decrease or stop other meds	8
Better pain control	6
Reduced anxiety	3
No other benefit	3
Other benefits	3

* Multiple choices allowed

When asked if they had concerns about nabilone and its possible relation to cannabis, the majority of respondents answered "no." When clinicians introduce the use of nabilone, it is important to clarify that it is a synthetic cannabinoid, and not marijuana. The authors did not inquire about the concomitant use of other cannabinoids, particularly smoked marijuana, and acknowledge this limitation and recognize this as a potential confounder. All members had been asked about drug use as part of the comprehensive evaluation at the clinic before starting nabilone, however, as legalization in Canada was pending at the time this survey was conducted, the authors did not feel that self-reported marijuana use was a reliable indicator, given that its use is strictly prohibited in serving members. The Cannabis Act legalized recreational use nationally in Canada, effective October 17, 2018. The current study was completed shortly before the Act came into effect.

Of interest to the surveyors was whether there was ever a time that the respondents stopped taking nabilone. At the time of the survey, 7 of 60 respondents had already stopped nabilone prior to taking the survey. Reasons for discontinuation were mainly "strong side effects" or "no longer working." Because it was unknown how long patients needed to remain on nabilone, it was suggested that patients could try to discontinue the medication after six months of cessation of nightmares to see if it was still needed; however, this was based on clinical experience and not guided by current evidence.

DISCUSSION

This is the first survey to capture data for nabilone as a PTSD nightmare treatment when used beyond seven weeks. The results of this survey conform to the existing literature showing the efficacy of nabilone, a synthetic cannabinoid, as having a positive effect on nightmare suppression. A total of 73% of the 52 respondents who continued nabilone reported having complete, or nearly complete, remission of all nightmares. This is almost identical to the 72% response rate reported in the 2009 article by Fraser.[10] A high number also reported reduced night sweats, improved sleep, and decreased flashbacks. In general, nabilone has been reported to be well tolerated with minimal reported side effects.[13] Consideration should be given for use as an adjunctive medication in the management of PTSD when nightmares persist.

Although this survey did not provide information about how long patients must remain on this medication, an average of seven years' duration of nightmares was

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reported prior to commencing treatment, which highlights the chronicity of PTSD nightmares.

The authors acknowledge several limitations to the study. These include the use of a survey format and the small number of respondents. The results of this survey are non-generalizable to non-combat related PTSD nightmares, however, results from earlier studies have shown positive effects on civilian populations treated for PTSD nightmares.[8,9] Active serving members of the CAF were included in the study, but it is suspected that Veterans who have released may report similar experiences with the ongoing use of nabilone. The intent was to conduct the survey by telephone in order to reach those who had released from the military and had continued use of nabilone for a longer duration than those who may be captured in the survey; however, concerns regarding confidentiality precluded this approach. As such, only patients who were still in active care could be accessed, and therefore the methodology was subsequently changed to obtaining responses via an anonymous online survey. The authors acknowledge that the current study design and informal reporting of results precluded formal statistical analyses and further elaboration of findings.

The authors note that participants continued to engage in other traditional therapies, including medications and psychotherapies, which may have had some effect on nightmare reduction.

To obtain further information on longer-term use, future studies are needed to replicate the data in those who continue to take nabilone longer term. As participants reported reductions or cessation in other PTSD symptoms with nabilone, quantifying changes in other parameters in future studies would be of interest. It would be beneficial to obtain a larger sample and to include both Veteran and civilian populations. Other future directions include studies looking at response to nabilone for non-combat PTSD nightmares. Given current existing literature on the use of prazosin for PTSD-related nightmares, a future study comparing prazosin and nabilone would be of interest. Finally, with the legalization of marijuana, it may be possible to conduct future studies comparing nabilone to cannabis for PTSD.

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COMPETING INTERESTS

None declared.

This article has been peer reviewed.

CONTRIBUTORS

All authors conceived, designed, researched, and drafted the manuscript and approved the final version submitted for publication.

ETHICS APPROVAL

The study protocol was approved by the Defence Research and Development Canada (DRDC) Human Research Ethics Committee (HREC), Ottawa, Ontario, Canada.

INFORMED CONSENT

Informed consent was obtained from the patient(s).

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Evaluation of three abbreviated versions of the PTSD Checklist in Canadian Armed Forces personnel

Kerry Sudom[a]

ABSTRACT

Introduction: Post-deployment screening within the Canadian Armed Forces (CAF) aims to identify individuals with mental health problems. However, as screening is a time-consuming process, it is important to consider ways to reduce the time required, including the use of shorter scales. The scale currently used to assess posttraumatic stress disorder (PTSD), the PTSD Checklist (PCL-C), is lengthy, although validated shorter versions have been developed that have not yet been evaluated in the CAF population. **Methods**: Three brief versions of the PCL-C were evaluated in this study: the PCL-2, PCL-4 and PCL-6. The operating characteristics of each scale were examined using the screening and diagnostic cut-offs of the full PCL, as well as clinician ratings of PTSD being of major concern, as the standards for comparison. Optimal cut-offs for each scale were determined based on a combination of sensitivity, specificity, area under the curve (AUC), and prevalence of disorder compared to the full scale. As well, correlations with other measures of health were examined. **Results**: Although all three scales demonstrated good psychometric properties, the PCL-6 showed the strongest properties of the three scales. Optimal cut-offs were similar to those found in past research when calibrated against the PCL-C screening cut-off for PTSD and to clinician ratings. As well, it exhibited high correlations with other measures of mental health. **Discussion**: This research provides evidence for the acceptability of brief measures in screening for PTSD in military members following deployment. In particular, it points to the advantages of using the PCL-6, with cut-offs in line with those recommended in past research.

Key words: CAF, Canadian Armed Forces, deployment, mental health, PCL-6, PCL-C, post-deployment screening, posttraumatic stress disorder, psychometric properties, PTSD

RÉSUMÉ

Introduction : Au sein des Forces armées canadiennes (FAC), le dépistage après le déploiement vise à repérer les personnes ayant des troubles de santé mentale. Puisque ce processus est chronophage, il est toutefois important d'envisager des moyens de le raccourcir, y compris le recours à des échelles plus courtes. La *Posttraumatic Stress Disorder Checklist* (PCL-C) – l'échelle actuellement utilisée pour évaluer l'état de stress post-traumatique (ÉSPT) – est longue, même s'il existe des versions plus courtes et validées qui n'ont pas encore été évaluées dans les FAC. **Méthodologie** : Les chercheurs ont évalué trois versions brèves de la PCL-C : la PCL-2, la PCL-4 et la PCL-6. Ils ont utilisé comme normes de comparaison les caractéristiques de fonctionnement de chaque échelle au moyen des seuils de dépistage et de diagnostic de la PCL longue, de même que les évaluations de l'ÉSPT par les cliniciens qui sont une importante source d'inquiétude. Ils ont déterminé les seuils optimaux de chaque échelle d'après une combinaison de sensibilité, de spécificité, de surface sous la courbe et de prévalence du problème par rapport à l'échelle longue. Ils ont également comparé les corrélations à d'autres mesures de la santé. **Résultats** : les trois échelles possédaient de bonnes caractéristiques psychométriques, mais la PCL-6 présentait les caractéristiques les plus solides. Les seuils optimaux étaient semblables à ceux des recherches antérieures lorsqu'ils étaient calibrés par rapport au seuil de dépistage de la PCL-C pour l'ÉSPT et aux évaluations des cliniciens. Cette échelle possédait également les plus fortes corrélations avec les autres mesures de santé mentale. **Discussion** : La présente étude démontre l'acceptabilité d'instruments courts pour dépister l'ÉSPT chez les militaires après le déploiement. Notamment, elle fait ressortir les avantages de la PCL-6 lorsque les seuils respectent ceux recommandés dans les recherches antérieures.

Mots-clés : dépistage après le déploiement, déploiement, état de stress post-traumatique, ÉSPT, FAC, Forces armées canadiennes, PCL-6, PCL-C, propriétés psychométriques, santé mentale

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INTRODUCTION

Past research has shown that military deployment, particularly to areas of combat where personnel are exposed to numerous potentially traumatic experiences, is associated with an increased risk of mental health problems, including depression, alcohol misuse, and posttraumatic stress disorder (PTSD).[1–3] In general, PTSD has shown the strongest association with combat experiences.[3] More than 40,000 Canadian Armed Forces (CAF) members deployed in support of the mission in Afghanistan from the period of 2001 to 2012,[4] where many were exposed to potentially traumatic events in combat. Among those deployed in support of the Afghanistan mission between 2009 and 2012, over 10% reported symptoms of at least one mental health problem, most commonly PTSD or depression.[5] In this study, combat exposure was one of the strongest risk factors for mental health problems. Therefore, it is important to be able to accurately screen for mental health issues following deployment, to ensure that military members are receiving necessary care.

Post-deployment screening aims to identify individuals with mental health problems who may require further assessment and care upon return from deployment. In the CAF, the screening process consists of a questionnaire to assess a number of mental health concerns, followed by a semi-structured interview with a clinician during which recommendations for further care are made as required. However, the process is lengthy, and it places considerable burden on CAF members returning from deployment who must take time from their schedules to complete the process. It also places demands on clinicians who have competing priorities. Therefore, it is important to optimize the time and effort involved in the screening process while maximizing the effectiveness of screening in identifying members at risk for mental health issues in need of further care.

Currently, the post-deployment screening questionnaire consists of a number of scales to assess mental health problems, including the Posttraumatic Stress Disorder Checklist – Civilian version (PCL-C). Although it is a widely used measure of self-reported symptoms of PTSD and has demonstrated good psychometric properties,[6,7] at 17 items, the PCL-C is lengthy. Two alternative brief screening tools, the PCL-2 and the PCL-6, were developed using items from the PCL-C.[8] Using a blind diagnostic interview with a clinician as the criterion standard, both versions were found to have high sensitivity for detecting the presence of PTSD in a sample of primary care patients undergoing treatment for the disorder, although the specificity was relatively low.[8] As well, abbreviated scale scores showed high correlations with other measures of mental health symptoms.[9] In a study of treatment-seeking samples of Veterans, the PCL-2 had psychometric properties comparable to longer PTSD measures.[10] Examination of partial correlations of the full PCL with other health measures, controlling for the brief scale scores, indicated that much of the information in the full PCL was captured in the PCL-6, although this was not the case with the two-item version.[9] In addition to these two brief scales, Bliese et al.,[11] using item response theory (IRT), found that four items from the PCL-C (known hereafter as the *PCL-4*) exhibited psychometric properties comparable to the original scale and effectively differentiated those with higher PTSD levels from those with lower levels.

Although these brief scales appear promising for initial screening for the presence of PTSD, there is currently limited data to support their use in post-deployment screening of military personnel. Given their high sensitivity for detecting PTSD, any of the abbreviated measures may be acceptable for use in post-deployment screening of CAF personnel, saving time on the part of both clinicians and CAF members while still capturing those in need of care. However, before considering their use, their utility for assessing PTSD and their potential cut-offs should be evaluated in this population. To this end, the aim of the present study was to evaluate the three brief versions of the PCL-C using data from post-deployment screening of CAF personnel.

METHODS

Participants

Data for this study were from 18,678 CAF members who deployed on various operations between 2009 and 2012, mainly in support of the mission in Afghanistan, and underwent post-deployment screening. The majority were male (90.2%), 30 years of age or older (57.7%), and from the army (76.8%).

Procedure

The Enhanced Post-Deployment Screening (EPDS) process involves a confidential, although not anonymous, questionnaire administered between 90 and 180 days following overseas deployments of 60 days or more, as well as a semi-structured interview with a clinician. Data from the EPDS are captured electronically

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for health surveillance. The use of this data for the present analysis was approved by the Department of National Defence (DND)/CAF Social Science Research Review Board and the Surgeon General Health Research Board.

Measures

PTSD symptoms were assessed using the PTSD Checklist–Civilian version (PCL-C).[6] The PCL-C consists of 17 items which cover the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV) criteria for diagnosis of PTSD. Respondents indicated how much they were bothered by each of the symptoms in the past month, and scores on the items were summed to create a total score for each individual. In this study, cut-off scores of 34 and 50 were used to indicate medium risk and high risk of PTSD, respectively. These values are in line with those used in past research: a cut-off of 34 is within the range of scores found to have optimal psychometric properties in past research validating the PCL among Veteran treatment-seeking samples,[10] and for post-deployment screening of military members.[11] As well, 50 is a standard cut-off used for informing possible diagnosis of PTSD.[6]

The PCL-2, PCL-4 and PCL-6 are derived from items on the PCL-C, and all have been found to have good psychometric properties and potential utility as screening instruments.[8,11] The PCL-2 was developed using the two items with the highest item-total correlations, which pertain to intrusive memories and distress associated with reminders of the traumatic event. The PCL-6 was developed using the two items from each of the three DSM-IV symptom clusters showing the highest correlations with their respective cluster scores. Cut-offs of 4 and 14 have been recommended for the PCL-2 and the PCL-6, respectively.[8] The PCL-4 was developed using IRT, and contains the four items that best differentiated individuals with PTSD;[11] it also shows overlap with the items in the two- and six-item versions. A cut-off of 7 was considered reasonable for this scale.[11]

Mental and physical health were measured using the 36-item Short Form Health Survey (SF-36).[12] The SF-36 is a set of quality of life measures that asks a series of questions about perceived health and level of ability to engage in usual activities. It yields two summary scores – a mental health component score (MCS) and a physical health component score (PCS) – as well as a number of sub-scales which cover specific domains of physical and mental health.

Analyses

Sensitivity, or the proportion of individuals with PTSD correctly detected by the measures, and specificity, or the proportion of individuals without PTSD for which it was correctly determined to not be present, were examined for each of the brief scales. The screening and diagnostic cut-offs of the full PCL, as well as clinician interview ratings of PTSD being a "major concern," were used as the standards for comparison. Optimal cut-offs for each scale were determined based on a combination of sensitivity, specificity, area under the curve (AUC), and prevalence of disorder compared to the full scale.

To compare the three abbreviated versions and determine whether the full PCL added significant information beyond the abbreviated versions, the magnitude of the correlations between the PCL and measures of physical and mental health, controlling for the abbreviated scales, was assessed. In particular, a reduction in correlation may indicate that the abbreviated version captures significant variance in PTSD symptoms.[9] Finally, internal consistency of the scales was assessed using Cronbach's α.

RESULTS

Overall, 9.2% of the sample met the criteria for PTSD using a cut-off of 34 on the PCL-C, while 2.6% met the criteria using a cut-off of 50. Prevalence was slightly higher for females (10.8%, 3.0%) compared to males (9.1%, 2.6%). The PCL-2, PCL-4 and PCL-6 all correlated highly with the full PCL (0.84, 0.93 and 0.97, respectively; all significant at $p < 0.001$). Cronbach's α values were 0.94 (full PCL), 0.81 (PCL-2), 0.81 (PCL-4), and 0.87 (PCL-6).

Operating characteristics for each scale at the cut-offs established in past research for the PCL-2 and PCL-6,[8] and the PCL-4[11] are presented in Table 1. At the recommended cut-off of 4, sensitivity and specificity of the PCL-2 were high, although the prevalence of probable PTSD at this cut-off (17.8%) was approximately double that using the PCL-C screening cut-off of 34. Similarly, at the recommended cut-off of 7 on the PCL-4, prevalence of PTSD was higher than that using the full-scale screening cut-off, although sensitivity and specificity were high. Finally, the established cut-off of 14 on the PCL-6 resulted in a similar percentage of members screening positive for PTSD while also having good sensitivity and specificity.

Operating characteristics for the optimal cut-offs of the three abbreviated scales are shown in Table 2.

Table 1. Operating characteristics of the PCL-2, PCL-4 and PCL-6 at established cut-offs

Abbreviated scale	Criterion	Established cut-off	Prevalence of disorder at established cut-off	Sensitivity	Specificity	AUC
PCL-2		4	17.8%			
	PCL ≥ 34			0.87	0.89	0.88
	PCL ≥ 50			0.99	0.84	0.92
	Clinician rating			0.86	0.85	0.86
PCL-4		7	14.9%			
	PCL ≥ 34			0.93	0.93	0.93
	PCL ≥ 50			1.00	0.87	0.94
	Clinician rating			0.89	0.89	0.89
PCL-6		14	8.3%			
	PCL ≥ 34			0.81	0.99	0.90
	PCL ≥ 50			1.00	0.94	0.97
	Clinician rating			0.79	0.95	0.87

PCL = PTSD Checklist; AUC = area under the curve.

Table 2. Operating characteristics for PCL-2, PCL-4 and PCL-6 at optimal cut-offs

Abbreviated scale	Criterion	Optimal cut-off for abbreviated scale	Prevalence of disorder (using optimal cut-off)	Sensitivity	Specificity	AUC
PCL-2	PCL ≥ 34	5	8.8%	0.68	0.97	0.83
	PCL ≥ 50	7	3.1%	0.75	0.99	0.87
	Clinician rating	5	8.8%	0.72	0.94	0.83
PCL-4	PCL ≥ 34	8	10.1%	0.84	0.98	0.91
	PCL ≥ 50	11	3.8%	0.94	0.99	0.96
	Clinician rating	8	10.1%	0.83	0.93	0.88
PCL-6	PCL ≥ 34	14	8.3%	0.81	0.99	0.90
	PCL ≥ 50	19	3.0%	0.90	0.99	0.95
	Clinician rating	14	8.3%	0.79	0.95	0.87

PCL = PTSD Checklist; AUC = area under the curve.

For the PCL-2, compared to the cut-off of 34 for the full PCL, it was found that 5 was a balanced cut-off: although some sensitivity was sacrificed, specificity was high compared to the established cut-off of 4,[8] and the prevalence of PTSD (8.8%) was similar to that of the full scale. Compared to the cut-off of 50 for the full PCL, a cut-off of 7 on the PCL-2 resulted in a balance of acceptable sensitivity, high specificity, and similar prevalence.

Compared to the PCL-C screening cut-off of 34, a cut-off of 8 on the PCL-4 resulted in an acceptable balance of sensitivity and specificity, and only slightly higher prevalence of disorder compared to the full scale. Compared to the cut-off of 50 on the full scale, a cut-off of 11 was considered optimal.

Compared to a cut-off of 34 for the full scale, the PCL-6 cut-off of 14 recommended in past research[8] resulted in good sensitivity and specificity as well as a similar prevalence of PTSD compared to the full PCL (8.3%). Compared to the cut-off of 50, the optimal cut-off point for the PCL-6 was 19, which yielded high sensitivity and specificity, and a similar prevalence of PTSD.

Overall, clinicians rated 4.0% of the sample as having PTSD (either military- or civilian-related) at a level of "major concern." Compared to clinician ratings

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of PTSD, optimal cut-off scores were 5, 8, and 14 for the PCL-2, PCL-4 and PCL-6, respectively (Table 2). These cut-offs were the same as those found to be optimal for the brief scales when they were compared to the PCL-C screening cut-off of 34. Although the prevalence of clinician ratings of PTSD as major concern was lower than the prevalence of PTSD using the PCL, our analyses did not include clinician-reported "minor concern," which was endorsed by approximately 6% of clinicians.

The correlations of abbreviated scale scores with physical and mental health scores from the SF-36 are shown in Table 3. Correlations for the PCL-6 were higher than those for the PCL-2 and PCL-4, and were generally closer in value to those of the full scale. All correlations were significant, which was not unexpected given the large sample size. As expected, correlations were lower for the physical health sub-scales compared to those of the mental health subscales. Although the correlations of the full PCL with MCS and PCS remained significant once the abbreviated versions were controlled for, the correlations were reduced in magnitude, particularly when controlling for the PCL-6. In particular, the correlation between the PCL-C and the MCS was reduced substantially, from −0.72 to −0.08, when the PCL-6 was controlled. In comparison, when controlling for the PCL-2 and the PCL-4, the correlation between the PCL-C and the MCS dropped to −0.58 and −0.40, respectively. Controlling for the PCL-6 reduced the magnitude of the PCL-MCS correlation by a greater extent, indicating that the PCL-6 accounted for greater variance in PCL-C scores compared to the shorter scales. Correlations of PCL-C scores with physical component summary scores were lower, and did not decrease substantially when the abbreviated versions were controlled for. Specifically, the correlation of the PCL-C with PCS was reduced in magnitude from −0.21 to −0.13, −0.06 and −0.10 when controlling for the PCL-2, PCL-4 and PCL-6, respectively.

Table 3. Correlations of PCL with SF-36 scores

SF-36 domain	PCL score			
	PCL-2	PCL-4	PCL-6	PCL-C
Physical functioning	−0.21	−0.25	−0.25	−0.26
Role-physical	−0.30	−0.37	−0.38	−0.39
Bodily pain	−0.29	−0.33	−0.35	−0.36
General health	−0.36	−0.44	−0.46	−0.47
Vitality	−0.42	−0.52	−0.58	−0.58
Social functioning	−0.54	−0.63	−0.70	−0.69
Role-emotional	−0.47	−0.59	−0.63	−0.62
Mental health	−0.53	−0.63	−0.70	−0.69
Physical health component summary score	−0.18	−0.21	−0.20	−0.22
Mental health component summary score	−0.55	−0.66	−0.73	−0.72

Note: All correlations are significant at $p < 0.001$.

PCL = PTSD Checklist.; SF-36 = 36-item Short Form Health Survey.

DISCUSSION

Having brief, yet reliable and valid measures of mental health is beneficial in post-deployment screening in order to reduce the burden on military members and clinicians as well as administration time of the screening process. Developing and validating brief versions of scales to assess mental health concerns, of which PTSD is one, represents a step toward optimizing the screening process. In the present study, three brief versions of a measure of PTSD were evaluated in CAF members undergoing post-deployment screening. The PCL-4 and PCL-6 performed somewhat better than the two-item version in terms of correlations with the full scale and with other measures of self-reported mental health. As well, the PCL-4 and PCL-6 exhibited high sensitivity for detecting the presence of PTSD, while all three brief measures showed high specificity. When controlling for the PCL-6, the correlation of full-scale scores with the mental health component summary scores of the SF-36 was reduced by the greatest extent, indicating that the PCL-6 captures much of the information contained in the full scale, consistent with past findings.[9] Optimal cut-offs for the abbreviated scales were similar to those found in past research when calibrated against the PCL-C screening cut-off of 34 for PTSD and to clinician ratings of PTSD being of major concern, while cut-offs were several points higher when using the diagnostic threshold as the criterion standard.

Overall, the findings support the use of brief measures of PTSD in post-deployment screening of military personnel, with the PCL-6 showing the strongest psychometric properties. The validity and psychometric properties were superior to the PCL-2, and the additional four items are not expected to increase the burden on the screening process substantially. Although

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the PCL-4 also demonstrated good psychometric properties, and like the six-item version, contains items from each of the three PTSD symptom clusters, the PCL-6 accounted for more variance in the full scale.

A cut-off of 14 was found to be optimal for the PCL-6, consistent with recommendations in past research.[8] Various cut-offs for the full scale have been recommended, often with higher cut-offs being suggested for high risk samples (e.g., treatment-seeking groups),[6] and lower cut-offs recommended for primary care samples, including military primary care.[13] Post-deployed military personnel undergoing screening may be considered more similar to a primary care sample, rather than a high-risk sample, in that it is expected that low numbers will present with mental health problems at a level requiring further care. In this sense, since the EPDS is intended to be used as a screening tool whereby those with likely mental health issues are referred to further care as needed, using a cut-off that corresponds to a lower screening threshold (rather than a diagnostic threshold) is appropriate. In addition, to the extent that perceived stigma may lead to underreporting of PTSD symptoms in non-anonymous surveys such as post-deployment screening, using a lower cut-off score offers a more conservative approach to screening in that it will capture more of those in need of further assessment and care.

In this study, a balanced approach to identifying cut-offs with optimal sensitivity, specificity, and prevalence of PTSD compared to the full scale was taken. In general, when selecting any cut-off, some sacrifice must be made: although a lower cut-off would result in higher sensitivity for detecting cases of PTSD, it would also mean a higher proportion of CAF members requiring further screening. While having tests that are sensitive enough to capture a large number of individuals with a disorder is important, we must also consider the burden on clinicians and the CAF health care system in general. If a lower cut-off is chosen, resulting in a much higher number of PTSD cases presenting to clinicians and being referred for further care, the utility of a brief scale is offset by the additional cost and time of the higher number of cases.

In the case of EPDS, the goal is to screen individuals with mental health problems who may require follow-up care, rather than to provide a diagnosis. Measuring mental health along several dimensions in the EPDS – where many issues, including PTSD, depression, anxiety, alcohol misuse, and general health are assessed – increases the likelihood that an individual will be flagged for some disorder and thereby be recommended for care. Additionally, the EPDS questionnaire is followed by a clinician interview for all members, regardless of questionnaire responses. Both of these factors increase the likelihood that those in need of care will be identified, even if the cut-off selected misses some individuals with PTSD.

Although some information will be lost when using any abbreviated measure, this must be weighed against the time saved in post-deployment screening, particularly when cut-offs are chosen to optimize the sensitivity, specificity, and prevalence of PTSD cases compared to the full scale. Also, in general, the choice of which scale to use may depend on the setting: a shorter scale may be sufficient for situations involving initial screening for PTSD which will be followed up by a clinical assessment, such as the EPDS. Past research evaluating the PCL-2 and PCL-6 found that both worked well as screening instruments in primary care.[8] However, in other settings, such as assessing response to PTSD treatment, a longer version may be required to capture more information.[9]

Limitations

There were a number of limitations in this study. Analysis of sensitivity and specificity of a test for detecting a disease or condition relies on having a valid and reliable standard for comparison. The abbreviated PCL scales were originally evaluated using the Mini-International Diagnostic Interview (MINI)[11] and the Composite International Diagnostic Interview (CIDI),[8] while other researchers have used the Clinician Administered PTSD Scale (CAPS).[14] Although a clinical diagnosis of PTSD using a standardized assessment tool would be ideal as the standard against which to evaluate the abbreviated scales, the current study is limited to the available questionnaire and clinician screening data. Nonetheless, the full PCL-C is a widely used scale with good psychometric properties,[7] which without other sources of data provides a fairly reliable estimate of the presence of PTSD against which the brief versions of the scale can be compared.

The information used by clinicians to indicate their perceptions of the severity of mental health issues may vary – the EPDS results as well as the interview are both taken into consideration, but the relative weight placed on each is unknown. As well, the goal of the clinician interview is not to diagnose, but rather to screen for

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potential areas of concern in order to ensure that members receive care as needed. Therefore, the clinical interview in the EPDS is not comparable to a diagnostic interview such as the MINI or the CAPS.

The PCL-C and its derivatives are based on DSM-IV criteria. New research on the use of the PTSD Checklist for the DSM-5 (PCL-5) will be required in order to maximize detection of military personnel with PTSD symptoms according to the more recent DSM-5 diagnostic criteria. Currently, PTSD is assessed in the EPDS using the PCL-C, and therefore the findings of this study apply to the EPDS in its present form. However, the PCL-C will eventually be replaced by the PCL-5, at which point the PCL-5 and any potential abbreviated versions will need to be evaluated for their psychometric properties and optimal cut-offs in the CAF population, as well as for their performance compared to the PCL-C.

Finally, due to its use as a screening tool to identify individuals in need of help following deployment, the EPDS is not anonymous. Although the survey is confidential, some participants may be reluctant to disclose mental health concerns on the questionnaire, the interview, or both, due to stigma or perceived career repercussions. Thus, the extent to which the EPDS process underestimates PTSD and other mental health issues is unknown.

Conclusion

This research provides evidence for the acceptability of brief measures in screening for PTSD in military members following deployment. Further, it specifically points to the advantages of using the PCL-6, with cut-offs in line with the recommendations of past research. Although some information is lost in comparison with the full measure, as indicated by lower correlations with other measures of health, the loss of information should be considered against the advantages of being able to quickly screen members for mental health issues. It is important in future research to continue to evaluate brief scales for their utility in post-deployment screening.

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AUTHOR INFORMATION

Kerry Sudom, PhD, joined the Department of National Defence in 2005 as a researcher with Defence Research and Development Canada. She is currently working with the Directorate of Mental Health within Canadian Forces Health Services Group. Her areas of research have included transition from military to civilian life, psychological resilience, stigma and barriers to seeking mental health care, post-deployment screening, and post-deployment mental health.

COMPETING INTERESTS

None declared.

This article has been peer reviewed.

CONTRIBUTORS

The author conceived, designed, researched, and drafted the manuscript and approved the final version submitted for publication.

ETHICS APPROVAL

The study protocol was approved by the Department of National Defence (DND)/CAF Social Science Research Review Board and the Surgeon General Health Research Board, Ottawa, Ontario, Canada.

INFORMED CONSENT

Informed consent was obtained from the patient(s).

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RESEARCH

Exploring harm reduction among Canadian Veterans experiencing homelessness

Olivia Marsella[a], Cheryl Forchuk[a,b] and Abe Oudshoorn[a]

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ABSTRACT

Introduction: In Canada, Veteran homelessness is an increasing concern. It is estimated that approximately 2,950 Veterans experienced homelessness in 2016. Some may also have substance use disorders, which has been linked to loss of housing and homelessness many years after exiting military service. A strategy that facilitates housing stability and reduces the harms of substance use is harm reduction. This study explored how Veterans who have experienced homelessness perceive and experience harm reduction. **Methods:** This study was a secondary analysis of data collected from the Canadian Model for Housing and Support of Veterans Experiencing Homelessness study that evaluated a Veteran-specific housing model in four Canadian cities. In the primary study, 78 participants received housing and related programming intervention. Focus groups with Veterans occurred at each of the four housing sites from 2012 to 2014. Across all sites, 24 Veterans attended both the 2012 and 2013 focus groups. A total of 39 Veterans attended the final focus groups in 2014. The authors conducted a thematic analysis of Veteran focus group data where data were extracted from transcripts and organized into themes. **Results:** Various themes emerged from the data including (1) regimented structure, (2) understanding both worlds, (3) congruent recovery journeys, (4) location close enough to services, far enough from harm, and (5) harm reduction is housing stability and housing stability is harm reduction. These themes represent the interface between military culture and homeless culture. Overall, Veterans considered harm reduction as an essential component of housing. **Discussion:** This study has shown that harm reduction may be part of the solution to ending Veteran homelessness in Canada. The findings of this study may inform how Veteran housing and substance use needs are addressed. Additional research is needed to explore further how harm reduction can be effectively incorporated into Housing First for Veterans.

Key words: addiction, harm reduction, homelessness, housing, Housing First, mental health, substance-related disorders, Veterans

RÉSUMÉ

Introduction : L'itinérance des vétérans est une préoccupation croissante au Canada. On estime que 2,950 vétérans vivent dans cette situation en 2016. Certains vétérans peuvent être aux prises avec des troubles de consommation de substances psychoactives, qui entraînent la perte de leur logement et leur situation d'itinérance plusieurs années après qu'ils ont quitté le service militaire. La réduction des méfaits est une stratégie qui favorise la stabilité du logement et réduit la consommation de substances psychoactives. La présente étude visait à explorer comment les vétérans qui ont connu l'itinérance perçoivent et vivent la réduction des méfaits. **Méthodologie :** La présente étude est une analyse secondaire des données colligées dans l'étude du *Modèle canadien pour l'hébergement et le soutien des anciens combattants en situation d'itinérance*, qui évaluait le modèle de logement des vétérans dans quatre villes canadiennes. Dans l'étude primaire, 78 participants ont reçu un logement et une intervention liée au programme. Des groupes de travail composés de vétérans ont été organisés entre 2012 et 2014 à chacun des quatre emplacements des logements. Dans tous les emplacements, 24 vétérans ont participé à la fois aux groupes de travail de 2012 et de 2013. Au total, 39 vétérans ont participé aux groupes de travail finaux de 2014. Les chercheurs ont procédé à une analyse thématique des données tirées des groupes de travail de vétérans, c'est-à-dire que les données ont été extraites des transcriptions et classées par thèmes. **Résultats :** Plusieurs thèmes ont émergé des données, soit a) la structure régimentée, b) la compréhension des deux mondes, c) les parcours congruents vers le rétablissement, d) le lieu assez près des services, mais assez loin des méfaits et e) la réduction des méfaits assure la stabilité du logement et la stabilité du logement assure la réduction des méfaits. Ces thèmes constituent l'interface entre la culture militaire et la culture d'itinérance. Dans l'ensemble, les vétérans

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considéraient la réduction des méfaits comme un volet essentiel du logement. **Discussion :** La présente étude démontre que la réduction des méfaits peut faire partie de la solution à la situation d'itinérance des vétérans au Canada. Les observations qui en sont tirées pourraient éclairer les façons de répondre aux besoins des vétérans en matière de logement et de consommation de substances psychoactives. D'autres recherches s'imposent pour mieux explorer comment intégrer la réduction des méfaits avec efficacité au programme Logement d'abord pour les vétérans.

Mots-clés : dépendance, logement, Logement d'abord, personnes itinérantes, réduction des méfaits, santé mentale, troubles liés à la consommation de substances psychoactives, vétérans

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INTRODUCTION

The rate of homelessness in Canada has been increasing since the 1980s. Each year, approximately 235,000 Canadians will experience homelessness.[1] Despite their past service in the Canadian Armed Forces (CAF), Veterans have a risk of homelessness similar to other Canadians.[2] It is estimated approximately 2,950 CAF Veterans were homeless in 2016.[1] Some Veterans experience substance use disorders, particularly alcoholism, many years after exiting military service, which has been linked to loss of housing and subsequent homelessness.[3] The national Life After Service Survey also found that the rate of heavy drinking among Regular Force Veterans was 25%, similar to the general Canadian population.[4]

Harm reduction is a recovery-oriented, evidence-based approach that aims to reduce the harms of substance use without requiring individuals to abstain from substances.[5] It was identified by Forchuk and Richardson[6] as a key principle in preventing Veteran homelessness. Evidence has shown that harm reduction reduces negative outcomes associated with substance use.[7–10] Housing First includes the principle of harm reduction and facilitates access, as quickly as possible, to stable, permanent, and affordable housing of choice. This strategy does not require individuals to abstain from substance use to receive housing.[11] Harm reduction and Housing First may be key to addressing homelessness among CAF Veterans.[6] This study explored how homeless Veterans experience and perceive harm reduction as a component of stable housing. The following research questions were addressed in this study:

1. What are the experiences with harm reduction for Canadian Veterans who have experienced homelessness?
2. What does harm reduction mean for Canadian Veterans who have experienced homelessness?

METHODS

Design

A qualitative secondary analysis was chosen to re-analyze focus group data from the Canadian Model for Housing and Support of Veterans Experiencing Homelessness[6] study. This two-year study evaluated a housing model and individualized programming for Veterans experiencing, or at risk of experiencing, homelessness in Toronto, London, Calgary, and Victoria.[6] The qualitative component of the study involved focus group interviews with Veterans, housing staff, and other key stakeholders, that occurred at three time-points at all four sites. A qualitative secondary analysis examined pre-existing data to investigate new research questions or confirm existing research. This type of analysis also investigated an issue or situation that was not considered, or fully examined, in the original research.[12,13] In the primary study, several findings related to harm reduction emerged from the focus groups. For the qualitative secondary analysis, this data was further examined to reveal what harm reduction meant for Veterans who experienced homelessness.

Sample

In the Canadian Model for Housing and Support of Veterans Experiencing Homelessness[6] study, Veterans residing at each of the four housing sites were surveyed and invited to join the focus groups. In total, 78 participants received the housing and related programming intervention. Baseline questionnaires were completed by 63 Veterans. Table 1 outlines the demographic characteristics of study participants at baseline, including details of military service and homelessness. All Veterans were given a choice to participate in the focus groups. Attendees of focus groups included those who were currently involved in the program, as well as former tenants who received housing services from the four programs. Across all sites, 24 Veterans attended both the 2012 and 2013 focus groups. A total of 39 Veterans attended the final focus groups in 2014.[6]

Data collection

Data for the primary study was collected from Veterans, service providers, and stakeholders from 2012 to 2014. Quantitative demographic data was collected via structured interviews with Veterans at baseline, 3, 9, and 15 months. Qualitative data was collected through focus

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Table 1. Participant demographics at baseline

Characteristic	*N* (%)
Sex	
Male	58 (92.1)
Female	5 (7.9)
Age (years), mean (SD)	
30–39	7 (11.1)
40–49	16 (25.4)
50–59	30 (47.6)
60–69	6 (9.5)
70–79	4 (6.3)
Marital status	
Single or never married	25 (39.7)
Married or common-law	1 (1.6)
Separated or divorced	33 (52.4)
Widowed	3 (4.8)
Other	1 (1.6)
Highest level of education	
Community college or university	21 (33.9)
High school	29 (46.8)
Grade school	12 (19.4)
Ethnicity	
White English	25 (40.3)
Canadian	24 (38.7)
Aboriginal/Métis	6 (9.7)
European	4 (6.5)
French Canadian	2 (3.2)
Semitic	1 (1.6)
Years in Canadian Forces, mean (SD)	8.1 (8.8)
Years since discharge from Canadian Forces, mean (SD)	28.4 (13.6)
Years spent homeless, mean (SD)	5.8 (6.8)
Time lapse since first episode of homelessness, mean (SD)	9.8 (10.5)

groups and individual interviews, which occurred in three cycles at each site. The purpose of the focus groups was to collect information about the housing model, including recommendations for future programs. These encounters were audio recorded and lasted approximately 20 minutes (the individual interview) to 2 hours. Recordings were transcribed verbatim by research assistants. In total, data from 12 focus groups and one individual interview were analyzed.

Data analysis

In this supplementary analysis, the process of re-coding[13] was used to analyze data from the focus groups. Prior to analysis, audio recordings of the focus groups were listened to in order to ensure the accuracy of the transcripts.[14] Transcripts were examined for themes related to harm reduction. Specific quotes from the transcripts were coded and organized into respective themes. These themes were continually refined and combined based on similarities and connections. The transcripts were read, repeatedly, until no new themes related to harm reduction were identified. To achieve triangulation, the findings were presented to an advisory committee member and the principle investigator of the primary study to confirm or modify the themes. The purpose of this secondary analysis was to provide further insight into how Veterans experiencing homelessness describe and experience harm reduction. By re-coding the primary focus group data, themes related to harm reduction could be identified and further explored

Ethical approval

Western University's research ethics board for Health Sciences Involving Human Subjects granted approval for the primary study with permission for secondary analyses included.

RESULTS

Analysis revealed five themes that captured how Veterans experienced and understood harm reduction. These themes represent the interface between the military culture and homeless culture, which was conceptualized into a diagram (see Figure 1). Overall, Veteran perceptions of harm reduction were strongly influenced by both their experiences in the military, and with homelessness. Understanding Veterans' unique military culture was integral to revealing what harm reduction meant to them.

Theme 1. Regimented structure

Veterans spoke of the highly structured nature and culture of military service. They described the clear "chain of command," hierarchy, organization of time, and rules that were present in the military. When Veterans exited the military and returned to civilian life, this important sense of structure was often lost. When they transitioned into the housing programs, Veterans

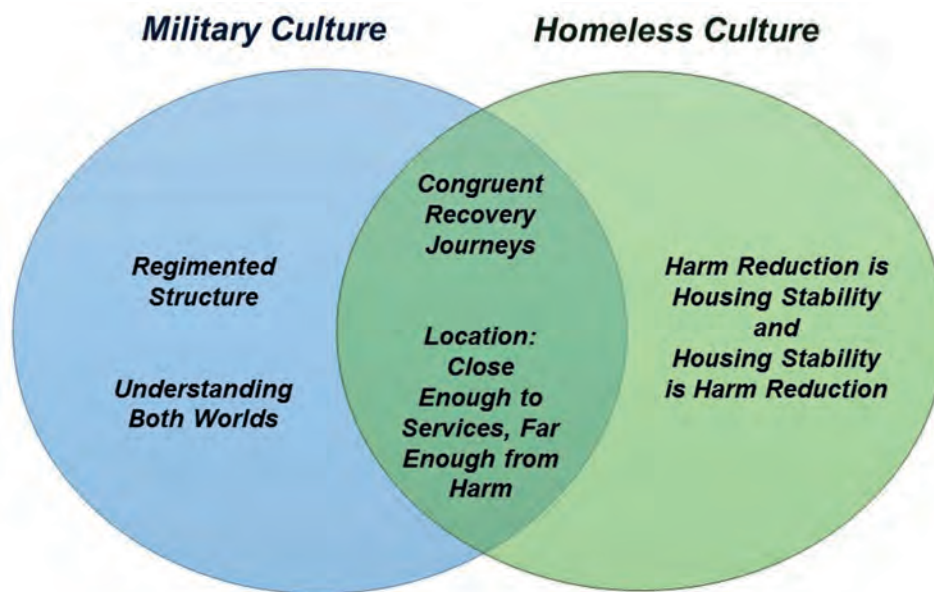

Figure 1. The interface between military and homeless culture

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also struggled to grasp and adjust to this sudden change in their living environments. One Veteran spoke of his experience of transitioning from the shelter system into the housing strategy:

> It was a big transition for me because I had been [living] in the shelter for the last few years. Then, all of a sudden, you're left to your own devices. You're not being forced to get up, go anywhere. It's so easy to sit in your apartment and just watch TV all day.

Most of the Veterans preferred a living environment that mimicked and re-established the regimented structure of military service. However, Veterans frequently discussed the general lack of structure within some housing programs. For example, it was often unclear who was managing housing programs, which was contradictory to the clear chain of command within the military. Furthermore, some reported staff and support workers occasionally missed, or were late for, scheduled appointments, which was frustrating for those who had come from a military background where a structured routine was followed:

> You know how frustrating it is, especially for military guys to have to get to an appointment at 10:00 and not get seen until 11:30?

Veterans strongly appreciated rules where they existed within the housing programs. Most agreed the presence of rules was beneficial and helped to maintain stability. This significant desire for rules and regulations often stemmed from a highly disciplined military background. For some, the existence of rules also created a sense of accountability for their substance use. Many Veterans also recommended that individuals who violated housing rules be disciplined accordingly. They believed breaching the rules, such as smoking or drinking indoors, could negatively impact Veterans recovering from drug or alcohol addictions:

> There has to be consequences. Um … drinking, smoking inside the building. … There just has to be some boundaries that can't be crossed. It's detrimental to the other Veterans that are in there.

Theme 2. Understanding both worlds

Veterans spoke of the importance of interacting with individuals who understood not only the experience of being homeless, but also military culture. This preference often originated from the comradery they experienced with other military members during service. Living in housing, or attending programs with other Veterans, helped re-establish the commonality and comradery associated with military service. Veterans often explained military culture is unique, so being with people who shared similar experiences and understood the distinctive language was essential. Two Veterans explained:

> You're with people who understand at least 90% of what you're talking about.
>
> You belong to something. When you're on the street you don't belong to anything. … But in this

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> building, at least everybody here has served in one form or another.

Most of the Veterans also described the significance of having staff members who understood military culture. However, some of the support at the housing programs was provided by staff or volunteers without a military background. Consequently, it was difficult for them to relate to staff members and develop effective relationships with those helping them:

> We could use somebody that could understand where we come from. Someone who has had a bit of a military background themselves. We're so used to it that we talk a certain way. We use certain terms, certain people like me who did 37-odd years in reserves. So, that they understand some of the vocabulary we use.

During the focus groups, the value of peer support was often highlighted and discussed. The housing programs offered peer support services, which allowed Veterans to associate with individuals who have experienced both military service and a substance use disorder. A Veteran described his experience with peer support:

> If you're not an alcoholic, you can't tell an alcoholic how to become sober and (name) is a Veteran and he understands us. That is important, to know where we are coming from. If you were never an addict or an alcoholic, I don't care what you say, you have no clue. We gotta relate to who's helping us.

Local police associations were a significant source of peer support at some of the sites. For example, at one of the programs, police officers regularly escorted Veterans to participate in recreational activities. Often, these police officers were also Veterans and could relate to the Veterans at the housing programs. Unlike some other homeless populations, these Veterans were comforted by a uniform:

> Oh, I would say the first thing is go over to the police, because a lot of those guys are Veterans and are so, so supportive! They are incredible.

Theme 3. Congruent recovery journeys

While the principles of the program remained the same, the housing models differed at each of the four sites. The models included shared accommodations and independent, private-sector apartments.[6] Veterans who lived in shared accommodations were often concerned about living with individuals who were at varying stages of recovery from substance use. Although some Veterans enjoyed the comradery associated with shared units, issues frequently occurred when roommates were at incompatible recovery stages. For instance, Veterans who were attempting to remain sober were sometimes placed with individuals who were actively engaging in substance use. A Veteran described his negative experience with roommates:

> I mean, I've lived in shared accommodation … 30 roommates later in 4 years and I've had all these people with schizophrenia and they're all poking up [on] the streets. Another guy smoking crack at like 9 a.m. or drinking like crazy, we have nothing in common.

Therefore, most of the Veterans preferred living independently. They strongly agreed that housing programs should ensure individuals are compatible prior to pairing them together if roommates are required. Matching individuals who were at different stages of recovery created tension, conflict, and instability.

Theme 4. Location: Close enough to services, far enough from harm

The location of the housing programs also varied, with some located more centrally than others. The location of the programs was integral to both the wellbeing and recovery of Veterans. For those who lived in less central areas, location was often a major barrier to accessing important resources, such as grocery stores and health care providers. Without access to transportation, it was difficult for these Veterans to travel to essential services:

> I found that I was stuck in the middle of nowhere … Like half the services that I access here are all downtown. Having to find those services in (city name) and (city name) takes some time.

Although living in less central locations created a barrier to accessing services, most of the Veterans agreed that housing programs should not be in downtown city cores. They felt these areas should be avoided due to the high availability of illicit drugs and alcohol. Living in areas where substance use is widespread could be detrimental for those recovering from addiction. Some Veterans referred to downtown as "the belly of the beast" and "skid row."

> I think we're in a great spot. It's better to put the men in a place like here instead of downtown. I used to like downtown but not anymore. Downtown, it's

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> a lot of pests and bugs. Here it's very clean and less temptations [to use].

Therefore, most of Veterans recommended housing sites be located centrally, but far enough away from downtown. This proposed location would not only facilitate access to essential resources, but also prevent exposure to substance-related harms.

Theme 5. Harm reduction is housing stability, and housing stability is harm reduction

Many Veterans described the necessity of implementing harm reduction and Housing First to facilitate permanent housing. In their opinion, securing stable and permanent housing should be the first step in the recovery process, as it creates stability. Having a stable home provided access to the resources Veterans needed to address personal issues. For example, a Veteran explained it can be difficult for programs and services to contact them without a permanent address:

> It all starts with a stable home. If [programs] can't contact you, you have nothing. ... And nobody can get a hold of you if you don't have a place to stay or if you don't have access to a phone.

Being homeless also limited employment opportunities for Veterans. However, with a permanent address, they were no longer overlooked by employers due to the stigma of being labelled "homeless." Harm reduction and Housing First also gave Veterans the time to address their substance use. When they were homeless, they had little time available to address the issues they were experiencing; they were in a constant state of survival. Securing stable housing, however, eliminated daily concerns about meeting basic needs. Referring to stable housing, a Veteran explained:

> It takes [away] 90% of the worry that you have about where you're going to be every morning. So, without that worry, you can concentrate on trying to clean up and get your life back together. You're not concentrating on trying to survive out there [on the streets] all the time.

In some cases, harm reduction programming changed the types of substances Veterans used:

> When I came here, I was off the street. I was drinking all kinds of shit, I mean all kinds. But, through the harm reduction thing I could cut down to just regular alcohol.

Securing stable housing also reduced the safety risks and issues Veterans experienced while homeless. They often described unsafe, and sometimes violent, conditions of the streets and shelters. However, the housing programs protected them from the dangers associated with homelessness.

DISCUSSION

The purpose of this study was to explore how homeless Veterans experience and perceive harm reduction as a component of stable housing. The theme *regimented structure* revealed Veterans prefer a highly structured living environment that mimicked military service. This theme is supported by literature[3,15] that has shown structured housing supports Veterans during their recovery from homelessness.[16] However, Veterans' desire to discipline those who use substances indoors is contradictory to the harm reduction philosophy. Harm reduction does not require abstinence, nor does it involve disciplining those who continue to use substances.[5,17] Therefore, Veteran-specific Housing First programs may need to consider how to incorporate structure for Veterans in a way that is still congruent with harm reduction.

Understanding both worlds showed that peer support was essential to the Veterans' recovery from substance use. Research has commonly cited peer support as both an effective evidence-based recovery model and housing stability model.[18,19] Peer mentorships for Veterans has also resulted in more effective relationships with providers, increased levels of social support, greater quality of life, and improved psychological health.[20–22] Supplementing this evidence, this study has further revealed peer support can produce positive outcomes for Veterans recovering from homelessness and substance use. Veteran-specific housing programs may need to further explore how to integrate peer support into services, especially in private accommodations where it is not as readily available.

The theme *congruent recovery journeys* aligns with previous research showing mental health consumers, including Veterans, prefer independent living.[23–25] However, if shared accommodations are offered, Housing First programs should ensure roommates are compatible and matched based on recovery stages. *Location: close enough to services, far enough from harm* revealed the barriers associated with less central housing locations. It emphasized the location of housing needs to not only facilitate access to essential resources, but also limit exposure to substance-related harms. *Harm reduction is*

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housing stability and housing stability is harm reduction established harm reduction created housing stability and supported Veterans in their recovery. Evidence frequently shows harm reduction effectively reduces the harms of substance use.[26–28] Housing First has also resulted in similar outcomes for both Veterans and non-Veterans experiencing homelessness, including greater social functioning, improved quality of life, and increased housing retention.[29] In addition, homeless Veterans experience similar physical health conditions as non-Veterans,[30] and it has been suggested that Housing First may provide a more supportive environment for Veterans to address these challenges.[29] This study has further shown that harm reduction and Housing First may be beneficial to Veterans, as with other homeless groups. This study has added to the literature and revealed Housing First may need to consider the unique needs of Veterans, such as the desire for structure, to more effectively address homelessness within this population.

Implications

This study's findings have the potential to inform policies to address Veteran homelessness in Canada. Particularly, a housing strategy that acknowledges the unique needs of Veterans may effectively address homelessness among this group, since there is no one-size-fits-all solution to homelessness.[1] Exploring Veteran perceptions of harm reduction may reveal the policy solutions to homelessness and substance use among this group. Specifically, housing policies that incorporate harm reduction in a way that is congruent with Veterans' unique needs and culture may address Veteran homelessness. Housing First programs can also utilize the study findings to provide housing that is tailored to the preferences of Veterans. For example, many Veterans reported they were incompatible with some housing and support workers. To address this issue, programs may provide staff with Veteran-specific training, or advertise in job postings a preference for candidates who have prior experience working with Veterans. The value of peer support and police participation in Housing First for Veterans was also highlighted in this study.

Limitations

The predominantly white, male, sample may limit the transferability of the findings, as it did not fully describe the unique experiences of female, Aboriginal, and Métis Veterans. Analysis of focus group data also omitted the experiences of Veterans who chose not to attend these groups. Veterans' limited understanding of harm reduction was a further limitation of this study. Despite the perceived benefits of harm reduction, a general misunderstanding of this approach existed among this group.

Conclusions

This study confirmed homeless Veterans are a unique population and harm reduction is an important part of Housing First for Veterans. Analysis of focus group data from The Canadian Model for Housing and Support of Veterans Experiencing Homelessness[6] study revealed various themes that captured Veterans' understanding of this approach. Overall, this study showed Veterans require stable housing that, not only incorporates harm reduction principles, but also takes into consideration their unique military background and experiences. Housing First programs, the government, and service providers can utilize these findings to ensure the unique housing and addiction needs of Canadian Veterans are adequately addressed.

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COMPETING INTERESTS

None declared.

This article has been peer reviewed.

CONTRIBUTORS

Olivia Marsella conceived the study, selected the research questions, analyzed the data, and drafted the manuscript. Cheryl Forchuk and Abe Oudshoorn edited and revised the manuscript and approved the final version submitted for publication.

ETHICS APPROVAL

The study protocol was approved by Western University's research ethics board for Health Sciences Involving Human Subjects, London, Ontario, Canada.

INFORMED CONSENT

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Correlates of perceived military to civilian transition challenges among Canadian Armed Forces Veterans

Jennifer E.C. Lee[a], Sanela Dursun[a], Alla Skomorovsky[a] and James M. Thompson[b]

ABSTRACT

Introduction: Analyses of the Canadian Armed Forces Transition and Well-Being Survey (CAFTWS) were conducted to identify the most prominent challenges faced by Canadian Armed Forces (CAF) Veterans during their military to civilian transition, and to assess the associations of various characteristics, including release type and health status, with experiencing such challenges. **Methods:** Prevalence estimates and logistic regression analyses were computed on data from the CAFTWS, which was administered in 2017 to 1,414 Regular Force Veterans released from the CAF in the previous year. **Results:** The two (of seven) perceived transition challenges with the strongest associations with difficult post-military adjustment were loss of military identity (adjusted odds ratio [AOR] = 5.4) and financial preparedness (AOR = 2.3). In adjusted regression analyses, Veterans who had a non-commissioned rank, primarily served in the army, 10–19 years of service, a medical release, and poor physical or mental health, were more likely to report loss of military identity. Veterans who had a junior non-commissioned rank, a medical release, and poor physical or mental health were more likely to report challenges with financial preparedness. Furthermore, significant interaction effects between Veterans' release type and their health status were observed. **Discussion:** This study extends prior research to inform ongoing efforts to support the well-being of CAF members adjusting to post-service life. Findings emphasize the importance of preparing transitioning service members and civilian communities for the social identity challenges they may encounter. Findings also support the value of programs and services that help prepare transitioning service members with managing finances, finding education and employment, relocating, finding health care providers, and understanding benefits and services.

Key words: Canadian Armed Forces, financial well-being, military identity, military to civilian transition, social identity, Veterans

RÉSUMÉ

Introduction : Les auteurs ont analysé l'Enquête sur la transition à la vie civile et le bien-être dans les Forces armées canadiennes (ETBFAC) afin d'établir les principales difficultés qu'ont affrontées les vétérans des Forces armées canadiennes (FAC) lors de leur transition à la vie civile et d'évaluer les associations de diverses caractéristiques, y compris le type de libération et l'état de santé, avec ces difficultés. **Méthodologie :** Ils ont calculé les évaluations de prévalence et les analyses de régression logistique à partir des données de l'ETBFAC, à laquelle 1 414 vétérans de la Force régulière libérés au cours de l'année précédente ont répondu en 2017. **Résultats :** Les deux (parmi sept) difficultés perçues à la transition les plus fortement liées à une adaptation éprouvante à la vie civile comprenaient la perte de l'identité militaire (rapport de cotes rajusté = 5,4) et la préparation financière (rapport de cotes rajusté = 2,3). Dans les analyses de régression rajustées, les vétérans qui avaient été sous-officiers, avaient surtout servi dans l'armée, avaient 10 à 19 ans de service, avaient été libérés pour des raisons médicales et étaient en mauvaise santé physique ou mentale étaient plus susceptibles de déclarer une perte d'identité militaire. Les vétérans qui étaient des sous-officiers subalternes, avaient été libérés pour des raisons médicales et étaient en mauvaise santé physique ou mentale étaient plus susceptibles de déclarer des difficultés relatives à leur préparation financière. De plus, des effets d'interaction importants entre le type de libération des vétérans et leur état de santé ont été observés. **Discussion :** La présente étude élargit la portée de recherches antérieures pour éclairer les efforts en vue de soutenir le bien-être des membres des FAC qui s'adaptent à la vie après le service militaire. Les résultats font ressortir l'importance de préparer les militaires en transition et les groupes civils à d'éventuelles difficultés en matière d'identité sociale. Les résultats font également ressortir l'importance des programmes et des services qui

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contribuent à préparer les militaires en transition à gérer leurs finances, à trouver des possibilités de formation et d'emploi, à déménager, à trouver un professionnel de la santé et à comprendre les avantages et les services.

Mots-clés : bien-être financier; Forces armées canadiennes; identité militaire; identité sociale; transition entre la vie militaire et la vie civile; vétérans

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INTRODUCTION

Identified as an important event in the life course of military personnel, the transition from military to civilian life has received increasing attention in the literature.[1–4] Indeed, the Well-being Framework adopted by the Canadian Armed Forces (CAF) and Veterans Affairs Canada (VAC) recognizes the impacts that this event can have across multiple domains of service members' well-being, including their health, employment or sense of purpose, finances, social integration, life skills and preparedness, housing and physical environment, and cultural and social environment.[5,6] Since 2010, the Life After Service Studies (LASS) have been the leading source of information on the well-being of CAF Veterans during post-military adjustment.[7–9] In the 2016 LASS, it was estimated that close to one-third of Veterans were experiencing, or had experienced, a difficult adjustment to civilian life, and the proportion was even greater among those who were released more recently.[8]

A 2012 report outlined some of the transition challenges that medically released CAF members face, including limited awareness about available support services and the high volume of paperwork.[10] However, it is important to consider issues other than administrative challenges or type of release. While the LASS surveys have found that the majority of Veterans adjust well to civilian life, some important group variations have been noted.[2,11,12] Analyses have also shown that post-military adjustment is strongly associated with mental health problems, regardless of the type of release; that a high proportion (60%) of Veterans who report difficult post-military adjustment were not medically released; and that health and other well-being problems are prevalent among non-medically released Veterans who report difficult post-military adjustment.[2,13] When assessing post-military adjustment, it is therefore important to consider the impacts on various domains of Veterans' well-being. Based on past studies, some of the challenges that Veterans may experience when adjusting to their post-service life include: loss of military identity, difficulty finding employment, problems related to living with chronic health conditions, and suicidal ideation.[1,3,4,11,14–20] However, more detail about the population-wide extent and correlates of transition challenges is needed to inform the development of relevant support services and programs.

The Canadian Armed Forces Transition and Well-Being Survey (CAFTWS) was conducted to address gaps in knowledge about the challenges involved in adjusting to post-military life using a representative sample of newly released CAF Veterans. The objectives of this study were (1) to identify aspects of military to civilian transition that are perceived as challenging by CAF Veterans, and (2) to explore the associations of type of release and health status with commonly perceived transition challenges. The goal was to provide a clearer understanding of military to civilian transition challenges in order to inform planning for services supporting the well-being of CAF members at this important stage of life.

METHODS

Sampling and data collection

The CAFTWS was conducted by Statistics Canada between April and June 2017. It employed a stratified systematic random sampling of Veterans who transitioned out of the CAF in 2016 with a minimum of two years of service (730 days). The target sample was drawn from the CAF human resources database. Veterans who were released for misconduct or unsatisfactory service were excluded, owing to methodological challenges in accessing that group.

A total of 1,414 CAF Veterans participated in the CAFTWS, representing an estimated weighted population of 4,100 Veterans. They were all surveyed within 18 months of their release date via computer-assisted interviews (75% response rate). Statistics Canada ensured the project met ethical guidelines, and participation required the provision of informed consent. More information on the survey sampling and data collection can be found elsewhere.[21]

Survey instrument

The CAFTWS survey instrument was developed by researchers within the Department of National Defence (DND) based on a pilot study[22] in collaboration with Statistics Canada and VAC.

Perceived transition challenges

Questions used to assess perceived transition challenges were adapted from a past survey.[23] Participants indicated the extent to which they perceived 10 items as challenging during their transition (see Figure 1 for the list of items) using a 5-point Likert-type scale (1 = *not at all challenging*, 2 = *a little challenging*, 3 = *moderately challenging*, 4 = *very challenging*, 5 = *extremely challenging*; *not applicable* was also provided as an option). Indicators were created to identify participants who perceived each item as challenging (i.e., they rated the item as having been either *very challenging* or *extremely challenging* during their transition).

Difficult post-military adjustment

Ease of post-military adjustment was assessed using a question drawn from the LASS.[2] Participants were asked to rate their adjustment to civilian life since being released from the CAF on a 5-point Likert-type scale (1 = *very easy*, 2 = *moderately easy*, 3 = *neither easy nor difficult*, 4 = *moderately difficult*, 5 = *very difficult*). An indicator was created to identify participants who

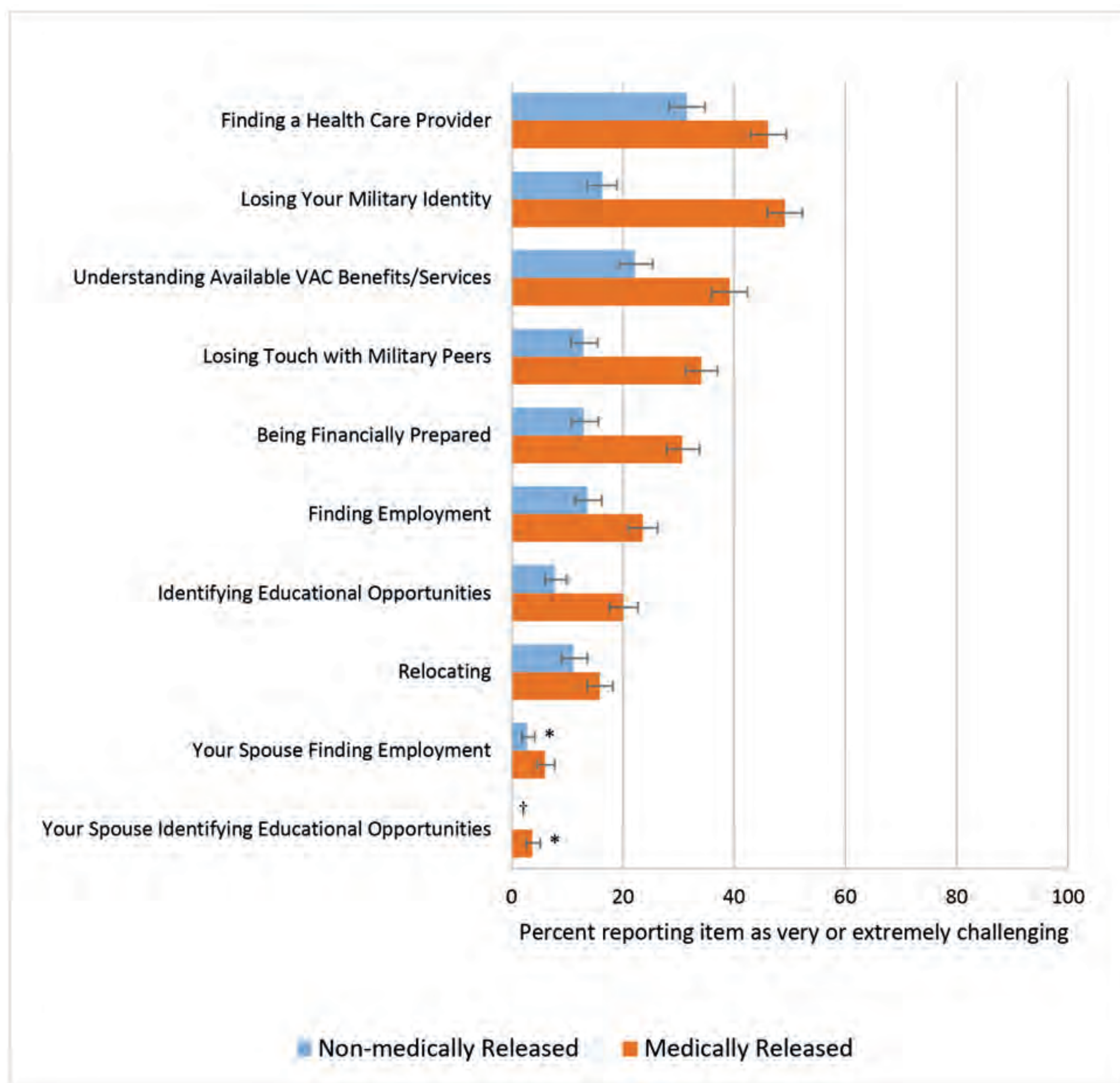

Figure 1. Perceived post-military transition challenges by release type

* Use with caution; coefficient of variation 16.6–33.3
† Too unreliable to report

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reported a difficult post-military adjustment (i.e., they rated their adjustment as *moderately difficult* or *very difficult*).

Release type

Participants were asked to identify the category under which they were released from the CAF (voluntary, medical, retirement age, involuntary, service complete, unknown, refusal). An indicator was created to distinguish participants who were medically released from all other participants.

Self-rated health status

In line with the approach taken in the Canadian Community Health Survey (CCHS), participants were asked to rate their physical and mental health on a 5-point Likert-type scale (1 = *poor*, 2 = *fair*, 3 = *good*, 4 = *very good*, 5 = *excellent*). They were then classified based on whether they assigned their health a rating of 'poor' (*poor* or *fair*) or 'good' (*good*, *very good*, or *excellent*).

Demographic and military characteristics

Demographic and military characteristics considered in the present study were age, sex, rank (junior non-commissioned member [NCM], senior NCM, junior officer, senior officer), element (Army, Navy, Air Force), Afghanistan deployment history (yes/no), history of other deployment outside of North America (yes/no), and years of service.

Analyses

Analyses were conducted using STATA statistical software (StataCorp, College Station, TX) with the survey command. Population weights supplied by Statistics Canada were used to adjust for sampling probability and non-response and to ensure estimates were representative of the population of interest. As well, 1,000 bootstrap weights were applied to account for the impact of the systematic sampling approach on measures of variance around these estimates. More information on the methods used to produce the population and bootstrap weights is available elsewhere.[21]

Aspects of military to civilian transition that participants perceived as most challenging were identified using prevalence estimates for each type of perceived transition challenge among both medically released Veterans and those released under non-medical categories. Statistical significance between the groups was assessed by examining the 95% confidence intervals (CIs). These represent the range of values in which we can be 95% certain the true value lies within the population of interest.[24] Non-overlapping CIs were assumed to indicate a significant difference. However, it should be noted that statistically significant differences may exist even when 95% CIs overlap. In such instances, statistical tests should be conducted to assess statistical significance.

Logistic regression analyses were conducted to determine which perceived transition challenges were most strongly associated with difficult post-military adjustment. Pairs of items related to finding employment, identifying educational opportunities, and the loss of military identity were combined, leaving 7 types of challenges from the original 10.

Regression analyses were conducted to identify key correlates for the two transition challenges that were most strongly associated with difficult post-military adjustment (i.e., loss of military identity and financial preparedness). First, unadjusted logistic regression analyses were conducted to identify demographic and military characteristics that were statistically associated with the two transition challenges. These characteristics were then included as covariates in adjusted analyses conducted to examine the main and interactive effects of release type and self-rated health status on the two transition challenges. All possible main effects, two-way interactions, and the three-way interactions were examined. The margins command was used to help with the interpretation of interactions. This command generates predicted probabilities, which indicate the probability of a given outcome under different conditions. Specifically, these are calculated using the regression equation for that outcome by "plugging in" specified values for independent variables of interest (in this case, release type, self-rated physical health status, and self-rated mental health status).

RESULTS

Table 1 provides a summary of the characteristics of participants overall and by release type. Approximately half of the CAF Veterans were medically released (49.6%), and the remaining half were released under non-medical categories (50.4%). Overall, they were primarily male and between the ages of 30 and 49 years. Regarding their military characteristics, the majority of participants had 20 years of service or more, were NCMs, and had primarily served in the army. About one-third reported poor health.

Noteworthy differences between medically released and non-medically released CAF Veterans included the apparent overrepresentation of women, NCMs, army

Table 1. Participant characteristics, CAF Veterans released in 2016

Variables	Overall, weighted (*N* = 4,100)			Medical release, weighted (*n* = 2,000)			Non-medical release, weighted (*n* = 2,100)		
	%	95% CI		%	95% CI		%	95% CI	
		LL	UL		LL	UL		LL	UL
Sex									
Male	85.8	85.8	85.8	82.1	82.0	82.2	89.4	89.4	89.5
Female	14.2	14.2	14.2	17.9	17.8	18.0	10.6	10.5	10.6
Age (years)									
20–29	17	15.6	18.5	9.7	8.3	11.4	24.2	21.8	26.7
30–39	25.1	23.7	26.6	27.6	26.1	29.2	22.6	20.3	25.1
40–49	26.4	24.6	28.4	33.0	30.3	35.8	19.9	17.6	22.5
50+	31.5	29.6	33.4	29.6	26.9	32.4	33.4	30.9	35.9
Marital status									
Single	21.8	20.1	23.6	17.5	15.3	19.8	26.1	23.5	29.0
Married/common law	67	64.9	69	66.8	63.9	69.6	67.2	64.0	70.2
Formerly married	11.2	9.8	12.7	15.8	13.6	18.2	6.7	5.2	8.6
First official language									
English	70.4	68.1	72.6	67.6	64.6	70.5	73.1	69.7	76.3
French	29.6	27.4	31.9	32.4	29.5	35.4	26.9	23.7	30.3
Education									
Up to high school	43.5	41.2	45.9	45.3	42.0	48.5	41.8	38.4	45.3
Trade/college	31.3	29.1	33.6	35.3	32.3	38.4	27.4	24.3	30.8
At least some university	25.2	23.1	27.3	19.5	17.0	22.2	30.7	27.6	34.1
Years of service									
up to 5	9.1	7.9	10.4	4.1	3.1	5.3	14.1	11.9	16.5
6–9	15.7	14.2	17.3	11.4	9.8	13.3	19.8	17.4	22.5
10–19	24.2	22.4	26	33.1	30.5	35.8	15.4	13.2	18.0
20–34	39.6	37.8	41.5	41.4	38.7	44.1	37.9	35.4	40.4
35+	11.4	10	13	10.1	8.2	12.3	12.8	10.8	15.2
Rank									
Junior NCM	46.1	44.2	48.1	49.7	46.8	52.5	42.7	40.0	45.4
Senior NCM	31.5	29.6	33.6	34.9	32.1	37.7	28.2	25.4	31.2
Junior officer	10.7	9.3	12.2	9.6	8.0	11.5	11.8	9.7	14.3
Senior officer	11.6	10.2	13.3	5.9	4.5	7.6	17.3	14.8	20.1
Environment									
Navy	16.2	14.4	18.2	12.4	10.5	14.7	19.9	17.2	23.0
Army	57.2	55	59.4	65.9	62.8	68.9	48.7	45.3	52.0
Air Force	26.6	24.4	28.9	21.7	19.1	24.5	31.4	28.1	34.9
Afghanistan deployment									
Yes	48.9	51.1	51.1	59.0	55.9	62.1	39.0	36.0	42.1
No	51.1	53.2	53.2	41.0	37.9	44.1	61.0	57.9	64.0
Other deployment									
Yes	55.3	53.2	57.3	56.3	53.4	59.2	54.2	51.4	57.1
No	44.7	42.7	46.8	43.7	40.8	46.6	45.8	42.9	48.6

(*Continued*)

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Table 1. (Continued)

Variables	Overall, weighted (*N* = 4,100)			Medical release, weighted (*n* = 2,000)			Non-medical release, weighted (*n* = 2,100)		
	%	95% CI		%	95% CI		%	95% CI	
		LL	UL		LL	UL		LL	UL
Physical health status									
Poor/fair	33.0	31.2	34.9	57.6	54.5	60.7	8.8	7.0	10.9
Good	29.9	27.8	32.1	30.9	28.1	33.9	28.9	25.8	32.1
Very good/excellent	37.1	35.1	39.1	11.4	9.6	13.5	62.4	58.9	65.7
Mental health status									
Poor/fair	32.2	30.3	34.2	54.4	51.1	57.6	10.4	8.5	12.7
Good	22.4	20.5	24.5	25.3	22.6	28.3	19.6	17.0	22.5
Very good/excellent	45.3	43.2	47.4	20.3	17.9	23.0	70.0	66.5	73.3

CI = confidence interval; LL = lower limit; UL = upper limit; NCM = non-commissioned member.

Table 2. Results of logistic regression analyses of the associations of perceived challenges with difficult post-military adjustment

Perceived challenge	OR	95% CI		*p*	AOR	95% CI		*p*
		LL	UL			LL	UL	
Being financially prepared	4.05	3.19	5.13	< 0.001	2.32	1.76	3.06	< 0.001
Finding employment	3.94	3.07	5.06	< 0.001	1.89	1.39	2.56	< 0.001
Finding educational opportunities	3.9	2.96	5.16	< 0.001	1.73	1.23	2.45	0.002
Relocating	2.81	2.1	3.76	< 0.001	1.54	1.07	2.21	0.02
Finding a health care provider	2.51	2.06	3.06	< 0.001	1.99	1.58	2.5	< 0.001
Understanding benefits	2.48	2.01	3.07	< 0.001	1.38	1.07	1.79	0.014
Losing military identity	7.51	6.04	9.33	< 0.001	5.36	4.26	6.74	< 0.001

OR = odds ratio; CI = confidence interval; AOR = adjusted odds ratio; LL = lower limit; UL = upper limit.

personnel, and individuals with a history of deployment in Afghanistan among those who were medically released, relative to those who were non-medically released. As well, a much higher proportion of medically released CAF Veterans reported poor health.

Perceived transition challenges

Figure 1 shows the proportions of CAF Veterans who perceived each item as challenging during their transition, by release type. Although all of the perceived transition challenges were more prevalent among medically released Veterans, challenges related to finding a health care provider, losing one's military identity, understanding available services and benefits, losing touch with military peers, and being financially prepared were most prevalent, regardless of release type.

Table 2 shows the results of unadjusted and adjusted regression models for difficult post-military adjustment. All seven perceived transition challenges were significantly associated with difficult post-military adjustment. However, the association was strongest for loss of military identity (adjusted odds ratio [AOR] = 5.4). Also, Veterans who perceived financial preparedness as a challenge had about twice the odds of reporting difficult adjustment (AOR= 2.3). Therefore, subsequent analyses focused on identifying correlates of perceived transition challenges related to loss of military identity and financial preparedness.

Correlates of perceived transition challenges

Table 3 shows the results of unadjusted logistic regression models for the perceived transition challenges. Veterans who were medically released, or who reported poor physical or mental health, had substantially greater odds of perceiving both loss of military identity and financial preparedness as challenges. The associations were strongest for loss of military identity. Regarding demographic

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Table 3. Results of unadjusted logistic regression analyses of the associations of demographic/military characteristics with perceived transition challenges

Predictor	Loss of military identity				Financial preparedness			
	OR	95% CI		*p*	OR	95% CI		*p*
		LL	UL			LL	UL	
Age (years)								
20–29 (Ref.)	–				–			
30–39	1.62	1.21	2.18	0.001	1.76	1.21	2.55	0.003
40–49	1.29	0.96	1.75	0.094	1.39	0.94	2.05	0.096
50+	0.57	0.42	0.77	< 0.001	0.72	0.49	1.07	0.102
Sex								
Men (Ref.)	–				–			
Women	1.64	1.4	1.92	< 0.001	1.4	1.16	1.68	< 0.001
Rank								
Junior NCM (Ref.)	–				–			
Senior NCM	0.59	0.47	0.74	< 0.001	0.53	0.4	0.71	< 0.001
Junior officer	0.48	0.35	0.67	< 0.001	0.51	0.34	0.75	0.001
Senior officer	0.26	0.17	0.38	< 0.001	0.22	0.13	0.37	< 0.001
Element								
Army (Ref.)	–				–			
Navy	0.33	0.25	0.44	< 0.001	0.82	0.58	1.14	0.234
Air Force	0.52	0.41	0.64	< 0.001	0.69	0.53	0.9	0.006
Afghanistan deployment								
No (Ref.)	–				–			
Yes	1.42	1.16	1.73	0.001	1.22	0.97	1.53	0.091
Other deployment								
No (Ref.)	–				–			
Yes	0.67	0.55	0.81	< 0.001	0.81	0.64	1.02	0.073
Years of service								
2–5 (Ref.)	–				–			
6–9	1.98	1.28	3.05	0.002	1.79	1.06	3.03	0.028
10–19	2.79	1.88	4.12	< 0.001	2.46	1.53	3.94	< 0.001
20–34	1.01	0.69	1.5	0.942	1.16	0.72	1.89	0.539
35+	0.87	0.54	1.41	0.583	0.74	0.4	1.4	0.356
Release type								
Non-medical (Ref.)	–				–			
Medical	4.5	3.63	5.57	< 0.001	2.97	2.3	3.84	< 0.001
Physical health								
Good (Ref.)	–				–			
Poor	3.64	2.96	4.48	< 0.001	2.95	2.33	3.73	< 0.001
Mental health								
Good (Ref.)	–				–			
Poor	6.4	5.12	8	< 0.001	3.67	2.91	4.61	< 0.001

OR = odds ratio; CI = confidence interval; LL = lower limit; UL = upper limit; Ref. = reference category; NCM = non-commissioned member.

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and military characteristics, the odds of perceiving loss of military identity as a challenge were highest among Veterans who were aged 30–39 years, female, and junior NCMs, as well as those who had primarily served in the army, had been deployed in support of the Afghanistan mission, or had between 6 and 19 years of service. Conversely, Veterans who were more than 50 years old and had been deployed in support of another mission outside of North America demonstrated lower odds of perceiving loss of military identity as a challenge. The odds of perceiving financial preparedness as a challenge were highest among Veterans who were aged 30–39 years, female, and junior NCMs, in addition to those who had primarily served in the army, or had between 6 and 19 years of service relative to their referent counterparts. Given that each of the characteristics was associated with at least one of the perceived transition challenges, all were included in subsequent adjusted analyses as covariates.

Table 4 shows the results of the adjusted regression models for the perceived transition challenges. Adjusting for the covariates, the odds of perceiving loss of military identity as a challenge were significantly greater among Veterans who were medically released, reported poor physical health, and reported poor mental health (holding all other variables in the interaction at the reference value). However, no significant interactions were observed among these three variables.

Adjusting for the covariates, the odds of perceiving financial preparedness as a challenge were highest among Veterans who were medically released, reported poor physical health, and reported poor mental health. Significant interactions were observed between release type and mental health status, physical and mental health status, and between release type, physical health, and mental health status. Figure 2 better illustrates the results of the interactive effects of these variables using the predictive probabilities calculated based on the resulting regression equation for perceiving financial preparedness as a challenge within each of the release, physical health, and mental health subgroups of Veterans.

Table 4. Results of adjusted logistic regressions of the associations of demographic/military characteristics, release type, and health status with perceived transition challenges

Predictor	Loss of military identity				Financial preparedness			
	AOR	95% CI		*p*	AOR	95% CI		*p*
		LL	UL			LL	UL	
Age (years)								
20–29 (Ref.)	–				–			
30–39	1.14	0.76	1.71	0.52	1.31	0.84	2.03	0.238
40–49	1.17	0.69	2	0.563	1.32	0.76	2.33	0.319
50+	0.68	0.37	1.22	0.191	0.93	0.51	1.69	0.802
Sex								
Men (Ref.)	–				–			
Women	1.53	1.23	1.92	< 0.001	1.17	0.93	1.48	0.175
Rank								
Junior NCM (Ref.)	–				–			
Senior NCM	0.94	0.65	1.35	0.741	0.59	0.4	0.86	0.007
Junior officer	0.65	0.44	0.94	0.023	0.6	0.4	0.89	0.012
Senior officer	0.62	0.38	1.03	0.066	0.34	0.19	0.6	0
Element								
Army (Ref.)	–				–			
Navy	0.45	0.32	0.63	< 0.001	1.16	0.79	1.69	0.454
Air Force	0.71	0.54	0.93	0.015	0.95	0.7	1.3	0.75
Afghanistan deployment								
No (Ref.)	–				–			
Yes	0.98	0.74	1.28	0.862	0.96	0.71	1.29	0.785

(*Continued*)

Table 4. (Continued)

Predictor	Loss of military identity				Financial preparedness			
	AOR	95% CI		*p*	AOR	95% CI		*p*
		LL	UL			LL	UL	
Other deployment								
No (Ref.)	–				–			
Yes	0.95	0.72	1.26	0.738	1.12	0.82	1.52	0.474
Years of service								
2–5 (Ref.)	–				–			
6–9	1.7	1.04	2.77	0.033	1.64	0.92	2.92	0.091
10–19	1.52	0.9	2.55	0.116	1.64	0.89	3.02	0.11
20–34	0.92	0.48	1.8	0.818	1.32	0.63	2.78	0.461
35+	1.57	0.72	3.41	0.258	1.25	0.51	3.03	0.626
Release type*								
Non-medical (Ref.)	–				–			
Medical	2.06	1.48	2.86	< 0.001	2.18	1.4	3.4	0.001
Physical health†								
Good (Ref.)	–				–			
Poor	2.35	1.12	4.93	0.024	2.87	1.27	6.46	0.001
Mental health‡								
Good (Ref.)	–				–			
Poor	4.23	2.23	8.05	< 0.001	5.24	2.74	10.01	< 0.001
Release × Physical health§	0.69	0.29	1.63	0.396	0.39	0.15	1.03	0.058
Release × Mental health¶	1.17	0.53	2.58	0.705	0.25	0.11	0.56	0.001
Physical health × Mental health**	0.34	0.1	1.16	0.085	0.22	0.06	0.86	0.029
Release × Physical health × Mental health††	1.62	0.39	6.64	0.506	7.44	1.62	34.06	0.01

AOR = adjusted odds ratio; CI = confidence interval; LL = lower limit; UL = upper limit; Ref. = reference category; NCM = non-commissioned member.

* Effect of medical release when physical and mental health are good.
† Effect of poor physical health among non-medically released with good mental health.
‡ Effect of poor mental health among non-medically released with good physical health.
§ Effect of medical release when only physical health is poor.
¶ Effect of medical release when only mental health is poor.
** Effect of poor physical health among non-medically released with poor mental health.
†† Effect of medical release with poor physical/mental health compared to non-medical release with good physical/mental health.

Veterans with poor mental health had lower odds of perceiving financial preparedness as a challenge if they were medically released (illustrated in Figure 2 with bars comparing non-medically and medically released Veterans with poor mental health only). Non-medically released Veterans with poor mental health also had lower odds of perceiving financial preparedness as a challenge if their physical health was also poor (illustrated in Figure 2 by comparing blue bars for those with poor mental health only versus poor physical/mental health). Results of the significant three-way interaction underlined substantially greater odds of perceiving financial preparedness as a challenge (AOR = 7.44) among medically released Veterans with poor physical/mental health compared to non-medically released Veterans with good physical/mental health (illustrated in Figure 2 with bars comparing non-medically released Veterans with good physical/mental health and medically released Veterans with poor physical/mental health).

DISCUSSION

The present study extends prior research by providing more information on the nature, extent, and correlates of perceived military to civilian transition challenges in

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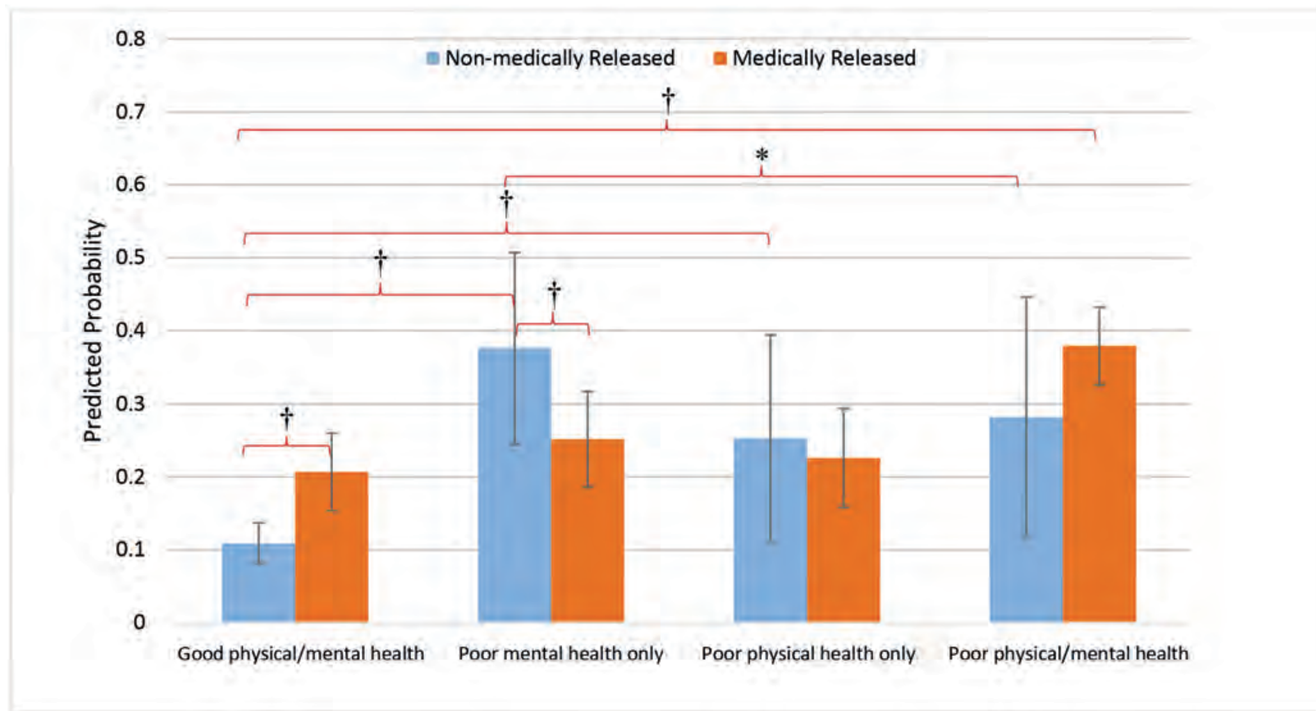

Figure 2. Predicted probabilities for perceived transition challenges related to financial preparedness

* $p < 0.01$
† $p < 0.001$

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a representative sample of newly released CAF Veterans. Challenges were reported by all Veterans but were found to be more prevalent among medically released Veterans. All were independently associated with difficult post-military adjustment, although perceived loss of military identity and challenges with financial preparedness had the strongest associations. Further regression analyses identified subgroups in whom loss of military identity and challenges with financial preparedness were more common. Although being medically released was strongly associated with reporting both types of challenges, so were poor self-rated physical health, poor self-rated mental health, and a range of other sociodemographic and military characteristics, independently of release type.

Loss of military identity

Among all of the perceived transition challenges, loss of military identity had the strongest association with difficult post-military adjustment. Social identity challenges in adjustment to post-military culture have been proposed as a defining aspect of military to civilian transition.[25] Initially formed through socialization during recruit training, military identity tends to be strong among service members throughout their career. After military service, intimate connections to military culture are lost, and service members must develop new social identities by finding meaning through memberships in social groups whose norms and values they learn to value. Loss of military identity, and the failure to achieve a new post-military social identity, have been found to be major barriers to successful transition.[1,15,26]

Relative to men, women were more likely to perceive loss of military identity as a challenge. Several unique aspects of women's military experiences may have contributed to this. Representing only 15% of the CAF population, women are typically employed in only a small number of military occupation groups. Women in the CAF have also been found to be at greater risk of experiencing assault or discrimination on the basis of their sex.[27,28] In combination, these shared aspects of the military experience may contribute to particularly strong bonds among women in the CAF, resulting in the potential for a greater sense of loss if they are broken. Furthermore, it has been proposed that one way in which women adjust to the military is by behaving like "one of the guys" and working harder than their male peers to prove themselves. Over time, female members may become more masculine in order to fit in and be perceived as able to do the work of a soldier.[29] For female Veterans, re-entering the civilian world is "further complicated by

the need to transition from being a soldier – an identity almost devoid of femaleness – to being a civilian and negotiating what it means to be female."[30(p.506)] Consequently, a strong military identity may make it hard for female Veterans to assume a traditional civilian female identity, leading them to feel isolated.[30]

Veterans who were medically released, as well as those who reported poor physical or mental health regardless of their release type, were also more likely to perceive loss of military identity as a challenge relative to their respective counterparts. Indeed, for ill or injured Veterans, the transition process may also involve having to negotiate the concept of oneself as disabled.[31] As well, members who are released with health problems, either medically or non-medically, may have been released before they were ready to leave their military lives behind.

Financial preparedness

Financial well-being has been found to be associated with various aspects of mental and physical well-being in military families[32] in addition to Veterans' post-military adjustment.[33–35] Furthermore, there is evidence that many CAF members are not sufficiently financially prepared for release.[36] Consistent with the LASS surveys, results indicated that financial preparedness challenges were especially common among junior NCMs.[33] While their lower pension may have contributed to this, uncertainty regarding future income sources may also have played a role. Junior NCMs have been found to be more likely to report lower transferability of their skills,[37] which may impact employability. They have also been found to be less knowledgeable about their pension and to report more uncertainty in its ability to support them financially in retirement.[36]

Veterans' release type was also found to be associated with perceived financial preparedness challenges, although some noteworthy interaction effects were observed when health status was considered. Among Veterans with poor self-rated mental health, those who were medically released were less – rather than more – likely to perceive financial preparedness as a challenge. It is possible that enhanced access to benefits gained through the medical release process helped mitigate financial strain among Veterans with poor mental health. Why this did not appear to be the case for Veterans with poor self-rated physical health remains unclear. One possibility is that freely available health care more readily addressed their needs, resulting in fewer costs.

Strengths and limitations

Since the survey was cross-sectional, no inferences can be made on causality. However, a major strength of the present study entails its basis on a representative sample of newly released CAF Veterans. While the structured nature of the survey did not permit the exploration and identification of emerging issues related to military to civilian transition, its quantitative findings are generally consistent with past qualitative studies[1,19,20,35] and provide converging evidence on the importance of transition challenges and their impacts on well-being. Finally, only single-item measures of self-rated physical and mental health were examined. Such measures have been found to be highly correlated with morbidity, disability, service utilization, and multi-item measures of health.[38–40] Still, further analysis of the CAFTWS is needed to explore the health conditions of newly released CAF Veterans in greater detail.

Implications

By underlining the importance of loss of military identity, this study supports recommendations that social identity challenges should be addressed during military to civilian transition.[15–17,25] Unlike programs and services that provide service members and Veterans with more tangible forms of support (e.g., financial support), programs and services that can address existential transition challenges of a more psychosocial nature are relatively less well-established. Achievement of post-military social identities that connect Veterans with needed well-being resources is integral to post-military adjustment.[41] The Veterans' Identities Research Theme Working Group generated a number of recommendations for doing so, including preparing service members prior to their transition to actively manage their social identity challenges, enabling peer support during transition, asking Veterans what forms of commemoration and recognition work for them, and sensitizing civilian communities to take active roles in embracing transitioning Veterans and their families.[17,25] Additional research on issues around social identity during military to civilian transition might include the further development of relevant measures and the evaluation of approaches for addressing such challenges.

Findings regarding the magnitude of perceived challenges with financial preparedness underline the value of financial counselling or training programs, such as those offered by the Service Income Security Insurance Plan (SISIP) and various financial support

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benefits that are currently available to support Veterans.[42] Although CAF members are encouraged to seek these services in the early stages of their retirement planning, lower-ranking members, or those who are released unexpectedly due to health problems, may be less likely to do so. Again, further research should focus on identifying the best means to empower CAF members early in their military career to plan for their financial future.

Conclusion

Consistent with findings published in both Canada and elsewhere,[3,4,13,15,16] this study found that both medically and non-medically released Veterans perceive a variety of challenges during military to civilian transition. This study not only demonstrates the potential value of enhancing Veterans' preparedness for loss of military identity and managing finances, but also for finding education and employment opportunities, relocating, finding health care providers, and navigating the vast amount of information they will receive on relevant benefits and services. It is important to note that significant efforts have been made to enhance transition program services in the CAF since the CAFTWS was administered. As such, results provide valuable baseline information against which progress related to these efforts can be monitored.

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COMPETING INTERESTS

None declared.

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CONTRIBUTORS

All authors conceived and designed the study. Jennifer E.C. Lee conducted the analyses and edited and revised the manuscript. All authors contributed to drafting the manuscript and approved the final version submitted for publication.

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The study protocol was approved by Statistics Canada.

INFORMED CONSENT

Informed consent was obtained from the participant(s).

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“Their pain is our pain”: The lived experience of intimate partners in Veteran recovery from PTSD

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ABSTRACT

Introduction: Social support, particularly support from an intimate partner, is both a significant protective factor for trauma-exposed Veterans and critical for recovery in mental health, yet we know little about the experiences and support needs of their partners, particularly in the Australian context. This study examined the multidimensional nature of experiences of being an intimate partner of a contemporary Veteran with posttraumatic stress disorder (PTSD). **Methods:** The authors used a qualitative phenomenological approach to conduct an inductive thematic analysis of data collected through individual interviews with a purposive sample of 10 partners of contemporary Veterans living in Australia. Interviewees were recruited through a range of community support organizations. **Results:** Analysis revealed intimate partners are crucial participants in supporting the recovery journey for traumatized Veterans, effectively managing day-to-day care, encouraging autonomy and instilling hope. However, descriptions highlighted that lack of understanding of partners' daily lives, and particularly their commitment to maintaining their intimate relationship, by health care providers and government results in a sense of invisibility and is the key barrier to receiving the support they need in order to support recovery in their Veteran partners. **Discussion:** The findings underscore the importance of recognizing the role of intimate relationships in trauma recovery and of responding to the support needs of intimate partners. In particular, the findings have clear implications for improving the engagement by health care providers of partners of Veterans with PTSD in Veteran clinical treatment. More formal recognition of the indirect impact of PTSD on partners of Veterans is also needed within organizational policies and procedures. Finally, there is clearly a need for continuing education of health care providers, government staff and the general community about the nature of PTSD and its impacts on relationships, particularly the intimate type.

Key words: caregiving, intimate partners, lived experience, PTSD, recovery, Veteran

RÉSUMÉ

Introduction : Le soutien social, notamment celui des conjoints, est à la fois un facteur protecteur important pour les vétérans exposés à des traumatismes et un aspect essentiel du rétablissement de la santé mentale, mais on sait très peu de choses sur les expériences et les besoins de soutien des conjoints, particulièrement dans le contexte australien. La présente étude porte sur la nature multidimensionnelle des expériences des conjoints de vétérans contemporains en état de stress post-traumatique (ÉSPT). **Méthodologie :** Au moyen d'une approche phénoménologique qualitative, les chercheurs ont réalisé l'analyse thématique inductive des données colligées lors d'entrevues individuelles auprès d'un échantillon sélectionné de dix conjoints de vétérans contemporains vivant en Australie et recrutés auprès de plusieurs organismes de soutien communautaire. **Résultats :** L'analyse a révélé que les conjoints sont une source de soutien essentielle au parcours de rétablissement des vétérans ayant vécu des traumatismes, car ils gèrent les soins quotidiens, favorisent l'autonomie et inspirent l'espoir. Cependant, les descriptions ont démontré que les professionnels de la santé et le gouvernement comprennent mal le quotidien des conjoints, notamment leur détermination à préserver leur relation, ce qui entraîne un sentiment d'invisibilité de la part des conjoints et représente le principal obstacle au soutien dont ils ont besoin pour soutenir le rétablissement de leur partenaire vétéran. **Discussion :** Les résultats font ressortir l'importance de reconnaître le rôle des conjoints dans le rétablissement des traumatismes et de répondre à leurs besoins de soutien. Notamment, ils démontrent clairement que les professionnels de la santé doivent s'engager davantage auprès des conjoints des vétérans en ÉSPT dans le cadre du traitement clinique. Les politiques et les procédures organisationnelles

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doivent également tenir compte plus officiellement des effets indirects de l'ÉSPT sur les conjoints de vétérans. De toute évidence, il est nécessaire d'offrir un perfectionnement continu aux professionnels de la santé, au personnel gouvernemental et à l'ensemble de la population sur la nature de l'ÉSPT et ses répercussions sur les relations, notamment les relations intimes.

Mots-clés : conjoints, ÉSPT, expérience vécue, rétablissement, soins, vétérans, Australie

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INTRODUCTION

Clinical recovery in mental illness is measured by improvement or remission in clinical symptoms based on explicit criteria of levels of signs and symptoms.[1] Personal recovery, on the other hand, is subjective. It is an attitude and a journey, rather than an outcome, built around a sense of hope and agency.[1] Personal recovery occurs within the social context of a person's daily relationships, as it is well recognized that positive social relationships improve mental health and well-being.[2] Relationships are vital to recovery because experiences of connectedness, hope, identity, meaningfulness, and empowerment emerge from the interactions that individuals experience within their social environments.[3] However, it is also well documented that caring for a person with mental illness can result in adverse psychological effects for the care provider.[4]

The importance of positive social relationships for recovery in posttraumatic stress disorder (PTSD) is highlighted by the clinical research literature on the role of social support as a mitigating factor in the development of PTSD,[5] in encouraging help-seeking,[6] and in treatment outcomes.[7] However, research has also found that the symptoms of PTSD, particularly anger and emotional distancing, appear to strain and erode support over time, with this lack of support conversely viewed as a risk factor for worsening of PTSD symptoms.[8]

The negative impacts of PTSD in Veterans on interpersonal relationships, particularly on the mental health of the intimate partner, have been well documented. For example, there is now a substantial body of predominantly clinical international literature highlighting that female partners of male Veterans can experience significant psychological distress, including depression and anxiety.[9,10] However, partner psychological distress has been viewed as a barrier to social support for the Veteran, with research recommendations generally limited to individual mental health treatment or couples counselling.[10,11] A small number of international studies have explored the lived experiences of partners of Veterans of recent deployments to the Middle East, reporting considerable challenges in their daily relationships and highlighting particular needs around individualized support.[12,13,14] While these studies illuminate the importance of supporting the partner in the care and recovery journey for the Veteran, recommendations are again limited – overwhelmingly – to clinical interventions. In comparison, general mental health literature suggests intimate partners of people experiencing mental illness have needs that are broader than individualized treatment, such as peer support and respite.[15,16] In this way, they receive the support they need in order to support the person in their recovery journey.

The nature of military service in the Australian Defence Force (ADF) over the last two decades has been characterized by a number of high-tempo and diverse operations. Studies have documented the significant prevalence of PTSD, compared with the general population, particularly in recently transitioned military personnel.[17] Previous research examining the effects of PTSD on relationships in Veterans suggests that many families are also impacted. There is, understandably, an ongoing focus on best-practice treatments for PTSD, yet there is limited research about the lived experience and support needs of the intimate partner, particularly in the Australian context. This is a concern, given the vital importance of social support in PTSD treatment and in the Veteran's personal recovery journey.

The current study is a subset of a larger study that included partners of emergency services first responders.[18] This study aimed to explore the multidimensional nature of experiences of intimate partners of contemporary Veterans with PTSD and learn what helps or hinders their ability to support their partner – that is, to examine what intimate partners need to support their own mental health and well-being and what resources are essential and helpful to them.

METHODS

Design

The purpose of the study was to better understand the lived experiences of intimate partners from their point of view. Therefore, the authors used an interpretive phenomenological approach underpinned by the philosophy of Martin Heidegger, who used the concept of the "life-world"

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to express the idea that an individual's reality – their lived experience – is influenced by the everyday world in which they live.[19] This philosophical approach is then useful for developing an understanding of how lived experience is influenced, structured and sustained by the context, enabling direction for practice and policy recommendations.[19] The interpretive phenomenological approach has been used in previous studies with partners of Veterans.[11,12] It involves in-depth interviews with individuals with the personal and nuanced experience under examination as the best means of enabling them to tell their stories.[20]

Recruitment procedures and participants

A purposive sampling strategy was used to recruit participants who experienced the phenomenon of being in an intimate relationship with a contemporary Veteran with PTSD. For this study, a *contemporary Veteran* was defined as someone who undertook military service from 1999 onward. The participants' partners were not required to have an official or formal diagnosis of PTSD, allowing for the potentially extended time to diagnosis, and the challenges in help-seeking for those experiencing symptoms of PTSD. Recruitment occurred through the distribution of written study information to a range of ex-service, support and advocacy community-based organizations that support contemporary Veterans and/or their families.

Data collection

Data was collected through individual face-to-face, in-depth, semi-structured interviews with partners of Veterans with PTSD. All interviews were conducted by one author with a background in social work and extensive experience in working with the Veteran community. An interview guide was developed through a review of the literature and input from a Veteran partner. The guide used open-ended, non-directive questions focusing on the participants' experiences of daily life, the impacts of PTSD on their own health and on the intimate relationship, the support they received, and any areas of unmet need. Interviews averaged an hour and were digitally recorded and subsequently transcribed verbatim by a professional transcriber. All transcripts were de-identified, with all names, places, and any individual identifying data changed before analysis to ensure confidentiality. Pseudonyms were used. The 10th interview contained no new themes, and it was deemed that theoretical saturation was satisfied for the sample recruited.

Ethical considerations

Ethical approval was obtained from the human research ethics committees of Flinders University and the Australian Government Departments of Defence and Veterans' Affairs. Participation was voluntary. A participant consent form was emailed to each participant when arranging an interview time, with written informed consent obtained at the interview before asking any questions. All participants were provided with details about *Open Arms – Veterans & Families Counselling*, given the possibility of distress through discussing personal experiences. A gift voucher was provided at the end of the interview, but this was not advertised in the recruitment material.

Data analysis

The interview transcripts were analyzed thematically following the method of Braun and Clarke,[21] which involved generating initial codes that were then collated into themes. Analysis commenced after the first interview. All transcripts were read by three members of the research team, bringing a broad perspective to identify common themes, meanings and issues. Each transcript was independently coded by at least two of the researchers with initial codes and provisional codes generated across the whole dataset. Tentative themes were then explored at regular meetings between research team members. A coding frame was developed to assist with further analysis of transcripts and the generation of meaning. The coded transcripts were then entered into the qualitative research program NVivo 11 to assist with organizing the whole dataset into themes and subthemes, supported by team discussions. The extracts of data selected for the report were reviewed by all six members of the team to ensure they provided a concise, coherent, and logical account of the lived experience of the participants, as told by the data.[21]

RESULTS

Ten female partners of male Veterans participated in an interview. Table 1 provides demographic information about the participants and their Veteran partners.

All Veterans were described as having served in the ADF and had been actively deployed. One Veteran was still serving; two others were employed in civilian positions and the remaining seven described as unable to work because of PTSD. All participants stated that their Veteran partners had a formal diagnosis of PTSD and were receiving clinical care.

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Table 1. Participant demographics

Participant (pseudonym)	Age bracket (years)	Length of relationship (years)	Dependents at home (yes/no)	Paid work (yes/no)	Age bracket for Veteran (years)
Alison	50–59	24	no	no	50–59
Bridgit	40–49	14	yes	no	30–39
Claudia	40–49	4	yes	no	50–59
Edwina	40–49	14	no	yes	40–49
Fiona	30–39	18	yes	no	30–39
Helen	40–49	4	yes	yes	40–49
Isobel	40–49	25	yes	no	50–59
Laura	40–49	26	yes	no	40–49
Catherine	40–49	2	yes	no	40–49
Narelle	30–39	18	yes	no	30–39

Three inter-related themes were generated: (1) protecting the family unit, (2) the need for support, and (3) barriers to support. By protecting the family unit, the Veteran was both supported and encouraged in their recovery. Despite the strength of commitment, the participants conveyed to maintaining the well-being of their families, they needed support to do this and described considerable cultural and organizational barriers to accessing much sought-after support.

Protecting the family unit

Protecting the family unit was revealed as paramount, underpinned by a strong emotional commitment to their Veteran partners. This theme encompassed three sub-themes: (1) the impact of PTSD on the relationship, (2) the change in roles, and (3) the support provided to the Veteran.

Impact of PTSD on the relationship

Participants described challenges the symptoms of PTSD can bring to a relationship, with symptoms of withdrawal and emotional numbing commonly expressed as particularly difficult, given they can close down intimate communication, expression of feeling and closeness between a couple:

> And he'll tell me that he might feel numb today. And numb to him is that he can't feel any emotions. He can't – he says 'I love you but I can't feel that love. Well, no, what it is, I know that I love you but I don't feel it, and I just feel numb.' And when he first told me that, that was really hard to swallow. (Isobel)
>
> He won't talk or – there's no communication so the intimacy where we used to sit and laugh and joke, not there anymore. (Laura)

Despite the impact of these symptoms on the relationship, participants emphasized the vital importance of striving to retain a level of emotional intimacy:

> … the medication and the PTSD he has no libido, he hasn't done for 5 years so there's no sex but intimacy which I think is more important.… As long as you cuddle me, kiss me, tell me that you love me then that's all I need. (Edwina)
>
> (Sexual) intimacy is few and far between these days [laughs] but we always hug and kiss each other and all that sort of thing … (Alison)

Change in roles

Together with managing the intimate relational impacts, participants revealed changes in relational dynamics, which meant assuming new roles and responsibilities that ranged from household tasks, providing an income, caring for their partners, as well as becoming the primary decision-makers across many life issues in the family unit. Several participants described being in a carer role and the sense of dependency they felt their partners had on them:

> I became the mum and the dad. I became the carer. You know, it was like he was away (on deployment) but I actually had another child to look after. (Isobel)
>
> … quite often he'll forget his appointments and, you know, so I've gotta be on top of that. I've got to be on top of everything. (Claudia)
>
> I'd give him a list of things to get (at the shop) and he'll forget things. Like every time he goes to the shops, he rings me with stuff … I feel like he uses my brain to think. (Bridgit)

Participants' descriptions revealed that, despite this dependency, they strove to protect their partners' sense of

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identity and self-worth, given the significant impacts that PTSD can have on a Veteran's identity. A key role undertaken was that of a cheerleader. They described how they both encourage the Veteran to engage in activities within their coping capabilities and encourage help-seeking when necessary.

> I've just got to encourage him without pushing him too hard ... And I put on the calendar when his appointments are and, the day before I will just mention, 'on the way to your appointment can you drop me here' rather than saying, 'Have you remembered?' I try and incorporate into what I'm doing so he's helping me do something. (Edwina)

While encouraging independence, participants described a constant vigilance to any changes in their partner's mood and behaviour, and particularly to triggers for worsening of PTSD symptoms and an awareness of when treatment was required.

> Ah, he becomes very unmotivated. He becomes a lot snappier, he becomes cold, he becomes distant. And that's when I know he is struggling. (Claudia)
>
> I'm very, very aware and I'm very engaged in his ups and downs and the idiosyncrasies of the disorder ... and I know they're all signs that his mental state is not right. (Isobel)

Support provided to the Veteran

The role of advocate with health care and other providers was revealed as a consistent and critical role in supporting well-being and recovery in Veterans. In many cases, participants advocated on behalf of a partner who was reluctant, or unable, to disclose to a health care provider how they were faring:

> You know, there's some days where things aren't great but – and I've already picked those and I will then get him in to see the GP... (Isobel)
>
> I talk to his psychiatrist whenever I feel that the drugs aren't working properly. (Claudia)

Of prime importance to the participants was for their partner to be as well as they could be and to get the necessary support they needed for the treatment and care of their PTSD. This reinforces participants' need to preserve their intimate relationships. Several expressed a sense of hope that the right treatment would restore aspects of the pre-PTSD relationship:

> ... to make him well again ... because he'd be the man I married and we'd be happy again. (Edwina)

Need for support

In participants' descriptions of day-to-day emotional struggles, the need for support was a central feature. They expressed their emotions and moods as being intertwined with those of their partner:

> We suffer. Because we take on the burden of our partners. Not their – not the burden of them but we love them so their pain is our pain ... (Fiona)
>
> ... so, if he's happy I'm happy. (Alison)

Therefore, finding the right treatment for their partners, being involved and accepted as critical in their partner's recovery, essentially supported them, as well. However, descriptions also revealed that finding and retaining the right treating provider could be fraught with difficulty:

> And we tried two previously, two other psych's and they were useless and the third one we got onto, and she was brilliant. (Catherine)
>
> The psychiatrist was rubbish so I got him another one. The counsellor wasn't very good so I got him another one. (Laura)

Participants described their own needs for support, but a prevalent frustration and fear of being judged by others pervaded the descriptions, in particular, with the experience or perception that they would be asked why they stay in the relationship:

> I've had people come up to me and go, why are you still with him? Did you know he was sick when you married him? (Fiona)
>
> And my GP actually said, why do you stay with him? I just looked at him. I said, what kind of question is that? (Laura)

They all described needing their own support from other partners dealing with PTSD to enable acceptance and understanding:

> ... you walk on eggshells and he's going to explode so you just have to go and do something else and wait for him to calm down. People just don't understand that. And suicide, you know, going out to work in the morning and thinking, am I going to come home to find him hanging in the garage? People don't understand those things. So, you want to talk about them. ... you want to be in a group of people who are experiencing the same things. (Edwina)

However, participants described the difficulties they experienced in finding peer support, reflecting on the

critical importance of learning from others and how this might have helped them in the early days.

> … I think one of the biggest needs is that there needs to be more support around the partners so what you're doing. I didn't find anything like that early on … (Isobel)

Financial support emerged as an area of unmet need. Only two participants described having their own employment, with most having taken a backseat to their partner's military career. They described complex, long-term, and stressful interactions with the Department of Veterans' Affairs (DVA) in navigating the compensation systems:

> … But he wanted to give up after day one … I wasn't going to give up, I kept fighting but I know there's a lot that just give up at the first hurdle … (Edwina)

One participant described how the impact of medical discharge and navigating the compensation system resulted in the loss of the family home:

> I would say the first 6 months of him being medically discharged was just a complete blur. I didn't know what was going on. Because we lost our house as well because we couldn't afford to pay the mortgage … (Laura)

Several participants described relying on external financial support to meet the school needs of their children:

> … they now give me $X a month for education, they assist with if the kids are doing sport. … They give us money twice yearly for electricity … (Bridgit)

Barriers to support

Considerable barriers to accessing essential support pervaded the descriptions. The need for social support was underpinned by a fear that a lack of understanding by others would result in judgement of participants and their relationships. The sense of being invisible, forgotten, and overlooked emerged consistently through the interviews; it was evident in descriptions of a lack of services and lack of concern for the participants and their children, and most intensely felt from government and health care providers.

> Steve served the country and our lives were ruined. … We are not acknowledged at all. … I feel quite bitter and angry that I am not recognized and my children are not recognized. (Bridgit)
>
> There's nothing for the women at all. It's crazy … And you have to fight for everything. And we, again, are the forgotten person. All the time. (Laura)

Commonly described was a lack of recognition of the intimate relationship by health care providers. There was a prevailing sense their intimate relationship with their partner was invisible in health care settings and they were acknowledged only as a support person and provider of task-focused care. Several participants described how they felt about interactions with their partner's mental health care provider, illustrating their perceptions of an attitude of exclusion from their partner's care:

> I felt like an irritation as opposed to somebody that could actually contribute. (Edwina)
>
> … he (the psychiatrist) was never really interested in what we've got to say. I think I was a little bit of an annoyance. (Bridgit)

This invisibility within health care settings extended to specialist Veteran mental health services, which were described as lacking understanding of the lived experience of partners of Veterans with PTSD.

> I went to the (counselling service) once – it was a guy and he told me I was being a martyr. And I was 'All right! No thanks. If this is what I actually have to do in my daily life and I'm telling you what I do in my daily life -that doesn't make me a martyr. That just makes me telling you the facts.' (Fiona)
>
> I went to one of the psychologists coz I was startin' to feel – you know, with everything being on top of me … her whole answer was it was my posture … She had no clue. (Claudia)

One participant described her frustration with a specialist group program:

> I said, 'You haven't talked about the financial pressures, you haven't talked about sexuality and issues with libido. You haven't talked about suicide. You haven't talked about the impact of PTSD on children … You haven't done any of that.' (Edwina)

DISCUSSION

This study examined the lived experience of partners of Australian Veterans with PTSD. Three inter-related themes were generated: (1) protecting the family unit, (2) the need for support, and (3) barriers to support. Findings suggest that the partner is a critical component of a Veteran's personal recovery journey, as they are highly invested in preserving the couple's intimate

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relationship. This is in contrast to previous studies on Veterans that viewed the intimate relationship as an isolated factor, barrier, or enabler in recovery[7,22] rather than the most significant and integral aid in the recovery process.

Despite considerable challenges for the relationship due to distressing symptoms of PTSD, consistent with other studies,[6,23] and changes in roles and responsibilities within the family unit, this study found participants strove to retain a degree of intimacy with their Veteran partners. The sensitivity with which they described supporting their partners in their daily lives to maintain their identity and sense of self-worth again indicated the importance of preserving the relationship. While there are task-focused components to caring, such as monitoring medication when necessary, this is done with an understanding of the partner and promoting independence and autonomy. These findings are also consistent with the broader literature examining the lived experience of partners of people with mental illness,[16] and in the limited literature concerning partners of Veterans with PTSD.[11,12,14]

The concept of hope is a core component in recovery.[24] Findings from this study suggest that participants retained hope that their Veteran partners would make a personal recovery and regain aspects of their former relationship. In comparison, literature examining the lived experience of partners of Australian Vietnam-era Veterans with PTSD found a resigned acceptance of the PTSD.[11] This suggests that retention of hope could be attributed to the age of participants and/or the relatively recent onset of PTSD symptoms. While the concept of hope is not explicit in recent studies with partners of contemporary Veterans with PTSD,[12,14] other studies found that belief in a person's capacity to recover is, in itself, a critical source of hope for those with mental illness.[25] Studies have also highlighted that, while sources of hope for carers can vary, treating health professionals have a vital role to play, as they can potentially support and sustain hope, or destroy it.[26] This again reinforces the importance of actively recognizing intimate partners in the treatment process.

Given the non-linear nature of the recovery process, this study found that participants adopt a key role in facilitating help-seeking and advocating for treatment through daily vigilance to their partner's health. This is consistent with findings in other studies examining the experiences of partners of Veterans with PTSD.[14] Participants identified a critical need to access appropriate and supportive treatment, thereby engendering a partnership with the provider, the value of which is also the recognition that the partner has a greater understanding of the reality of daily life for the Veteran. This finding is consistent with recent literature examining carer engagement in specialist mental health care for Veterans.[27] This is also an implicit finding within other recent literature reporting that partners of Veterans with PTSD want greater involvement in treatment and the opportunity to offer insight.[13,14,28] Conversely, the finding of the perceived lack of value and recognition placed on the participants by treating professionals is a common theme in general mental health literature.[29] While it is not an explicit finding in international literature about partners of Veterans with PTSD, it is consistent with other Australian research.[11,27] It remains a significant and concerning finding because it renders the partner, and their key role in recovery, invisible within the systems of care and support they navigate on behalf of Veterans.

Participants expressed considerable concern that about facing judgement by others for remaining in relationships with their partners, and this is a finding consistent with other recent studies of partners of Veterans with PTSD.[11,12,14] Not only does this imply a need for health care providers and general community mental health literacy, but it renders the needs of the partner invisible and is a barrier to accessing support. The finding that early access to peer support enables learning from others, understanding and acceptance, is also a finding in general mental health studies.[30] Although recent Veteran-partner literature has also highlighted the need for partner social support and education,[12,31] recommendations are generally limited to professionally-driven, rather than peer support, strategies.

The finding of unmet needs for financial support is consistent with the general mental health carer literature,[32] although it is not an explicit finding in the international literature examining the lived experience of partners of Veterans with PTSD. This finding might reflect the relatively young age at which the Veterans associated with this study were medically discharged, with the complexity of the legislation regarding compensation through DVA and the financial stresses more readily experienced in contemporary society. As well, the majority of participants in this study were not in paid employment. Not only are there financial implications for a medical discharge, but there exist potential implications for the relationship with this additional stress, on top of the stresses of living with a Veteran with PTSD.[33]

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Strengths and limitations

Key strengths of this study are the nature of the semi-structured, in-depth interview process, the rapport generated, the rich data produced, and the rigour in using a multi-researcher approach to the analysis. However, some limitations should be noted. The phenomenological methodology does not permit generalizations to be made because the study described and interpreted the reflections of only 10 individual participants at a moment in time; however, one strength is that its themes are consistent with the existing literature exploring the lived experience of partners of contemporary Veterans with PTSD. Also, it should be noted that, as all participants were female partners of male Veterans, the findings are biased toward the perspective of female partners in heterosexual relationships. While this homogeneity also strengthens the findings in relation to the experience of a female living with a contemporary male Veteran with PTSD, future research should focus on recruiting a more diverse sample, including male partners and those in LGBTQI relationships. Further, the participants were all partners of Veterans with a formal diagnosis of PTSD who were recruited through community-based organizations, having reached out for support. However, the concerning nature of the findings for this group of help-seeking participants reinforces that partners of Veterans with undiagnosed PTSD could be in an even worse position.

Implications

The findings from this study have implications for health care providers, the general community, and policy development. Many of the needs expressed by participants relate to alleviating barriers to support and improving awareness, access, PTSD health literacy, and communication with services. Underpinning each of these needs is the need for recognition of the partners, not only in their “role” of providing informal support and care but as intimate partners directly impacted by the person’s PTSD. Therefore, more formal recognition of the indirect impact of PTSD on partners of Veterans is needed within organizational policies and procedures. In addition, there is clearly a need for continuing education of health care providers, government staff and the general community about the nature of PTSD and its impacts on relationships, particularly the intimate type.

The findings have clear implications for improving the engagement by health care providers of partners of Veterans with PTSD in Veteran clinical treatment. The findings suggest that partners need to be included as part of the treatment team, along with the Veteran and the health care provider. The requirement for mental health services to engage in partnerships with carers is embedded in Australian mental health legislation and policies at national, state, and territory levels.[27] This is also consistent with a current attempt in Australia to shift away from an individualized model of care for Veterans to a psycho-social model that recognizes the role of the family and their own needs for support.[34]

Peer support groups provided important emotional support for partners. More focus on making explicit the value of family peer support groups or networks in promoting well-being and resilience is needed, and more work to understand what they could, and should, look like.

The financial impacts of PTSD on the family unit are an additional stress with unmet financial need currently being addressed as a gap in service by a community-based organization. Therefore, with the increasing number of young families experiencing financial distress as a result of Veterans’ medical discharges from the ADF, there is an urgent need to raise this issue with government services.

Conclusion

Partners of Veterans with PTSD have implicitly adopted a recovery orientation in striving to preserve their intimate relationships, encouraging their partners to have a quality of life with a sense of purpose, meaning, and relationships. Yet, they face considerable barriers in accessing the support they need. Considerable work is needed by government and healthcare providers, in particular, in recognizing, acknowledging, and supporting partners in their key roles in Veteran recovery from PTSD.

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COMPETING INTERESTS

None declared.

This article has been peer reviewed.

CONTRIBUTORS

All authors conceived and designed the study. Elaine Waddell acquired the Veteran partner data. All authors analyzed the data. Elaine Waddell drafted the manuscript. All authors revised the article for important intellectual content and approved the final version submitted for publication.

ETHICS APPROVAL

The study protocol was approved by the human research ethics committees of Flinders University, Adelaide, South Australia, and the Australian Government Departments of Defence and Veterans' Affairs, Canberra, Australian Capital Territory, Australia.

INFORMED CONSENT

Informed consent was obtained from the participant(s).

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RESEARCH

Charting a course to support military families navigating service systems for children with Autism Spectrum Disorder: A qualitative study

Heidi Cramm[a], Ronald Garth Smith[b], Dawa Samdup[b], Ashley Williams[a] and Lucia Rühland[a]

ABSTRACT

Introduction: Most military families experience mandatory relocation, or posting, several times during their military career. For Canadian military families, who must access provincial or territorial health care systems, maintaining reasonable continuity of care is a persistent issue. Such challenges may be amplified when a child in a military family has special needs within the health and educational systems. The purpose of this qualitative study was to gain a better understanding of Canadian Armed Forces (CAF) families' experiences in navigating health care systems on behalf of a child with Autism Spectrum Disorder (ASD), in the context of mandatory relocation, and to determine their recommendations for improved system navigation. **Methods:** Parents of children with ASD, where at least one parent serves in the CAF and had faced military-related relocation, were recruited. Semi-structured interviews were recorded, transcribed verbatim, and analyzed thematically. **Results:** A total of 13 participants represented 12 families and 15 children with ASD. Participants discussed two primary ways to support military families: (1) Improve communication between military-connected families with children with ASD, and (2) Improve transition coordination. **Discussion:** The recommendations made by military families echo those made in clinical professional association reports and recent Canadian research. International policy initiatives to offset the impacts of military family relocation may serve as examples to adapt to the provincial and territorial jurisdictions for both health and education in Canada.

Key words: Autism Spectrum Disorder, children with autism, health care system, mandatory relocation, military family, phenomenology, qualitative study, school system, system navigation

RÉSUMÉ

Introduction : La plupart des familles des militaires sont tenues de se réinstaller — ou d'accepter de nouvelles affectations — plusieurs fois au long de la carrière du militaire. Pour les familles de militaires canadiens qui doivent accéder au réseau de la santé provincial ou territorial, une continuité raisonnable des soins représente un enjeu constant. Ce problème peut être amplifié lorsque l'un des enfants de la famille a des besoins particuliers au sein des réseaux de la santé et de l'éducation. La présente étude qualitative visait à mieux comprendre les expériences des familles des membres des Forces armées canadiennes qui doivent s'orienter dans le réseau de la santé pour leur enfant ayant un trouble du spectre de l'autisme (TSA) après une réinstallation obligatoire, ainsi qu'à connaître leurs recommandations pour mieux s'orienter dans le réseau. **Méthodologie :** Les chercheurs ont recruté les parents d'enfants ayant un TSA si au moins l'un des parents servait dans les Forces armées canadiennes et si la famille avait vécu une réinstallation militaire. Ils ont enregistré les entrevues semi-structurées, les ont transcrites textuellement et les ont analysées par thèmes. **Résultats :** Treize participants, qui représentaient 12 familles et 15 enfants ayant un TSA, ont discuté de deux grands moyens de soutenir les familles des militaires : 1. améliorer les communications entre les familles des militaires dont un enfant a un TSA et 2. améliorer la coordination de la transition. **Discussion :** Les recommandations formulées par les familles des militaires reprennent celles qui figurent dans les rapports d'associations de professionnels cliniciens et dans de récentes recherches canadiennes. Des initiatives stratégiques internationales conçues pour atténuer les répercussions des réinstallations des familles des militaires pourraient inspirer l'adaptation des réseaux de santé et d'éducation des régions juridictions provinciales et territoriales du Canada.

Mots-clés : étude qualitative, famille des militaires, orientation dans le système, phénoménologie, réseau de la santé, réseau scolaire, trouble du spectre de l'autisme

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INTRODUCTION

Military families commonly experience mandatory relocations, or "postings", to different military locations during a serving member's career within the Canadian Armed Forces (CAF). While there is limited research on the effect of mandatory military relocation on children,[1] postings have been reported to be highly disruptive to family life and one of the most unsettling features of the military lifestyle in the United States[2,3] and Canada.[4] This can be especially true when a family has a child with special needs.[4–8] Military Family Services (MFS) has recognized that CAF families "supporting a family member with special needs have unique and additional challenges, beyond those faced by civilian Canadian families, as a direct result of the CAF lifestyle."[9]

ASD is a relatively common neurobehavioural condition of childhood, with Health Canada recently reporting the prevalence of ASD as 1 in 66 children between the ages of 5–17.[10] Children who have ASD typically require more frequent and broad access to educational and health care services[11,12] to address impairments in social communication, which present in combination with repetitive and restrictive behaviours and sensitivities, including sensitivity to changes in routine.[13] Early diagnosis is critical, as treatment at an early age has been found to have the greatest impact on the prognosis of ASD, but the increased rates over the past 10 years have resulted in wait-lists of up to two years for diagnosis, typically by a developmental pediatrician.[14] This congestion further delays access to other required services.[15] These issues are compounded for military families, with postings disrupting the process of obtaining a diagnosis and/or treatment.[6,16,17] Several studies document challenges American military families face when navigating services and supports for children with special needs after being posted to a new location,[5–8] including increased risk for high stress levels and challenges accessing and maintaining ASD services.[16,17]

In Canada, 8.2% of military families are reported to have a child with special needs such as ASD.[18] Most research conducted on the impact of relocation in Canada includes non-peer reviewed research (e.g., government reports) and indicates frequent relocations are the most challenging aspect of military life, and that finding health care in this context is extremely difficult.[19–21] Additionally, frequent relocation disrupts academic participation and performance for military-connected children due to differing requirements across regions and provinces.[22,23]

There has been some peer-reviewed research published on military relocation in the United States,[1] but this literature is lacking in Canada. There are some crucial differences between the American and Canadian military family health care service delivery systems that may limit the generalizability of the American findings to Canada. In the United States, the Department of Defense's military health care system provides services to military personnel and their families, which helps maintain continuity of care for the entire family during relocation.[11] By contrast, unless the posting is international or remote, Canadian Forces Health Services provides medical care only to military personnel, while families are required to access civilian provincial and territorial health care services. Moreover, the level of specific resource development to support parents in their children's educational transition differs. In the United States, the Military Interstate Children's Compact Commission has offices in 50 member states that help families address education transition issues when they are relocated.[24] Military OneSource is a call center that provides information, referrals, and access specifically related to special needs.[6] In Canada, recent funding has been devoted to further development of special-needs services within the Miltiary Family Resource Centres, but, ultimately, the services are variable across locations.[25]

With limited data on the specific issues Canadian military families face when navigating what is often a complex web of health and educational services and supports, this research explored the experience of Canadian military families navigating health and education systems on behalf of children with ASD and determined recommendations families would make to support others facing mandatory relocation. The results regarding participants' experience of health service navigation are reported elsewhere.[26] The purpose of this article is to present and discuss participants' recommendations in light of their experience navigating health and educational services. A better understanding of the recommendations from the family perspective may ultimately translate into better practices and policies to reduce stressors on military families when they are relocated.

METHODS

Design

A qualitative phenomenological approach was used to investigate the lived experience of Canadian military

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familes who have children with ASD and are navigating the health and educational systems in Canada in the context of relocation. This included participants' perspectives on how to improve access to these systems, which is the subject of this article.

Participants

Eligible participants included parents in a Canadian military family (i.e., a family with at least one parent serving in the CAF) with at least one child with ASD and either experienced a posting or elected to leave the CAF Regular Forces to avoid it.

Recruitment

Posters were placed in ASD service agencies in the region of two military bases, along with Facebook and Twitter. Sixteen families inquired about the study, with three not responding further and one declining to participate. A sample size of 15–20 was sought, which is within the general guidelines for phenomenological studies,[27] and participants were recruited until theoretical saturation was achieved[27] and no new information was obtained from participants.

Procedure

The semi-structured interview guide was piloted ($n = 1$), refined, and implemented (HC, AW) for use in face-to-face or phone interviews with participants. As suggested by Lester,[28] the interview guide was loosely structured to enquire about several key areas. For this study, these key areas included pathways through the health care system during relocation, barriers faced when trying to navigate systems and supports, and what types of resources would have been, or could be, helpful in navigating health care for children with ASD in military families. The latter of these key areas is the focus of this article and questions related to participant recommendations can be found in Table 1. Field notes were made during/after interviews. This study was granted ethical clearance (#6016307) by the Queen's University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board.

Data analysis

All interviews were recorded and transcribed verbatim. Two of the authors used the constant comparison method to code the raw data[29] with the assistance of qualitative data analysis software, MAXQDA (VERBI Software Consult Sozialforschung GmbH, Berlin, Germany). Analysts and the lead researcher compared and resolved coding disagreements to increase the validity of the findings[30] repeatedly. Emergent themes were aggregated from the initial codes to capture the "essence" of participants' experiences and their recommendations based on these experiences.

Table 1. Sample interview questions

1. In an ideal situation, what kinds of system supports or resources would be present to support you in navigating the new health care system and accessing the necessary services?

   Prompts:

   a. What aspects of different systems would you combine to create this ideal scenario?

   b. If you had a magic wand, what kind of system change would you make to ease health system navigation and service access issues for military families who have children with ASD?

2. Is there anything else related to navigating health care systems for military families who have children with ASD that we haven't asked but is important for us to know?

ASD = Autism Spectrum Disorder.

RESULTS

Thirteen participants from 12 families were interviewed for an average of 63 minutes each, between January and August 2016, until the authors agreed no new information was being obtained (i.e., saturation was achieved). No repeat interviews were carried out. Nearly all participants were currently residing in Ontario and were married or cohabitating. The majority had only one family member in the CAF Regular Force, over half of whom were non-commissioned members. See Table 2 for demographic information about the sample.

Participants described their experiences of navigating health services for their children with ASD in the context of relocation. Three themes emerged: (1) High mobility inherent in the military lifestyle can create disruptions and discontinuities in service; (2) Navigating health systems for children with ASD takes its toll on military families; and (3) Opportunities to support military families navigating service systems for children with ASD. The third theme is the subject of this article; the first two themes are reported elsewhere.[26] Opportunities to support military families thematically cluster around communication strategies and strategies to enhance continuity.

Communication strategies

Informal support network

When asked for recommendations to improve health care navigation, half of the participants suggested a

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Table 2. Participant demographics

Demographic characteristics	No.*
Number of participants	13
Number of families	12
Number of dual CAF families	4
Number of children with ASD	15
Female	5
Male	10
Marital status	
Married/cohabitating	10
Separated	1
Blended	1
Age of diagnosis (years), range	2–8.5
Current age of child with ASD (years), range	4–18
Number of postings after initial contact with health care or education system about ASD (years), range	0–3
Province of diagnosis	
Ontario	14
Manitoba	1
Current provincial posting location	
Ontario	11
Alberta	1
Previous provincial posting locations	NS, QC, ON, MB, AB, BC
CAF member workforce designation	
Regular	12
Reserve	0
Service element	
Army	9
Air Force	2
Navy	2
Not indicated	3
Commission status	
Non-commissioned officers	10
Commissioned officers	3
Not indicated	3

* Unless otherwise noted.

CAF = Canadian Armed Forces; ASD = Autism Spectrum Disorder; NS = Nova Scotia; QC = Quebec; ON = Ontario; MB = Manitoba; AB = Alberta; BC = British Columbia.

network of informal supports – what one participant called a "network of shepherds" – be established at each base, comprised of families who have a child(ren) with ASD who could provide information and mentoring for new arrivals. Particularly valued was information from other parents of children with ASD who had been at the location for a few years. One parent said:

> [P]eople who have been through the same thing you're going through are the best ones to talk to, because they can tell you, 'This is the doctor you need to see. This is the school. This is who you talk to at the school.' You need somebody who's been there.

Nearly all of these respondents suggested the network be coordinated outside the military command structure and "through the [Military Family Resource Centres (MFRC's)]." This type of network would be able to provide "not just the official information you get from the government … which you can read in 15 minutes and isn't very helpful, but a network that is well-informed." The scope of information that a network could provide was essentially limitless. One participant stated: "That's where I've got almost all my information. People will phone me up and ask me questions, and so I try to pass on the same sort of information about everything."

Point person at each base

More than half of parents recommended there "be staff located at each base … whose job is to help … military families who are posted in, (who have special-needs kids), access the right services, just to navigate the provincial services. Because it's a huge thing for any special-needs parent to try and navigate the province, and the services available, but if you have to learn a different province every three years, you lose your mind."

At the same time, some participants expressed a need to take responsibility for making contacts during relocation and "not wait for anybody else." Overall, participants suggested the provision of streamlined assistance with this particularly complicated undertaking that is not of their choosing. One parent summarized the ideal: "A centralized location that deals specifically with children with special needs … They know what has to be done when you move. One-stop shop for that." Another suggested that a combination of a point person and informal mentoring would work well.

Enhanced and current information package prior to, and upon, transition

Parents expressed the need for both general and specific information, depending on their familiarity with the new province's systems and where they are in the diagnosis and treatment pathway for their child with ASD. A couple of parents said general information included

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in the military welcome package would be useful, if it related to programs and services, or how a province's health and education systems worked. Others suggested the package contain specific information on local schools and primary care physicians and pediatricians specializing in ASD so families could be placed on the correct wait-list immediately. One parent explained this would avoid "… hopping around all over the place, and you know, not finding out about certain programs until, you know, weeks and months later." Other common recommendations were for the provision of a list of current service providers, community groups, other families who have children with ASD, funding opportunities, local programs and websites.

Strategies to promote continuity and coordination of services

Most parents clearly expressed the need to have specific information targeted to families who have a child on the autism spectrum when facing mandatory relocation, especially for those early in the diagnosis phase, who have no previous experience navigating the health and education systems. Recommendations clustered around facilitating a smooth transition to reduce the amount of time spent waiting for services and supports at a new location, rather than "blindly navigating."

Reduce posting frequency. All participants lamented the impact of relocation on their child's ability to access or continue with required services, with two asserting that staying in one location as long as possible was a desired goal. One parent recapped:

> [The military] send[s] you to a new location, then you wait 2 or 3 years to get on this wait-list, and then they boot you after you're there for 4 years, or 5 years, well, you know now, now she's only getting 1 or 2 years of support.

Medical record transfer. Parents strongly endorsed this area as a priority for improvement. Recommendations made by parents about the transfer of medical and educational records underscored a need to expedite the process for families through supports and/or through mechanisms for them to own the process entirely or share responsibility. Nearly half of parents specifically indicated they would like help with records transfer, while others expressed a lack of trust in leaving such an important component of their transition in the hands of another person. The potential for an electronic file transfer that the military would manage was recognized by participants, and one commented: "if they're going to have that file-share system, then it should be Canada-wide, so that if we get posted … I don't have to lug two totes around with me when I'm going to see people."

Some participants spoke to the value of maintaining their own set of complete records for health and educational purposes. One participant reflected:

> The biggest help that I've ever had is the fact that I've kept all my paperwork. Like, it's saved me so much headache … I don't let the movers pack it. I take it with me when we move, like, in the car … if I show up at a doctor's office, or I show up at the school, or if I move 10 times from now, I'll be able to just, kind of, show people.

Advocacy. All parents recommended taking the initiative to advocate for their child with ASD to optimize continuity and coordination of services at the time of posting. This included being proactive in finding information from multiple sources, being proactive in the search for educational supports early in the posting process, being put on wait-lists for services, personal record keeping/transfer, and fundraising for service provision.

One parent explained that "years" are saved by "just knowing what's really out there, versus just waiting for it to show it[self]." Beginning the search as soon as a posting was announced, or even rumoured, was a common suggestion in order to "get the ball rolling" as early as possible. For example, a parent advised that "as soon as you physically can, you're contacting the [school] people and giving them the heads up." Other parents stated they would "at least be following up on referrals on a weekly basis to make sure we've got something set up when we walk in the door." Parents emphatically advised, "you are your own best advocate. Push hard and don't give up."

For some parents, the need for advocacy was sufficiently strong as to be expressed in terms of a battle that must be fought, advising that parents must "fight for their kid." One parent spoke to this: "… you need to fight for what you need. At the end of the day, we're the ones that have to stick up for our kids." While this was a common suggestion, one participant admitted this process of relentless advocacy was "beyond exhausting." However, these strongly held views on self-advocacy did not preclude a concomitant recommendation for the enlistment of others to advocate on behalf of a child. As mentioned, the mobilization of advocacy efforts by previous health care providers was also encouraged. Having a MFRC staff member to assist with transition also was seen as a valuable asset with regard to advocacy: "so that

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when we arrived, this person is here to act as an advocate on our behalf, who knows the in's and out's of the education system and the health system." These recommendations were also seen as provisions to assist families in advocating for themselves as one participant indicated:

> If you're going to trust someone else to do it for you, stay on top of the situation, always calling, always following up. … You can say, 'Okay, can you send this referral for me?' But you need to be on it. You need to be the one knowing what's going on, when, where, why.

DISCUSSION

While literature focusing on the effect of military-related relocation is scarce, what has been developed focuses on the American context and indicates that frequent relocation can be problematic.[1] This is especially true for children with ASD.[16,17] This study is among the first to describe the recommendations of military families of children with ASD arising from their experiences with health and education system access during mandatory relocation. As such, this study addresses a gap in knowledge about how to facilitate navigation through the Canadian health care system for this population of military families. The results of this study are supported by other recent findings, as well as initiatives within the CAF and Canadian health provider organizations. They also have implications for additional research, policy, and programming for Canadian military families of children with ASD.

The recommendations made by participants in this study included communication strategies, such as mentoring programs, as well as strategies related to promoting continuity and coordination of health care services, such as assistance with transferring health services from one region or province to another. These recommendations are supported by earlier reports from the Canadian Pediatric Society,[31] the College of Family Physicians of Canada,[32] the Department of National Defence and Canadian Forces Ombudsman[4] and Canada's Defence Policy, *Strong, Secure, Engaged*.[33] Furthermore, a recent Canadian study undertaken to document military family delays in accessing primary and specialist care after relocation echoes these recommendations.[34] Other recent Canadian research on military-connected children's access to special education[35] makes noticeably similar recommendations for support: the need for strong self- and assisted-advocacy; the need for better information on relocation; the desire for a support group; and outreach for families living off base. Evidently, military families with special education needs are facing parallel challenges to those navigating health care systems in Canada.

Recent developments on the international and national stage have signalled military institutions' recognition of the unique challenges faced by military families who have a child with special needs. A notable example in the United States is the passing of legislation known as The Interstate Compact on Education and Opportunities for Military Children,[24] which addresses education transition issues by establishing a consistent policy across jurisdictions, by providing military-related awareness training for educators and by instituting provisions for efficient transfer of documents and supports – all of which could serve as a model for Canada.[36] On a much smaller scale, the CAF has piloted programs, based on similar strategies in the United Kingdom[37] and United States,[38] at several Canadian bases to facilitate transitions for children with special needs through the engagement of a special needs coordinator.[38] Other programs, such as the Canadian military family outreach Family Information Line,[39] which provides information and support to families who live off base, aim to address communication deficits in ways reflected by the participants in this study. The 30-day wait to access to health care in a new province has been waived for Canadian military families; the Minister of Defence has also begun discussions with the provinces for Seamless Canada,[40] an initiative to improve education and health service coordination between provinces and territories for military families.

Despite these efforts, frequent relocation still presents significant challenges for families with special needs. Implementing a number of the ideas expressed by the participants in this research would reflect a classic bottom-up approach to tackling the relentless problem of repeatedly "starting from scratch" with each relocation and make further gains toward supporting these families.

Participants strongly endorsed the creation of a "network of shepherds" who could provide both formal and informal support and knowledge. A mentoring program that aligns with this description was created and implemented at five Wings and Squadrons by the Royal Canadian Air Force (RCAF) in 2014.[41] Within this program, the military unit and the local MFRCs engaged a team of local volunteers (adult family members of serving personnel) to act as sponsors to incoming families or families affected by duty-related separations.

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The sponsors introduced families to the unit, facilitatede access to local supports and services, and helped families settle into the new area. This program included many of the structural components participants in this study desired. It had the goal of facilitating transition; there was a significant role for the MFRCs as a source of centralized information and was the location of a "point person" to provide assistance, volunteer sponsors were military members, or family of military members, who provided support and information informally; and the communication between sponsors/mentors and the incoming families preceded their arrival. If it existed outside the chain of command, it might have been in a better position to ensure members' careers not be impacted through the disclosure of personal health information. The results of this study could provide an evidence-based rationale for the expansion and adaptation of this program for families who have children with ASD or other special needs, as well as additional research to develop and evaluate such a program to ensure its effectiveness.

Other recommendations resulting from this study have not, to the authors' knowledge, been implemented, but have the potential to address the challenges of health and education system access during relocation. Participants repeatedly described difficulty transferring services and health records. There were a number of recommendations made that could be explored further to assist with this problem. For example, a child's pediatrician/medical facility in the current province could refer to a pediatrician in the new province, outlining a summary of the child's current skills and treatment needs. Alternately, the new province's providers could proactively request the patient's records or verbal "handover" from the previous province's providers, preventing delays through repeated assessments prior to starting treatments. Medical passports could enable patients/caregivers to share medical/health files online. Further options include the identification of a primary care doctor in the new location prior to relocation and communication between caregivers (doctors, therapists) via phone or videoconferencing when needed.

Discontinuities in care created by repeatedly starting at the bottom of service wait-lists after each move might be managed through alignment of wait-lists across locations that honour wait-list positions from previous postings where possible; a strategy similar to the model employed for the U.S. organ transplant waitlist.[42] Pediatricians and other services that commonly have wait-lists could also simply save spots on the list for children from military-connected families who are newly posted.

Limitations

There are limits around the generalizability of qualitative research. The study sample consists of diversity across ranks, which helps ensure shared essential experiences have been captured. However, information about children's comorbidities, parents' ages or civilian parent's employment status – factors which may have bearing on their experiences – were not obtained. Those who elect to participate in research may have strong perspectives on the issues, so neutral framing was used to elicit perspectives on their experiences, rather than to presume there were challenges.

Conclusion

This study explored opportunities to support military families navigating service systems for children with ASD from the perspective of those families. Improved support and communication and strategies for improving continuity and coordination of service would help support Canadian military families with children who have special needs. These assertions are supported by research and policy initiatives both nationally and internationally, however, more research is required to understand the nature of the issues experienced by Canadian families, to create support effective evidence-informed systems.

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COMPETING INTERESTS

None declared.

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CONTRIBUTORS

All authors conceived, designed, researched, and drafted the manuscript and approved the final version submitted for publication.

ETHICS APPROVAL

The study protocol was approved by the Queen's University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board, Kingston, Ontario, Canada.

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Gender differences in clinical presentation among treatment-seeking Veterans and Canadian Armed Forces personnel

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ABSTRACT

Introduction: Limited research has investigated gender differences among treatment-seeking Veterans and serving military personnel, despite important implications for treatment provision. In order to better serve the needs of women with military service, the authors sought to address this gap by examining the clinical presentation of men and women requesting services for military-related operational stress injuries (OSIs). **Methods**: Using a sample of 648 treatment-seeking male (n = 550) and female (n = 99) Veterans and Canadian Armed Forces (CAF) personnel, the authors compared prevalence of childhood sexual and physical abuse, probable mental health diagnoses (posttraumatic stress disorder [PTSD], depression, and generalized anxiety disorder [GAD]), and severity of pain and somatic symptoms. Results were rerun to control for sociodemographic variables that significantly differed by gender. **Results**: Rates of probable PTSD were higher for women ($p < 0.05$), and women reported significantly more somatic symptoms ($p < 0.001$), pain severity ($p < 0.01$), and childhood sexual abuse (47% of the sample; $p < 0.001$). Both men and women reported equally high rates of childhood physical abuse (71% for both genders). **Discussion:** Women in this study had a higher prevalence of probable PTSD and childhood sexual abuse, and reported higher severity of pain and somatic symptoms. The study highlights the diverse range of issues that are clinically relevant for – and may complicate the treatment of – women with military service who have OSIs.

Key words: CAF, Canadian Armed Forces, GAD, generalized anxiety disorder, mental health, Military, operational stress injury, OSI, posttraumatic stress disorder, PTSD, sexual abuse, treatment seeking, Veterans, women

RÉSUMÉ

Introduction : Un nombre limité de recherches ont porté sur les différences de genre chez les vétérans et le personnel militaire qui demandent des traitements, malgré les conséquences importantes sur la prestation des traitements. Afin de mieux répondre aux besoins des femmes militaires, les auteurs ont cherché à corriger cette lacune en examinant la présentation clinique des hommes et des femmes qui demandent des services à cause de blessures de stress opérationnel (BSO) subies dans l'armée. **Méthodologie :** À partir d'un échantillon de 648 vétérans et membres des Forces armées canadiennes (FAC) de sexe masculin (n = 550) et féminin (n = 99) qui souhaitaient obtenir un traitement, les auteurs ont comparé la prévalence de violence sexuelle et physique pendant l'enfance, les diagnostics probables de troubles de santé mentale (état de stress post-traumatique [ÉSPT], dépression et trouble anxieux généralisé [TAG]) et la gravité de la douleur et des symptômes somatiques. Ils ont revu les résultats pour déterminer les variables sociodémographiques qui étaient significativement différentes en fonction du genre. **Résultats** : Les taux d'ÉSPT probable étaient plus élevés chez les femmes ($p < 0,05$), et celles-ci déclaraient beaucoup plus de symptômes somatiques ($p < 0,001$), de douleurs de plus grande gravité ($p < 0,01$) et de violence sexuelle pendant l'enfance (47 % de l'échantillon; $p < 0,001$). Les hommes et les femmes ont présenté des taux tout aussi élevés de violence physique pendant l'enfance (71 % pour les deux genres). **Discussion :** Les femmes de l'étude présentaient une prévalence plus élevée d'ÉSPT probable et de violence sexuelle pendant l'enfance et déclaraient une douleur de plus grande gravité et des symptômes somatiques. L'étude fait ressortir les problèmes diverses sur le plan clinique pour les femmes dans l'armée qui sont victimes de BSO, lesquels risquent de compliquer leur traitement.

Mots-clés : armée, blessure de stress opérationnel, BSO, état de stress post-traumatique, ÉSPT, femmes, Forces armées canadiennes, FAM, recherche de traitement, trouble anxieux généralisé, TAG, vétérans, violence sexuelle

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INTRODUCTION

Women with military service face unique stressors that may contribute to the development and presentation of mental health conditions. Sexual assault and harassment are among the most salient and recently publicized of these stressors, with numerous studies disclosing that woman are more likely to experience various forms of military sexual abuse than men.[1–4] Recent research using a Canadian sample of Regular Force (RF) members discovered that 27.3% of women reported experiencing sexual assault at some point over their military careers, compared to only 3.8% of men.[5] Further, women contend with engendered pressures that may affect their career trajectory and adjustment to civilian life, including child rearing, expectations around being the primary caregiver, balancing military and family roles, and perceptions of the "Veteran woman" identity.[3,4] Women are also more likely to have sustained childhood sexual and physical abuse prior to enlisting,[6] a troubling finding given the cumulative effect multiple traumatic events can exert on a Veteran's mental health.[6] Despite this, female Veterans and serving personnel are a historically under-studied cohort, making research that seeks to better understand their mental health needs of critical importance.

Research using civilian samples typically reports woman are more likely than men to be diagnosed with PTSD, depression, and anxiety;[7] however, results obtained using military samples have been mixed. There is some evidence to suggest women are more adversely affected by combat experiences, and a number of studies have reported higher rates of PTSD, depression, and anxiety among military women, and higher rates of alcohol and substance misuse among military men.[8–11] Other studies have failed to find gender-based discrepancies, particularly for PTSD.[12,13] Using a large sample of male and female military personnel matched on baseline characteristics, Jacobson et al.[14] found that women were no more likely to develop PTSD than men. In their systematic review of female Veterans' mental health, Runnals et al.[7] found higher rates of depression and anxiety for females, but equal rates of PTSD between genders. Similarly, while some research has shown women with military service to be at higher risk for developing chronic pain,[15,16] other studies have shown no detectable gender difference, despite the consistent finding that civilian women are generally more likely to experience chronic pain than men.[12] Lastly, using latent class analysis (LCA) in a Canadian sample of RF personnel, Richardson et al.[17] found women were at increased risk of belonging to a latent class characterized by high mental health comorbidities. Thus, women may be at particular risk for acquiring simultaneous mental health disorders.

Of note, very few studies have investigated gender-based differences among treatment-seeking military samples – an important limitation, given the complexity of treating women with military service[18] – and no study, to the knowledge of the authors, has investigated gender-based differences among Canadian treatment-seekers. As such, this study sought to compare clinical presentation between male and female Veterans/Canadian Armed Forces (CAF) personnel presenting to St. Joseph's OSI Clinic, a specialized mental health clinic funded by Veterans Affairs Canada (VAC) to treat and assess military-related mental health conditions. Specifically, gender differences among the following variables were investigated: probable diagnoses of PTSD, generalized anxiety disorder (GAD) and depression, prevalence of childhood sexual and physical abuse, and somatic symptom and pain severity.

METHODS

Procedure

At intake to St. Joseph's OSI clinic, all clients completed self-report questionnaires about demographics, mental health symptomatology, and childhood experiences for clinical evaluation purposes. The current study included consecutive clients (from January 2015 to November 2018) who (1) were less than 65 years old, (2) were currently serving CAF members or Veterans, and (3) had provided written informed consent for their data to be used for research purposes. Data was stored in a de-identified, password-protected database. Ethics approval was received from Western University and Lawson Health Research Institute.

Demographics

The following demographic information was provided: gender (male, female), age (continuous), marital status (married/common-law, single/divorced/separated/widowed), education level (less than high school, high school, some post-secondary, completed post-secondary), member type (Veteran, currently serving), years of military service (continuous), and number of deployments (continuous).

Somatic symptoms

Somatic symptoms were measured using a section of the Patient Health Questionnaire (PHQ) called the

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PHQ-15.[19,20] The PHQ-15 asks respondents to rate how bothered they were by 15 symptoms over the past 4 weeks on a scale from 0 (*not bothered*) to 2 (*bothered a lot*). Scores were summed and interpreted such that higher scores were indicative of greater somatic symptom severity. As one question was omitted that asked about menstrual cramps, possible scores ranged from 0 to 28.

Major depressive disorder

Probable major depressive disorder (MDD) was measured using the PHQ-9,[19] which asks respondents to rate how bothered they have been by nine depressive symptoms over the past 2 weeks on a scale from 0 (*not at all*) to 3 (*nearly every day*). Participants were coded as having probable MDD if they (1) felt "little interest or pleasure in doing things" or experienced "feeling down, depressed, or hopeless" at least *more than half the days*; and (2) felt bothered *more than half the days* by at least five of the problems. Suicidal ideation was included as one of these items even if it was endorsed less than half the days.[19]

Generalized anxiety disorder

Probable GAD was measured using the GAD-7,[21] which asks respondents to rate how often they have been bothered by seven anxiety symptoms over the past 2 weeks on a scale from 0 (*not at all*) to 3 (*nearly every day*). Participants were coded as having GAD if they (1) answered "feeling nervous anxiety or on edge" at least *more than half the days*, and (2) answered *more than half the days* to at least three symptoms.[21]

Posttraumatic stress disorder

Probable PTSD was determined using the PCL-5,[22] a measure based on the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5).[23] Respondents were asked to assess how much they have been bothered by each of 20 items over the past month on a scale from 0 (*not at all*) to 4 (*extremely*). Totals are summed for a range from 0–80 with scores of 33 or higher indicative of probable PTSD.[24]

Chronic pain severity

Chronic pain severity was measured using the Brief Pain Inventory Short Form (BPI),[25] which asks respondents to rank their pain at its worst and least in the last 24 hours, and their *average pain* and *pain right now* on a scale from 0 (*no pain*) to 10 (*pain as bad as you can imagine*). Chronic pain severity was measured by taking the mean of these four scores.

Childhood sexual abuse

Childhood sexual abuse was measured using the Childhood Experiences (CEX) questionnaire,[26] a questionnaire used by Statistics Canada for the 2012 Canadian Community Health Survey – Mental Health. Respondents were asked how often they experienced six different types of events before the age of 16 on a scale ranging from 0 (*never*) to 4 (*more than 10 times*). The sum of two questions (unwanted sexual activity and unwanted touching) was used to create a dichotomous variable (yes, no) to represent endorsement of any frequency of childhood sexual abuse.

Childhood physical abuse

Childhood physical abuse was measured using the aforementioned CEX questionnaire.[26] The sum of three questions (slap or spank; push, grab, shove, or throw; and kick, bite, punch, choke, burn, or physically attack) was used to create a dichotomous variable (yes, no) to represent endorsement of any frequency of childhood physical abuse.

Analysis

Participants missing at least half of the items from each measure were excluded from analysis for that measure. For participants missing less than half of the items from a particular measure, mean imputation was used on an item-by-item basis. Data were not imputed for the CEX questionnaire.

To determine whether there was a significant difference between genders, the Chi-square test for dichotomous data (MDD, GAD, PTSD, and childhood sexual and physical abuse) and analysis of variance (ANOVA) for continuous data (somatic symptoms, chronic pain) were used. To evaluate the potential for sociodemographic differences between genders to confound the results, Chi-square or ANOVAs, as appropriate, were performed. If any sociodemographic variables significantly differed by gender, logistic regression (MDD, GAD, PTSD, and childhood sexual or physical abuse) or multiple linear regression (somatic symptoms and chronic pain) was run to determine if controlling for these variables affected results. Statistical significance was set at $p < 0.05$. StataIC 13 (StataCorp, College Station, TX) was used to conduct analyses.

RESULTS

There were 648 participants who met the inclusion criteria. Most participants were male (84.7%) and

most (91%) were Veterans (see Table 1 for further demographics). Females had significantly higher severity of somatic symptoms ($p < 0.001$) and chronic pain ($p = 0.002$) compared to males (see Table 2). Significantly more females had probable PTSD than males ($p = 0.049$). While significantly more females reported having experienced childhood sexual abuse than males (46.2% vs. 13.5%; $p < 0.001$), both genders reported a similarly high prevalence of childhood physical abuse (males = 70.8%; females = 70.1%). Regarding

Table 1. Cohort characteristics

Variable	Overall	Male	Female	χ (*df*) or F (*df*)	*p*
Gender	648	549 (84.7%)	99 (15.3%)	–	
Age	44.1 (11.1)	43.9 (11.1)	45.3 (11.1)	$F_{1,646} = 1.32$	0.25
Marital status				χ(1) = 0.805	0.37
Married or common-law	347 (55.8%)	298 (56.5%)	49 (51.6%)		
Single, separated, divorced, or widowed	275 (44.2%)	229 (43.5%)	46 (48.4%)		
Education				χ(1) = 8.330	0.04
< High school	56 (8.8%)	53 (9.8%)	3 (3.1%)		
High school	185 (29.0%)	160 (29.6%)	25 (25.5%)		
Some post-secondary	170 (26.7%)	145 (26.9%)	25 (25.5%)		
Post-secondary	227 (35.6)	182 (33.7%)	45 (45.9%)		
Member type				χ(1) = 0.001	0.974
Veteran	586 (91.0%)	496 (91.0%)	90 (90.9%)		
Currently serving	58 (9.0%)	49 (9.0%)	9 (9.1%)		
Years in military	14.4 (10.5)	14.4 (10.5)	14.4 (10.5)	$F_{1,646} < 0.01$	0.956
Number of deployments	2.5 (5.1)	2.7 (5.3)	1.3 (3.7)	$F_{1,642} = 6.03$	0.014

Data are mean (SD) or *n* (%).

Some variables have missing data so their totals do not add to *N* = 648.

df = degrees of freedom.

Table 2. Sex differences in mental health conditions and childhood experiences among treatment-seeking Veterans and CAF personnel

Variable	Overall	Male	Female	χ (*df*) or F (*df*)	*p*
PHQ-15	13.9 (5.0)	13.6 (4.9)	15.7 (5.2)	$F_{1,638} = 14.42$	< 0.001
MDD				χ(1) = 1.01	0.314
No MDD	177 (27.7%)	154 (28.4%)	23 (23.5%)		
MDD	463 (72.3%)	388 (71.6%)	75 (76.5%)		
GAD				χ(1) = 0.45	0.502
No GAD	188 (29.4%)	162 (29.9%)	26 (26.5%)		
GAD	452 (70.6%)	380 (70.1%)	72 (73.5%)		
PTSD				χ(1) = 3.88	0.049
No PTSD	133 (21.5%)	120 (22.9%)	13 (13.8%)		
PTSD	485 (78.5%)	404 (77.1%)	81 (86.2%)		
Pain severity	4.9 (2.3)	4.7 (2.3)	5.7 (2.1)	$F_{1,399} = 9.43$	0.002
Childhood sexual abuse				χ(1) = 47.44	< 0.001
No	428 (81.7%)	386 (86.6%)	42 (53.9%)		
Yes	96 (18.3%)	60 (13.5%)	36 (46.2%)		
Childhood physical abuse				χ(1) = 0.01	0.907
No	153 (29.3%)	130 (29.2%)	23 (29.9%)		
Yes	369 (70.7%)	315 (70.8%)	54 (70.1%)		

Data are mean (SD) or *n* (%).

CAF = Canadian Armed Forces; *df* = degrees of freedom; GAD = generalized anxiety disorder, MDD = major depressive disorder, PHQ = patient health questionnaire, PTSD = posttraumatic stress disorder.

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sociodemographic differences between men and women, women had higher levels of education ($p = 0.04$) and significantly fewer deployments ($p = 0.014$).

When controlling for education level and number of deployments, it was found those with less than a high school education had significantly more severe somatic symptoms and had a significantly higher risk for probable GAD and PTSD. Having more deployments was also significantly associated with having probable PTSD. Despite these associations, when controlling for education level and number of deployments, there was no change in prior results. The association between gender and somatic symptom severity ($F_{5,622} = 4.39$; $p < 0.001$), PTSD diagnosis (χ (5) = 6.63; $p = 0.25$), pain severity ($F_{5,386} = 5.11$; $p < 0.001$), and childhood sexual abuse (χ (5) = 44.75; $p < 0.001$) remained significant.

DISCUSSION

Among the treatment-seeking cohort, a significantly greater percentage of women had probable PTSD compared to men (86.2% vs. 77.1%, respectively); there was no statistically significant difference in prevalence of probable MDD or GAD. These results oppose a number of previous studies reporting similar rates of PTSD between genders, with women at increased risk for depression and anxiety.[7] This discrepancy is likely attributable to differences between sample characteristics, emphasizing the importance of including treatment-seeking cohorts. Despite the existence of equal – or differing – risks for males and females based on research conducted using predominantly healthy military personnel, results suggest the clinical presentation of mentally ill Veterans may be inherently different. Here, the finding of greater rates of probable PTSD among women may be particularly insightful given the high prevalence of mental disorders among those seeking treatment for military-related OSIs.[27]

Women in this study were also found to have higher rates of somatic symptoms and more chronic pain than men, suggesting a greater burden of illness related to physical comorbidities. The existence of health-related symptoms above and beyond mental health conditions can complicate the course of treatment, particularly in the presence of multiple psychiatric comorbidities – which is often the case among treatment-seeking Veterans and CAF personnel.[27] As such, treatment providers should be versed in evidence-based approaches suitable for addressing a conglomerate of mental and physical health symptoms (i.e., use of Cognitive Behavioral Therapy for comorbid pain and PTSD).[28] This may be particularly pertinent for treating women with military service.

Nearly half the women in this study reported childhood sexual abuse, and both sexes reported nearly identical rates of childhood physical abuse (71%). The prevalence of physical abuse for both genders in the sample is high compared to previous research. To illustrate, in their study of inpatient U.S. Veterans with psychiatric conditions, Koola et al.[29] found that only 12% of men and 22% of women reported a history of childhood physical abuse. Previous research has reported comparable rates of childhood sexual abuse among female military personnel and Veterans and demonstrated higher rates of childhood sexual abuse for military compared to civilian women.[30–32] For example, Shultz et al. found that 48.6% of female Veterans enrolled in a Veteran's Affairs (VA) medical clinic endorsed instances of childhood sexual abuse.[30] The high prevalence of childhood sexual abuse in this sample, and others, likely reflects the increased incidence of childhood sexual abuse for female Veterans in general. For example, in their large, population-based survey, McCauley et al.[33] found that almost one quarter (24%) of female Veterans reported being touched sexually as children, compared to only 14% of civilian women – and this study did not exclusively focus on treatment-seekers. There is also some evidence to suggest that childhood sexual abuse experienced by female Veterans may be more severe in nature. Compared to civilian women, Schultz et al.[30] found that Veterans reported more frequent childhood sexual abuse from a parental figure and longer durations of childhood sexual abuse, and experienced significantly greater severity of adult sexual victimization. The impact of childhood trauma, such as childhood sexual and physical abuse, has implications for the development of subsequent mental health conditions, increasing the risk of depression, anxiety, PTSD, suicide risk, and substance misuse.[34–36] For example, regardless of other index trauma, childhood sexual abuse survivors are five times more likely to develop PTSD than those who do not report childhood sexual abuse.[37]

The current study had a number of limitations worth noting. Data were self-reported, cross-sectional, and included both Veterans and serving military personnel. Although previous research showed questionnaires such as the PCL-5 and PCL-9 to be valid and reliable screeners for mental health conditions such as PTSD[22] and depression,[19] respectively, the diagnoses

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in this study were not confirmed by a licensed clinical professional. As in previous research, the number of women was disproportionally lower than the number of men. Nevertheless, to the knowledge of the authors, this study is the first to evaluate gender differences in clinical presentation among treatment-seeking Veterans and CAF members.

Future research will benefit from including additional variables, such as nature of military trauma, in order to better understand – and mitigate the risk of – operational stress and mental health diagnoses. Such research is particularly imperative among women given their seemingly higher proclivity for developing certain mental and physical health symptoms. It is unclear from the current study whether some military traumas were more prevalent among women seeking treatment, or whether military-sustained traumatic events impacted symptom severity differently (e.g., deployment-replayed events vs. on-base events such as military sexual assault). It is also unknown how military trauma, in conjunction with mental and physical health diagnoses, severity, and comorbidity, affect treatment efficacy and refraction. In this vein, continued research, specifically using treatment-seeking samples, is warranted.

As the number of women involved in Canadian military operations continues to increase,[38] so does the number of women seeking treatment for mental health conditions sustained as a result of their service, including PTSD, depression, and anxiety. These women have reported barriers to accessing mental health services, such as comfort with male clinicians and a lack of women-specific resources, such as therapeutic groups.[39] Of particular relevance to the results, women with PTSD and a history of sexual trauma are at higher risk of experiencing disparity in mental health care access and are less likely to be satisfied with their treatment services.[40,41] In the current study, women seeking treatment for military OSIs had a higher prevalence of probable PTSD, somatic symptoms, and chronic pain, and reported significantly more childhood sexual abuse. The needs of this historically under-studied population are unique and deserving of ample research attention.[42] A better understanding of gender-specific issues among those seeking treatment will help ensure equal recovery opportunities for both males and females.

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COMPETING INTERESTS

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CONTRIBUTORS

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Same-sex sexual violence in the military: A scoping review

Lauren R. Godier-McBard[a] and Michelle L. Jones[a,b]

ABSTRACT

Introduction: Sexual violence (SV) is a globally prevalent issue, and the majority of research focuses on the historical view of SV as an act perpetrated by men against women. Same-sex sexual violence (SSSV) incidents represent a small proportion of recorded sexual offences, and therefore prevalence and consequences of this have received little attention. Male-dominated occupations, such as the military, are associated with higher rates of SV and data points to a particular vulnerability to SSSV of male service personnel (SP). **Methods:** This review aims to map the literature pertaining to SSSV in the military. A comprehensive scoping review methodology was adopted, following a rigorous accepted framework. Four databases were searched for English language, peer-reviewed, original research papers that were focused on SSSV in the military context. **Results:** Eleven papers were identified that met the criteria for inclusion; 10 originated from the United States and one from South Korea. Themes identified included prevalence and nature of SSSV in the military, characteristics of survivors and perpetrators, barriers to reporting, and the outcomes associated with SSSV in the military. **Discussion:** The evidence that does exist suggests that male SP are particularly at risk of SSSV, and experience poorer psychological and social outcomes due to SSSV compared to female SP and those who experience opposite-sex sexual violence (OSSV). More research is required internationally to provide accurate and up-to-date estimates of prevalence, and to account for cultural and structural differences in military organizations.

Key words: hazing, initiation, military sexual violence, same-sex sexual violence, service personnel, sexual violence, SSSV, SSSV in the military

RÉSUMÉ

Introduction : La violence sexuelle (VS) est répandue dans le monde, mais la plupart des recherches adoptent la perspective historique de la VS selon laquelle il s'agit d'un acte de violence faite aux femmes par des hommes. Les incidents de violence sexuelle entre partenaires de même sexe (VSPMS) constituent une faible proportion des infractions sexuelles recensées, et leur prévalence et leurs conséquences sont peu explorées. Les professions exercées majoritairement par des hommes, comme c'est le cas des forces armées, sont liées à un taux plus élevé de VS, et les données laissent croire à une vulnérabilité particulière du personnel militaire (PM) de sexe masculin à la VSPMS. **Méthodologie :** La présente analyse visait à fouiller les publications sur la VSPMS dans les forces armées. Les chercheurs ont adopté la méthodologie d'analyse exploratoire détaillée proposée par Arksey et O'Malley (2005). Ils ont exploré quatre bases de données afin d'en extraire les articles de recherche originaux rédigés en anglais et dotés d'un comité de lecture sur la VSPMS dans le contexte militaire. **Résultats :** Les chercheurs ont retenu 11 articles qui respectaient les critères d'inclusion. Dix provenaient des États-Unis et un, de la Corée du Sud. Ces articles traitaient de la prévalence et de la nature de la VSPMS dans les forces armées, des caractéristiques des survivants et des agresseurs, des obstacles au signalement et des conséquences de la VSPMS dans les forces armées. **Discussion :** Selon les quelques données sur le sujet, le PM de sexe masculin est particulièrement vulnérable à la VSPMS et en subit des conséquences psychologiques et sociales plus marquées que le PM de sexe féminin et que les victimes de violence sexuelle entre partenaires de sexe opposé (VSPSO). Plus de recherches s'imposent sur la scène internationale pour obtenir une évaluation précise et à jour de la prévalence tout en tenant compte des différences culturelles et structurelles des organisations militaires.

Mots-clés : bizutage, initiation, personnel militaire, violence sexuelle, violence sexuelle chez les militaires, violence entre partenaires de même sexe, VSPMS, VSPMS dans les forces armées

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INTRODUCTION

The majority of the literature around military sexual violence (SV) has focused on the traditional victimization of women by men. However, reports of same-sex sexual violence (SSSV) in the form of hazing or initiation of new recruits, including physical and sexual abuse by superiors, has been the subject of international media interest in recent years.[1–3]

The World Health Organization (WHO) defines SV as "any sexual act, attempt to obtain a sexual act, unwanted sexual comments or advances, or acts to traffic, or otherwise directed, against a person's sexuality using coercion, by any person regardless of their relationship to the survivor, in any setting, including but not limited to home and work."[4] While international prevalence rates of SV are consistently found to be higher in women than men,[5,6] significant numbers of men are affected.[7] Although same-sex incidents represent a small proportion of recorded sex offences,[8] little research has been published on the prevalence and consequences of SSSV.

The act of physical and sexual aggression has been linked to hyper-masculinity.[9,10] Hyper-masculinity is defined by extreme adherence to the masculine gender role, including exaggeration of aggression and dominance,[11] and is associated with male-dominated occupations, such as the military. Research in the United States has found rates of SV to be higher in military compared to civilian populations,[12] and surveys of service personnel (SP) in the United Kingdom and Canada suggest highly sexualized military environments, characterized by misconduct ranging from sexual jokes and banter to sexual assault (SA).[13–15]

Masculine banter, including that of a sexual nature, and a general acceptance of this behaviour is evident in the military environment,[16,17] making it difficult for SP to report SV. Rates of official reporting are low compared to results from self-report questionnaires,[18,19] with SP reporting they are fearful of, or have experienced, negative consequences on their career.[13,14,17]

Surveys carried out in the U.S. military suggest that SSSV may be particularly prevalent for male SP. In the 2014 Military Workplace Study, while only 1% of all male SP reported any type of SA (compared to 5% of female SP), 70% of servicemen who had been sexually assaulted in the past year reported the perpetrator was of the same gender, compared to just 2% of women who experienced SV.[20] More recently, the U.S. Department of Defense (DoD)[21] reported 52% of servicemen and 8% of servicewomen who experienced SA in the past year had reported SSSV.

Survivors of SSSV are less likely to report incidents, compared to survivors of other sex sexual violence (OSSV), due to fear of not being believed, and historic cultural beliefs that SSSV does not occur.[22,23] SSSV has received little organizational or academic attention compared to OSSV. This scoping review aims to examine the international peer-reviewed literature pertaining to SSSV in the military, and to elucidate what is known about the prevalence and consequences for both the individuals affected and the military as a whole.

METHODOLOGY

A scoping methodology[24] was adopted for this review, as it suited the broad aim of examining the literature and gaps in research pertaining to SSSV in the military. The authors included peer-reviewed published literature of any experimental methodology and originating from any location. Arksey and O'Malley[24] provide a comprehensive five-stage framework, outlined below.

1. **Identifying a research question:** This should include the study population, any outcomes, exposure, or intervention. The research question was: What is known from the existing peer-reviewed literature about SSSV in the military? The authors included only the study population (military) and exposure (sexual violence) as part of this scoping review. The authors decided not to specify outcomes, due to interest in any evidence of prevalence, outcomes, causes and prevention/intervention strategies in the literature. The WHO definition of SV outlined in the introduction was used, due to the international focus of the review.[4]
2. **Identifying relevant studies:** The following databases were searched: EBSCO (including PsychInfo, PsychARTICLES, MedLine, CINAHL Plus), ProQuest Central (including ProQuest Military Collection, ProQuest Psychology Database, ProQuest Social Sciences Database, Proquest Public Health Database), Web of Science, Scopus, and PubMed. Search terms and Boolean phrases used are outlined in Table 1 and centred on variations of the key words 'same-sex', 'sexual violence' and 'military'.
3. **Study selection:** The initial database search returned 5,697 papers. Following exclusion of all papers other than peer-reviewed journal articles, 5,632 papers remained. Both authors reviewed the titles and abstracts of the papers based on the inclusion and exclusion criteria outlined in Table 2.

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Table 1. Search terms used to identify relevant studies

Key word	Search strings
Same-sex	'Male-on-male' OR 'female-on-female' OR 'same-sex' AND
Sexual violence	'Sexual harassment' OR 'sexual assault' OR 'sexual violence' OR 'rape' OR 'Military sexual trauma' AND
Military	'Military' OR 'Armed Forces' OR 'Army' OR 'Navy' OR 'Marine' OR 'Air Force' Or 'National Guard' OR 'Veteran'

Table 2. Inclusion and exclusion criteria for study selection

Inclusion criteria

- Main focus of the research on SSSV during military service (this could include full-time regular service personnel, part-time reserve or voluntary forces, and cadet forces)
- English only, peer reviewed research with no date or geographical limitations
- Original research using any methodology (e.g., empirical data, quantitative, qualitative, or any other using original research)

Exclusion criteria

- Research on other-sex (e.g., male-on-female or female-on-female) SV in the military
- Review papers that do not include original research (although these were used to check all research papers had been captured)
- Grey literature that has not been peer-reviewed (this was decided as the peer-review process ensures that the research identified is of a sufficient quality)

SSSV = same-sex sexual violence; SV = sexual violence.

Inclusion was based on the paper having a substantive focus on SSSV. Following a review of the titles and abstracts, 17 full text papers remained and were reviewed independently by both authors. Both authors read the full versions of each paper and categorized them as relevant, potentially relevant, or not relevant. Those deemed to be not relevant included papers that did not meet the full inclusion criteria. Those in the potentially relevant category included papers that mentioned SV within the military but did not have a substantive focus on this. Reference list and citation searches identified two additional papers. Eleven papers met the full inclusion criteria. Figure 1 shows the full scoping review process.

4. **Charting the data:** The following information was extracted and charted: title, author, year, journal, and location of research participants, study aim or objective, methodology type, outcome measures, and main results/findings.
5. **Collating, summarizing, and reporting the results:** The articles were read by both authors and data were summarized. Certain themes emerged across the 11 papers and the charted data is shown in Table 3. A summarized analysis of the 11 research papers are shown in the results section below.

RESULTS

Of the 11 papers included, one paper was published in 1984, with the remaining 10 papers published between 1999 and 2019. Ten papers originated from the United States and one from South Korea. Five papers reported quantitative methods, two studies used a mixed-methods approach, two were qualitative, and two reviewed patient case records. The terms of reference used within the papers reviewed included sexual harassment (SH), SA, SV, rape, and military sexual trauma. Table 4 shows the behaviours studied/definitions used for each study. Four papers included SH behaviours only, three papers included SA only, and four papers included both SH and SA.

The following four themes were identified: the prevalence and nature of SSSV in the military, characteristics of survivors and perpetrators, barriers to reporting, and the outcomes associated with SSSV in the military.

The prevalence and nature of SSSV in the military

Five papers reported on the prevalence of SSSV in the U.S. military using data from DoD surveys of SP. Four papers reported on data collected from all service branches (one from 1988, two from 1995, one from 2002), and one paper reported on data collected from army SP only (in 1990).[25–29] Respondents were asked about experiences of SH, and one study included SA (see Table 4). Prevalence rates were reported as a percentage of those who experienced an incident of SV in the past 12 months. Between 1988 and 2002, reports of SSSV across all service branches in those who experienced SV increased from 35% to 53% in male SP and remained at 1%–2% for female SP.[25–28] In the army-only sample in 1990, a 26.6% prevalence rate was reported among those who have experienced SV, but this was not split by gender.[29]

Interestingly, the study that included both SH and SA behaviours reported on the lower end of prevalence

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Table 3. Summary of research articles included in the review

Full journal reference	Location	Study population	Intervention (if any)	Aims of the study	Methodology	Outcome measures	Important results
Stockdale M, Visio M, Batra L. "The Sexual Harassment of Men: Evidence for a Broader Theory of Sexual Harassment and Sex Discrimination", *Psychology, Public Policy and Law,* 1999, Volume: 5, No: 3, p. 630–64	US	28,296 (5,924 men and 22,372 women) Army, Navy, Marine Corps, Air Force, Coast Guard military personnel who had 6 or more months of active duty. National Guard and Reserve components on active assignments of more than 179 days.	N/A	To address the following issues:	Analysis of the data from the Status of the Armed Forces Surveys: 1995 Form-B Gender Issues. Applied a social science framework on a law-based theory of sexual harassment by Franke (1997) to determine the prevalence of atypical forms of sexual harassment.	Scores on three validated questionnaires: Sexual Experiences Questionnaire, RAND's Health Survey, and the Organisational Commitment Questionnaire	Male personnel were almost twice as likely to experience same vs. other sex SV.
				• prevalence of SSSV in male vs. female personnel;		Respondents who indicated they had experienced at least one unwanted sexual experience completed additional items measuring the impact and coping strategies.	Behaviours comprised those that promote a male-dominated environment (display of sexual materials) and masculine superiority (sexual remarks and jokes).
				• forms of other- vs. SSSV against male personnel;			Same-sex targets were less likely to label their experiences as SV.
				• demographics of male personnel experiencing other vs. SSSV;			Same-sex targets were more likely to be younger, have less active duty experience, to be at the lowest pay grade, and unlikely to hold a supervisory position.
				• prevalence of other vs. SSSV in predominantly male or all-male work groups;			

(*Continued*)

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Table 3. (Continued)

Full journal reference	Location	Study population	Intervention (if any)	Aims of the study	Methodology	Outcome measures	Important results
				• consequences of other vs. SSSV in male personnel; • coping strategies for other vs. SSSV in male personnel.			
Magley V, Waldo C, Drasgow F, Fitzgerald L. "The Impact of Sexual Harassment on Military Personnel: Is it the same for Men and Women?", *Military Psychology*, 1999, Volume: 11. No: 3, p. 283–302	US	28,296 (5,924 men and 22,372 women) Army, Navy, Marine Corps, Air Force, Coast Guard military personnel who had 6 or more months of active duty. National Guard and Reserve components on active assignments of more than 179 days	N/A	To address the following issues:	Analysis of the data from the Status of the Armed Forces Surveys: 1995 Form B- Gender Issues	23 of the 26 Sexual Experiences Questionnaire items were used as a measure of sexual harassment.	Women were more likely than men to be sexually harassed.
				• the effects of SV for both male and female SP.		Demographic and military service history were recorded, alongside other categories such as physical health, psychological health, workplace characteristics, and work attitudes.	Over half of the male personnel responding to the incident section identified their offenders as male.
				• the incidence of SSSV.			Only 1.6% of women identified their offenders as female. Male personnel most commonly reported behaviours, such as a display of sexual materials, offensive jokes or stories, making crude or sexist remarks.

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Goyer P, Eddleman H. "Same-sex Rape of Non-incarcerated Men", *American Journal of Psychiatry*, Volume: 141, No: 4, 1984. p. 576–9	US	13 males aged 18 to 31yrs who were survivors of same-sex rape in the US Navy and Marine Corps	N/A	The aim of the study was to report on 13 cases of male-on-male sexual assault to provide information about this type of assault.	Examined 13 case records / psychiatric evaluations of patients who reported male-on-male sexual assault	Data recorded regarding age, time, and location of assault, sexual preference, number and status of attackers	Survivors of male-on-male sexual assault are also likely to experience professional and interpersonal problems.
						Statement from a referring physician, evaluation by the outpatient psychiatrist, a standardized patient self-report, additional information from the outpatient healthcare team	10 out of the 13 cases reviewed reported mood disturbances, 11 out of 13 reported difficulties with peer relationships, and 6 out of 13 reported subsequent sexual problems.
O' Brien C, Keith J, Shoemaker L. "Don't Tell: Military Culture and Male Rape", *Psychological Services*, Volume: 12, No: 4, 2015, p. 357–65	US	172 male and 158 female survivors of military sexual assault who attended either the residential or outpatient treatment at the VA Health Care System Centre for Sexual Trauma Services; 680 male survivors of combat and non-Military Sexual Trauma (MST) PTSD trauma	N/A; However, recommendations are made for future clinical treatment programs	To examine whether male rape myths and related beliefs that arise from cultural norms are amplified and modified by military culture	A review of the literature regarding military culture and male sexual assault. Draws upon the clinical experiences of the authors	Pre-treatment data included demographics, treatment, military and legal history and Minnesota Multiphasic Personality Inventory (MMPI) -2 personality inventory	The examination of the literature and author's clinical experiences revealed that military culture amplifies beliefs and myths about male rape that enhances stigma and creates barriers for MST survivors to seek help.
					Preliminary analysis of data collected from 172 male and 158 female survivors of MST who attended a residential or outpatient treatment program, and 680 male survivors of combat and non-MST PTSD trauma		Male survivors show significantly higher mean elevations than female survivors on MMPI-2 scales for Psychopathic Deviate, Paranoia, Psych asthenia, Schizophrenia, and Hypomania.

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Table 3. (Continued)

Full journal reference	Location	Study population	Intervention (if any)	Aims of the study	Methodology	Outcome measures	Important results
DuBois C., Knapp DE, Faley RH, Kustis GA. "An empirical examination of same- and other-gender sexual harassment in the workplace." *Sex Roles,* Volume: 39, No: 9–10, 1998, p. 731–49	US	6,669 (5,312 female, 1,357 male) active duty military personnel from the Army, Navy, Air Force, Marine Corps and Coast Guard who had been the target of SV at work in the past 12 months	N/A	To investigate same- and other-gender SV using a four-component conceptual model proposed by Fitzgerald et al. (1997)	Analysis of the data from the 1988 Department of Defense Survey for Sex Roles in the Active Duty Military using four components of the Fitzgerald et al. (1997 model – SV, personal vulnerability, target response styles, and consequences of the SV for the target)	Survey data looking at types of SV behaviours, perpetrator characteristics compared to survivor, survivor responses to SV, impact of SV on survivors	Only 1% of female survivors report being harassed by other females. 35% of male survivors report being harassed by other males.
							Male survivors of SSSV experience significantly more pervasive and severe consequences than male survivors of OSSV.
Kwon I, Lee D, Kim E, Kim H. "Sexual Violence among Men in the Military in South Korea", *Journal of Interpersonal Violence,* Volume: 22, No: 8, 2007, p. 1024–42	South Korea	671 South Korean Military personnel, including serving and ex-serving personnel	N/A	To investigate the frequencies, causes, circumstances, and characteristics of SV among men in the South Korean military	A survey was distributed to 671 people across two groups; current conscripts and post-conscripts who left the military less than 3 years ago.	Survey data looking at perpetrator's ranking, location of SV act, context of act, types of abuse, and reason for abuse	There was a high frequency (15.4%) of physical SV.
					8 in-depth interviews were completed with perpetrators and 3 interviews with survivors. Treatment notes for 6 survivors were also reviewed.		81.7% of perpetrators had been survivors themselves (n = 39).

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							SV was used as a tool to control hierarchy and create certain masculinities. Soldiers did not trust the reporting mechanisms which either criticize or ignore survivors.
Settles I, Buchanan N, Yap S, Harrell Z. "Sex Differences in Outcomes and Harasser Characteristics Associated with Frightening Sexual Harassment Appraisals", *Journal of Occupational Health Psychology*, Volume: 19, No: 2, 2014, p. 133–42	US	US Military personnel (1,764 men and 4,540 women) who had an SV experience in the previous 12 months	N/A	To determine:	Analysis of pre-existing publicly available data obtained from the Sexual Experiences Questionnaire using a model of moderated mediation	Association between perpetrator characteristics (sex and rank) and the three psychological/ job outcomes (psychological stress, role limitations, and work satisfaction)	Frightening appraisals mediated the relationship between perpetrator rank and all outcomes for both sexes. Frightening appraisals mediated the relationship between perpetrator sex and outcomes for women only.
				• whether appraisals of SV as frightening mediate the relationship between perpetrator characteristics (sex & rank) and 3 psychological / job outcomes (psychological distress, role limitations, and work satisfaction); and			Having a male or higher status perpetrator was more strongly related to frightening appraisals for men than women.
				• whether these relationships were stronger for women.			The relationship between frightening appraisals and more psychological distress, role limitations, and less work satisfaction were stronger for men than women.

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Table 3. (Continued)

Full journal reference	Location	Study population	Intervention (if any)	Aims of the study	Methodology	Outcome measures	Important results
Leskela J, Dieperink M, Kok C. "Group Treatment with Sexually Assaulted Survivors: A Year in Review", *Journal of the Eastern Group Psychotherapy Society,* 2001, Volume: 25, No: 4, p. 303–20	US	7 male ex-service personnel who had taken part in a treatment group for sexually assaulted men	Treatment group for sexually assaulted male Veterans was developed for high-functioning outpatients	To describe the ongoing process group developed for Veterans who are survivors of SV and the understanding of male military rape developed during this process	Narrative description the development of the treatment group over a year, the effect of the group on participants and the understanding of male military rape gained during the process	N/A	The men in the group discussed:
			The process-oriented psychotherapy group was designed to help members understand the effects of sexual trauma on their functioning, decrease psychiatric symptoms, and to improve current levels of functioning.				• how difficult it was to seek treatment
							• feelings of shame and fear that they would not be believed • fear of retaliation and physical harm as a result of reporting rape • hyper-heterosexuality, homophobia, and externalizing anger in response to being violently gang raped

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								• conflicting sexual orientation and internalizing of anger when psychologically coerced into unwanted sexual relations
Faley RH, Knapp DE, Kustis GA, Dubois C, Young J, Polin B. "Estimating the Organizational Costs of Same-sex Sexual Harassment", *International Journal of Intercultural Relations,* 2006, Volume: 30, p. 557–77	US	2,079 active duty Army personnel (1,600 males and 479 females) who reported an experience of SV at work in the past 12 months	N/A		This study aimed to estimate the organizational costs of SSSV within the Army gathered as part of a large-scale survey.	Analyzed data from the DoD Survey of Sex roles in the Active Duty Military (1990). An integrated costing model was applied to each of the 554 survey respondents who reported a member of their own sex had harassed them in the past 12 months	Costs in the following categories estimated and summed: • productivity-related costs • incident costs • absenteeism costs • administrative costs • separation costs • replacement costs • transfer costs • other costs	The aggregate total cost annually (in dollars) of SSSV in the US Army's workplace was estimated to be over US$95,000,000. This is likely to be underestimated due to conservative estimates and excluded costs.

US = United States; SV = sexual violence; SSSV = same-sex sexual violence; MST = military sexual trauma; PTSD = posttraumatic stress disorder.

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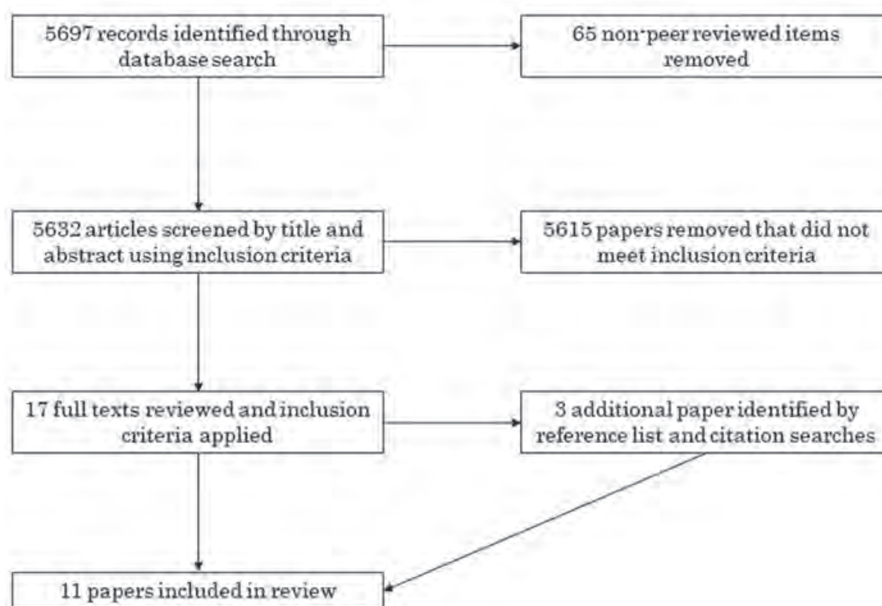

Figure 1. Study selection process

rates (35% males, 1% females).[25] The absolute number of SP reporting military SSSV was available for 1995 and 2002 only (i.e., as a proportion of the entire sample).[26–28] This suggested that between 10.1% and 13.2% of male SP and 1.1%–7.1% of female SP had experienced SSSV in the past 12 months.[26–28] A study with former reservists[30] collected responses to the DoD Sexual Experiences Questionnaire[31] via telephone interview. This study found that a higher proportion of male versus female former reservists who experienced SH in the past 12 months reported SSSV (78% vs. 12%, respectively). In U.S. treatment-seeking Veterans,[32] a much lower prevalence rate of SSSV (0.5%) was reported. However, this study did not include incidents of SH, and did not report on female experiences of SSSV.

U.S. males SP experiencing SSSV were more likely to report behaviours associated with sexual hostility and masculine superiority (rape, sexist, and crude remarks, display of offensive sexual material) compared to male SP experiencing OSSV.[25,26,28] No differences were reported in the types of behaviours associated between SSSV and OSSV in female SP.

A qualitative study of U.S. male Veterans[33] reported on experiences of OSSV and SSSV, including SH and SA behaviours. SSSV behaviours included male higher-ranked perpetrators making unwanted sexual advances, gang rape by male peers as part of initiation/hazing, and SA by a male mentor. OSSV behaviours included sexual coercion by higher-ranked women, and threats of a SA accusation if they did not comply with advances by similarly ranked women.

A survey of 671 male SP from the South Korean military[34] found a high frequency of SSSV at any time during military service (SH or SA: 15.4%), with 83.5% of SSSV survivors reporting an incident on two or more occasions.[34] The most common type of SV experienced involved inappropriate touching, including forceful hugging (41.2%), and touching the chest/buttocks (33.5%) or the genitals (12.9%). There were no reports of OSSV in this sample.

Characteristics of survivors and perpetrators

Two papers reporting DoD data found that male SP who experienced SSSV were more likely to be younger, at a lower pay grade and of a lower rank than their perpetrators compared to those who experienced OSSV.[25,28] Male SP who experienced SSSV were more likely to work in male-dominated environments than those who reported OSSV.[28] No significant difference was found in perpetrator characteristics for female SP who experienced SSSV compared to OSSV.[25]

Perpetrators were also reported to be of a higher rank in 81.2% of male SP who experienced SSSV in the South Korean sample.[34] Furthermore, SP who experienced SSSV were described by survey respondents in submissive terms, as "cute" or "submissive." Interestingly, 56% of SP who experienced SSSV in this sample

Table 4. Behaviours studied/definitions used for each study

Study	Behaviour studied/definition used	Time frame
Goyer et al. (1984)[32]	Male-on-male sexual assault as recorded in psychiatric evaluations by clinicians	Anytime while serving
DuBois et al. (1998)[25]	DoD Survey of Sex Roles: Nine specific types of uninvited, unwanted, sexual attention: (1) whistles, calls, hoots, or yells; (2) sexual teasing, jokes, remarks, or questions; (3) sexually suggestive looks, gestures, or body language; (4) letters, telephone calls, or materials of a sexual nature; (5) pressure for dates; (6) sexual touching, cornering, pinching, or brushing against; (7) attempts to promote participation in sexually oriented activities; (8) pressure for sexual favours; and (9) actual or attempted rape or sexual assault	Past 12 months
Magley et al. (1999)[26]	Twenty-three items from the Sexual Experiences Questionnaire (Fitzgerald, 1988) that fell into four broad categories of sexual harassment: sexist hostility, sexual hostility, unwanted sexual attention, sexual coercion	Past 12 months
Stockdale et al. (1999)[28]	Twenty-five items from the Sexual Experiences Questionnaire (Fitzgerald, 1988) that fell into four broad categories of sexual harassment: sexist hostility, sexual hostility, unwanted sexual attention, sexual coercion	Past 12 months
Leskela et al. (2001)[35]	Male-on-male sexual assault as self-reported reported by survivors in treatment	Anytime while serving
Faley et al. (2006)[29]	DoD Survey of Sex Roles: included respondents who reported uninvited and/ or unwanted sexual attention from someone at work while serving in the active duty military	Past 12 months
Street et al. (2007)[30]	Twenty-four items from the Sexual Experiences Questionnaire (Fitzgerald, 1999)[31] that fell into four broad categories of sexual harassment: sexist hostility, sexual hostility, unwanted sexual attention, sexual coercion	Past 12 months
Kwon et al. (2007)[34]	Korean Sexual Violence Relief Center (2003) definition used: a forceful sexual act, committed against the consent of an individual, including verbal, physical, and psychological violence	Anytime while serving
Settles et al. (2014)[27]	Twenty-four items from the Sexual Experiences Questionnaire (Fitzgerald, 1999)[31] that fell into four broad categories of sexual harassment: sexist hostility, sexual hostility, unwanted sexual attention, sexual coercion	Past 12 months
O'Brien et al. (2015)[37]	Self-reported sexual assault as reported by survivors in treatment	Anytime while serving
Monteith et al. (2019)[33]	Self-reported sexual harassment (i.e., uninvited and unwanted sexual attention, such as touching, cornering, pressure for sexual favours, or inappropriate verbal remarks), or sexual assault (i.e., other individual[s] using force or the threat of force to have sexual contact with them against their will)	Anytime while serving

also reported perpetrating this behaviour. Of those who perpetrated SSSV, 83% reported being victims of SSSV when they were of a lower rank.

In U.S. treatment-seeking male Veterans (n = 7), some survivors of male-on-male SA (four of seven participants) were also survivors of childhood sexual abuse (CSA),[35] supporting previous research that shows repeated victimization is common in SP who have experienced CSA.[36]

Barriers to reporting

Six of the papers reported on barriers to reporting military SSSV. DoD survey data[26] suggests that male SPs who experience SSSV (compared to OSSV) were less likely to take formal action, due to concerns it would make their work situation unpleasant, fear of being labelled a troublemaker, not knowing what action to take, and believing nothing would be done.[25] Male SP who experience SSSV (compared to OSSV) were also less likely to recognize their experience as SV.[28] Barriers to reporting were not reported for female SP in these studies.

U.S. treatment-seeking Veterans report barriers to reporting SSSV, including fears of being punished, negative consequences for their careers, and not being believed by their superiors.[35,37] In one study,[35] none of the male Veterans reported their assault, and felt the focus on female survivors of military SV made it difficult

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for them to take formal action. Male Veterans felt that male rape myths (e.g., males cannot be raped, male rape survivors are homosexual) were amplified by a hyper-masculine military culture and were scared of being victimized further by reporting their assault.[35,37] This is supported by a qualitative study of male Veterans,[33] in which barriers to reporting also included male rape myths, fear of being labelled as gay, and fear of discharge from the military as a result of the "Don't Ask, Don't Tell" policy of the U.S. military. In the South Korean sample,[34] similar fears of not being believed, a lack of faith in the reporting system, and feeling unable to confront superiors were reported.

Outcomes and consequences of SSSV

U.S. DoD surveys[26,29] found male SP who report SSSV (compared to OSSV) reported significantly higher emotional and physical health concerns. No differences in health outcomes were found for women dependent on perpetrator gender. However, female SP who self-report SSSV were found to have a more negative attitude toward their own gender compared to male SP.

Poor psychosocial outcomes were associated with treatment-seeking male Veteran SSSV survivors,[32,35,37] with two papers reporting males experienced increased psychological symptoms as compared to females.[35,37] Additionally, it was suggested male survivors of SSSV are more likely than females to question their gender identity, leading to hypersexual, hypermasculine behaviours.[35] This is supported by a qualitative study of male U.S. Veterans,[33] that found those who experienced SSSV reported negative attitudes toward gay men following the incident (homophobia) and increased displays of masculinity to prove their heterosexuality.

Four papers highlighted that SP who have experienced military SSSV are more likely to be unsatisfied with their jobs and want to leave the military,[25,26,28,29] which has the potential to impact retention and operational readiness for the military organization. The impact of SSSV on job satisfaction was found to be higher in male compared to female SP.[25] The total annual cost of SSSV in the U.S. Army was estimated to be over US$95,000,000.[29]

DISCUSSION

This scoping review aimed to outline what is known about SSSV within the military from existing peer-reviewed literature. The identified themes outlined what is known about the prevalence and nature of military SSSV, characteristics of survivors and perpetrators, barriers to reporting and the impact on the individual and military organization. Most papers focused on male survivors of military SSSV and tended to emphasize the detrimental impact on males compared to females and survivors of OSSV, both in terms of prevalence and outcomes. Comparisons between SSSV and OSSV were inconsistent across papers but are highlighted where possible.

Large-scale U.S. survey data indicated that, while female SP were more likely to experience SV in general, male SP were more likely to report SSSV (10.1%–13.2% of male SP, and 1.1%–7.1% of female SP).[25–28] This is supported by RAND and DoD survey data[20,21] which reports higher rates of SSSV in male compared to female SP in those reporting any incident of SV (RAND: 70% vs. 2%; DoD: 52% vs. 8%). This is in line with SSSV prevalence rates in the civilian population, which suggest men are proportionately more likely than women to experience SSSV.[6,38,39] Significant variation was seen in the prevalence of SSSV, and an increase over time in male SPs reporting SSSV was noted in the DoD survey data.[25–28] This variation is likely due to differences in the samples and procedures used (see Limitations section). While this significantly limits comparison across studies, higher rates of SSSV in male compared to female SP was a consistent result in studies that made this comparison.

The SSSV behaviours reported by male SP were more often in line with what could be considered hazing/initiation, compared to those reported for OSSV.[25,26,28,34] Indeed, the hazing/initiation of new recruits is often reported in the military context and includes using both physical and sexual abuse to assert hierarchy.[20,34] SP may not acknowledge hazing as an act of violence or may feel too intimidated to make a complaint. Interestingly, no difference was found in the type of behaviours reported for SSSV versus OSSV in women SP.[26–28] This may be due to the low levels of SSSV reported in women, which does not allow for meaningful comparison within the sample.

The reviewed research found that perpetrators of military SSSV were often of a higher rank than their victims.[25,28,34] which may impact the likelihood that incidents are formally reported.[34] Indeed, barriers to reporting commonly included fear of not being believed or experiencing negative consequences for their career, and a lack of faith in the reporting system.[25,28,34,35] These barriers are also seen in those reporting OSSV in the military.[13,14] For male SP who experienced SSSV,

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barriers to reporting also included stigma associated with male rape and fear of being perceived as weak, feminine or homosexual.[33,37] These findings suggest that SSSV, particularly for male SP, may be used to assert the hierarchical and hyper-masculine culture inherent in the military, creating an environment in which incidents of SV are unrecognized and unreported. This is supported by assertions from perpetrators in the South Korean sample,[34] within which SV was described as a mechanism to control others. Perpetrators referred to victims in a feminizing manner (i.e., "cute" or "submissive"), and victims described the right of higher-ranking officials to treat lower ranks as they pleased.

Male survivors of SSSV were suggested by some papers to experience increased emotional and physical health concerns compared to female survivors of SSSV, and survivors of OSSV.[25–27,35] Furthermore, male survivors of SSSV report questioning their sexual and gender identity,[25,34,35,37] as well as increased negative attitudes toward gay men and displays of heterosexuality.[33] This may relate to the pervasive nature of male rape myths reported in the military environment (e.g., that "real" men are not raped, that male survivors must be homosexual),[37,39] which may lead male survivors of SSSV to compensate with hypermasculine behaviours.[33]

The nature of the military environment means survivors of SV may continue to work alongside the perpetrator. Indeed, affected SP reported feeling uncomfortable at work, and losing respect for their colleagues.[25,26,28] This may affect unit cohesion and operational readiness, leading to a costly retention issue for the military.[29]

Limitations

Some limitations are of note. Only 3 of 11 papers were published in the past decade, limiting the relevance of the data, and highlighting the need for up-to-date academic research. The papers were predominantly from the United States, limiting the generalizability of the results. Importantly, the method and procedures used across studies varied significantly. The samples were not consistent in their inclusion of current and ex-serving personnel, or specific service branches. This distinction is important, as barriers to reporting while serving may lead to an underestimation of the problem. Most Veteran samples were limited to those who had sought formal help, and as such, results cannot be generalized to SSSV survivors who have not sought help. There was also inconsistency in the inclusion of both genders, with four papers including only male SP. Conversely, some studies purposefully oversampled female SP, as they are proportionately more likely to experience SV. This inconsistency limits the ability to compare the prevalence, response, and outcomes of SSSV by gender. Finally, there was variance in the inclusivity of SV behaviours (i.e., SH and/or SA) (Table 4), making comparison difficult across studies. As a scoping review, this article seeks to provide an overview of the available literature in the area, rather than an in-depth comparative analysis. Implications for research, policy and practice are shown in Table 5 and discussed below.

Table 5. Implications for research, policy, and practice

Implications for research

- There is limited research internationally looking at the prevalence, outcomes, and responses to SSSV in the military.
- The majority of the published research on military SSSV comes from the US, limiting the generalizability of the findings. More research is required internationally to account for cultural and structural differences in military organizations.
- Estimated SSSV prevalence rates are dated and limited by barriers to reporting, including pervasive male-rape myths and fear of negative consequences on career.
- The evidence that does exist suggests that male SP are particularly at risk of SSSV, and experience poorer social outcomes compared to female victims of SSSV.
- There is inconsistency in investigating SH vs. SA in the literature. Future research should focus on the full breadth of SSSV behaviour, including those that constitute SH and SA.

Implications for policy and practice

- The gender difference in experience of SSSV prevalence in the military (i.e., male SP are more likely to experience SSSV) needs to be taken into account when considering their support needs. Male-specific treatment programs may be required, as well as an understanding of the military context by healthcare professionals.
- The military should provide a clear definition of what constitutes sexual violence, to ensure SP recognize this in distinction to so called hazing rituals and masculinized banter.
- Reporting mechanisms for sexual violence should be made clear by the military organization, and efforts made to ensure that SP are not adversely affected by reporting sexual violence.
- The geographical limitations of the research limit the ability to generalize policy and practice implications outside of the US.

SSSV = same-sex sexual violence; SP = service personnel; SH = sexual harassment; SA = sexual assault.

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Implications for research

There is a significant lack of accurate and up-to-date prevalence rates for SSSV in military organizations internationally. Several of the estimates provided were significantly out of date and limited predominantly to the U.S. context. Accurate prevalence rates broken down by SH versus SA behaviours will be imperative to ascertain the scale of the problem and begin to tackle this issue.

The experience and outcomes of military SSSV focused predominantly on heterosexual males. Considering the rise in the number of women entering the military, and the recent inclusion of LGBTQ+ SP in many westernized militaries, it will be important for future research to consider the differential effects of SSSV for female and LGBTQ+ SP. Indeed, women and LGBTQ+ SP are more likely to experience military SV in general.[40]

Implications for policy and practice

The literature reviewed suggests that male SP are more likely to experience SSSV and may report greater health concerns than female SP. As such, this gender difference needs to be considered when discussing the support needs of survivors. Clinicians need to consider that the support needs of SSSV survivors, particularly male survivors, may be distinct from those of OSSV survivors. The papers reviewed emphasized the need for practitioners to understand both the military and gender-specific context, and gender-specific support services were suggested.[37]

The military need to ensure that definitions around SV, including SSSV, are understood and acknowledged as illegal acts rather than hazing rituals, with the same level of consequences for both.[20] Reporting mechanisms should be clear and understood across the rank structure. Greater knowledge of SSSV and the negative impact of male rape myths may help to increase reporting rates. Furthermore, the military should ensure that SP are not adversely affected when reporting SV, particularly if the perpetrator is of a higher rank.

Conclusion

There is a paucity of international research regarding SSSV in the military. The existing small literature base suggests that, while female SP are most at risk of experiencing SV in general, male SP are proportionately more likely to experience SSSV (compared to female SP and compared to OSSV). Furthermore, the psychosocial impact of SSSV may be emphasized in male compared to female SP. Research looking at the impact on military organizations suggests huge annual costs, and the potential to impact operational readiness and retention. However, the available evidence is dated and predominantly U.S.-based. Further research is required internationally to fully understand the impact on the individual and the military, and to inform policy and practice in tackling this issue.

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CONTRIBUTORS

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REVIEW

Are we family? A scoping review of how military families are defined in mental health and substance use research

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ABSTRACT

Introduction: While some families may experience poor mental health, substance use, and poor school performance due to service life, the usefulness and applicability of these research findings may be affected by how representative study participants are of the broader population. This article aims to examine how research on mental health and substance use defines a "military family" to understand if the current body of evidence reflects the increasing diversity of this population. **Methods:** A systematic search of academic articles was conducted in Ovid MEDLINE, Ovid Embase, Ovid PsycINFO, Ebsco CINAHL and ProQuest PILOTS using database-specific subject headings and keyword searches for 'military', 'family', 'mental health' and 'substance use'. Sociodemographic and military characteristics of study participants were extracted to identify who was and was not included. **Results:** The most commonly represented family structure was the traditional, heteronormative family comprised of a male service member married to a female civilian with whom they have children. Military couples without children, dual-serving couples, families of LGBTQ personnel, unmarried and new relationships, single parents, male spouses/partners, Veterans not seeking Veterans Affairs (VA) services, and families with additional challenges were regularly not reflected in the research due to implicit or explicit exclusion from studies. **Discussion:** Research on mental health and substance use among the family members of service personnel continues to reflect the traditional, heteronormative family. Future studies should consider more inclusive definitions of family and creative approaches to recruitment to ensure research in this area reflects the experiences, needs, and strengths of an increasingly diverse military community.

Key words: adolescent, child, children of service members, LGBTQ, military families, military partner, military spouse, military-connected children, mental health, substance use

RÉSUMÉ

Introduction : Certaines familles sont aux prises avec des troubles de santé mentale, une consommation de substances psychoactives et une piètre performance scolaire en raison de la vie militaire, mais l'utilité et la pertinence des recherches pourraient pâtir de la représentativité de leurs participants dans l'ensemble de la population. La présente analyse vise à établir la définition de « famille des militaires » qui est utilisée dans les recherches sur la santé mentale et la consommation de substances psychoactives pour comprendre si l'ensemble de preuves reflète la diversité croissante de cette population. **Méthodologie :** Les chercheurs ont réalisé une recherche systématique d'articles universitaires dans Ovid MEDLINE, Ovid Embase, Ovid PsycINFO, Ebsco CINAHL et ProQuest PILOTS au moyen des vedettes-matières propres aux bases de données et des mots-clés *military*, *family*, *mental health* et *substance use*. Ils ont extrait les caractéristiques sociodémographiques et militaires des participants à l'étude pour établir qui était inclus et qui ne l'était pas. **Résultats :** La famille hétéronormative traditionnelle, composée d'un militaire marié à une civile avec qui il a des enfants, était la

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structure familiale la plus représentée. Les couples de militaires sans enfants, les couples de deux militaires, les familles LGBTQ, les célibataires et les nouvelles relations, les parents monoparentaux, les époux ou conjoints de sexe masculin, les vétérans ne recourant pas aux services d'Anciens Combattants Canada et les familles qui affrontaient des défis particuliers ne faisaient généralement pas partie des recherches en raison des critères d'exclusion implicites ou explicites des études. **Discussion :** Les recherches sur les troubles de santé mentale et la consommation de substances psychoactives des familles des militaires continuent de refléter la réalité des familles hétéronormatives traditionnelles. Les futures études devraient privilégier des définitions plus inclusives de la famille et adopter des méthodes de recrutement créatives afin que les recherches sur le sujet reflètent les expériences, les besoins et les forces d'un milieu militaire de plus en plus diversifié.

Mots-clés : adolescent, conjoint de militaire, consommation de substances psychoactives, enfant, enfants liés aux forces armées, enfants du personnel militaire, époux de militaire, familles des militaires, membres du personnel militaire, santé mentale, LGBTQ

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INTRODUCTION

Research has indicated deployment and combat-related experiences are associated with increased mental health problems among particular groups of serving and former military personnel.[1–4] Service members, however, do not experience these vulnerabilities in isolation. An increased focus on the mental health of military families, as well as aspects of well-being[5] including spousal employment and identification with the military, has demonstrated similar issues among the spouses/partners and children of service personnel.[6–12]

While most military families weather the stressors of military life well,[13–15] some nevertheless experience negative outcomes associated with service life. Psychological distress, parenting stress, trauma symptoms, mental health, and substance use associated with experience of service personnel deployment have been found among spouses/partners.[9,16–19] Military-connected children may experience increased victimization, weapon-carrying, substance use, suicidality and mental health diagnoses, and poorer school performance compared to their peers.[6,13,20–24] The family unit itself may also be affected, with reported impacts of military life on parenting processes, spousal relationships or family cohesion.[25–28]

Though the body of evidence on the mental health and well-being of military families has grown, the usefulness and applicability of the reported findings may be affected by how representative participants in the research are of the broader population of military families. Available figures indicate there are more than 4.7 million Regular and Reserve military family members in the United States[29] and over 60,000 in Canada,[30] containing a range of family types all experiencing different benefits and challenges. In order to provide evidence to support appropriate services, it is imperative that research on the mental health and well-being of military families accurately reflects these structures and experiences.

According to policy definitions and eligibility criteria for services within and across the Five Eyes alliance (Australia, Canada, New Zealand, United Kingdom, and United States),[31] the stereotypical military family traditionally centres on a husband who is in service, his female spouse who is assumed to be a civilian, and their children. However, this image may no longer accurately represent military families given shifting social norms regarding family structures such as blended families, childless couples, unmarried couples and same-sex relationships.[32] There is also increasing diversity within the military. Women comprise between 11% and 16% of regular serving personnel in the United Kingdom, the United States, and Canada[33–35] and nearly 71,000 (2.8%) U.S. military personnel identify as lesbian, gay, or bisexual.[36] There are also increasing numbers of dual-serving couples, in which both partners serve in the military, and of childless couples.[33] Studies suggest that similar demographic shifts are also under way in the militaries of other countries.[37,38]

What is less clear is whether research with military families is keeping pace with these changes and reflecting increased diversity within military communities. It is therefore important to understand who is, and who is not, being included in military families' research given the potential implications of the generalizability of estimates regarding mental health and substance use. Such understanding is also relevant to the success of interventions for improving the mental health and well-being of military families. A greater understanding of the samples used in the literature may also allow

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for addressing common myths and misperceptions about military family mental health by highlighting any gaps or weaknesses.

Objectives

To the knowledge of the authors, there have been no previous systematic efforts to understand how military families are defined and represented in empirical research on mental health and substance use. This systematic review aims to examine how quantitative research has operationalized the term "military family" within mental health and substance use research and to understand if the current body of evidence reflects the increasing diversity of this population, as well as to whom the existing evidence base may be generalized.

METHODS

Articles in academic journals were identified via a systematic literature search of Ovid MEDLINE, Ovid Embase, Ovid PsycINFO, Ebsco CINAHL, and ProQuest conducted using database specific headings and keyword searches for the concepts of 'military' (e.g., Army, Navy, active duty), 'family' (e.g., spouses, children, adolescents, family), 'mental health' (depression, posttraumatic stress disorder [PTSD], anxiety, psychological stress), and 'substance use' (see Appendix 1). A preliminary search was conducted in Ovid MEDLINE to analyze the search results retrieved using a combination of text words and Medical Subject Headings (MeSH). This search strategy was then optimized and subsequently adapted for Ovid Embase, Ovid PsycINFO, Ebsco, CINAHL, and ProQuest PILOTS using database-specific subject headings and text words as appropriate. Results were limited to articles published between 2002 and October 2017 to retrieve research from the post-9/11 era. Reference lists of eligible reports and articles were hand-searched to identify additional studies for inclusion.

Articles were eligible for inclusion if they were quantitative studies reporting prevalence estimates of, or mean scores for, depression, PTSD, psychological stress/distress, or substance abuse among the spouses/partners, children, and families of National Guard, Reserve, or active duty military personnel or Veterans. Articles were limited to those published in English language peer-reviewed journals. Data from medical records was included if estimates of the outcomes of interest were reported. Dissertations, theses, case reports, conference proceedings, editorials, and literature reviews were also excluded, as were studies reporting on suicidality, studies reporting findings based on pre-9/11 missions or the mental health of family members of prisoners of war (POWs), and qualitative studies.

In order to capture definitions of military families in empirical research on mental health and substance use among military families, extracted from each paper (where relevant) were: data relating to the sociodemographics (age, gender, relationship status and length, socioeconomic status, employment/education, family size) and military factors (service branch, serving status, rank, deployment, whether dual-serving, type of Veteran) of study samples. Information on inclusion/exclusion criteria, recruitment, *N*, date of data collection, and geographical location were also extracted to better understand participant selection. A narrative approach was used to categorize studies according to their focus (spouses/partners, children/adolescents, family approach, caregivers) and synthesized to understand who was and was not included in the research.

RESULTS

Overview of included articles

Ninety-one articles on mental health and substance use among the members of military families were identified from the review (Table 1). The majority (80.4%; $n = 74$) were based on data from the family members of U.S. active-duty personnel (Table 2). The remaining 17 articles were based on data from Israel ($n = 4$), Australia ($n = 4$), Netherlands ($n = 3$), Iran ($n = 2$), Canada ($n = 1$), United Kingdom ($n = 1$), and Croatia ($n = 1$). One paper included both U.S. and Canadian data.

Most studies were based on cross-sectional methodologies, with approximately 40 studies using data from interventions or cohort studies (Table 2). Seven studies used data from medical or administrative records. Where reported, response rates ranged from 21.3% to 99%, with most between 40% and 60%. Sample sizes varied from nine couples to nearly 690,000 in a single study based on administrative medical record data. Most studies contained approximately 100–500 participants, with a median of 215 individuals, dyads/couples, or families. Ethnicity of participants was not reported consistently across the papers. In those that did, the majority of participants were reported to be white.

Articles were sorted into themes according to the family member of primary interest in each study. The majority (40.7%) focused on spouses/partners ($n = 37$),

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Table 1. Studies included in review

Author(s)	Year	Title	Country	Family member of interest
Acion, Ramirez, Jorge, et al.[46]	2013	Increased risk of alcohol and drug use among children from deployed military families	US	Children/ adolescents
Ahmadi, Azampoor-Afshar, Karami, et al.	2011	The Association of Veterans' PTSD with secondary trauma stress among Veterans' spouses	Iran	Family approach
Andres	2014	Distress, support, and relationship satisfaction during military-induced separations: a longitudinal study among spouses of Dutch deployed military personnel	Netherlands	Spouses/partners
Andres, Moelker, & Soeters	2012	A longitudinal study of partners of deployed personnel from the Netherlands' armed forces	Netherlands	Spouses/partners
Barker & Berry[47]	2009	Developmental issues impacting military families with young children during single and multiple deployments	US	Children/ adolescents
Bass, Judge, Snow, et al.	2013	Caregiver outcomes of partners in dementia care: effect of a care coordination program for Veterans with dementia and their family members and friends	US	Caregivers
Bejjani, Snow, Judge, et al.	2015	Characteristics of depressed caregivers of Veterans with dementia	US	Caregivers
Blow, Gorman, Ganoczy, et al.[39]	2013	Hazardous drinking and family functioning in National Guard Veterans and spouses postdeployment	US	Spouses/partners
Burton, Farley, & Rhea	2009	Stress-induced somatization in spouses of deployed and nondeployed servicemen	US	Spouses/partners
Caspi & Klein[54]	2012	In the aftermath of trauma: a community study of Bedouin IDF servicemen and their families	Israel	Caregivers
Caspi, Slobodin, Kammerer, et al.	2010	Bedouin wives on the home front: living with men serving in the Israel Defense Forces	Israel	Spouses/partners
Cederbaum, Gilreath, Benbenishty, et al.[20]	2014	Well-being and suicidal ideation of secondary school students from military families	US	Children/ adolescents
Chandra, Lara-Cinisomo, Jaycox, et al.	2010	Children on the homefront: the experience of children from military families	US	Children/ adolescents
Chartrand, Frank, White, et al.5[0]	2008	Effect of parents' wartime deployment on the behavior of young children in military families	US	Children/ adolescents
Church & Brooks	2014	CAM and energy psychology techniques remediate PTSD symptoms in Veterans and spouses	US	Spouses/partners
Cozza, Guimond, McKibben, et al.	2010	Combat-injured service members and their families: the relationship of child distress and spouse-perceived family distress and disruption	US	Children/ adolescents
DeGraff, O'Neal, & Mancini	2016	The significance of military contexts and culture for understanding family well-being: Parent life satisfaction and adolescent outcomes	US	Family approach

Author(s)	Year	Title	Country	Family member of interest
Dekel, Solomon, & Bleich	2005	Emotional distress and marital adjustment of caregivers: contribution of level of impairment and appraised burden	Israel	Spouses/partners
Dirkzwager, Bramsen, Ader, et al.	2005	Secondary traumatization in partners and parents of Dutch peacekeeping soldiers	Netherlands	Family approach
Dolphin, Steinhardt, & Cance	2011	The role of positive emotions in reducing depressive symptoms among Army wives	US	Spouses/partners
Doss, Rowe, Morrison, et al.	2012	Couple therapy for military Veterans: overall effectiveness and predictors of response	US	Family approach
Ebrahimzadeh, Shojaee, Golhasani-Keshtan et al.	2014	Depression, anxiety and quality of life in caregiver spouses of Veterans with chronic spinal cord injury	Iran	Caregivers
Faulk, Gloria, & Steinhardt	2013	Coping profiles characterize individual flourishing, languishing, and depression	US	Spouses/partners
Fields, Nichols, Martindale-Adams, et al.	2012	Anxiety, social support, and physical health in a sample of spouses of OEF/OIF service members	US	Spouses/partners
Flittner O'Grady, MacDermid Wadsworth, Willerton, et al.[49]	2015	Help seeking by parents in military families on behalf of their young children	US	Children/ adolescents
Flittner O'Grady, Thomaseo Burton, Chawla, et al.	2012	Evaluation of a multimedia intervention for children and families facing multiple military deployments	US	Spouses/partners
Gewirtz, DeGarmo, & Zamir	2016	Effects of a military parenting program on parental distress and suicidal ideation: after deployment adaptive parenting tools	US	Spouses/partners
Gewirtz, McMorris, Hanson, et al.	2014	Family adjustment of deployed and non-deployed mothers in families with a parent deployed to Iraq or Afghanistan	US	Spouses/partners
Gilreath, Cederbaum, Astor, et al.	2013	Substance use among military-connected youth: the California Healthy Kids Survey	US	Children/ adolescents
Goff, Crow, Reisbig, et al.	2009	The impact of soldiers' deployments to Iraq and Afghanistan: secondary traumatic stress in female partners	US	Spouses/partners
Gorman, Eide, & Hisle-Gorman[22]	2010	Wartime Military Deployment and Increased Pediatric Mental and Behavioral Health Complaints	US	Children/ adolescents
Green, Nurius, & Lester	2013	Spouse psychological well-being: a keystone to military family health	US	Spouses/partners
Griffin, Lee, Bangerter, et al.[53]	2017	Burden and mental health among caregivers of Veterans with traumatic brain injury/ polytrauma	US	Caregivers
Herzog, Everson, & Whitworth	2011	Do secondary trauma symptoms in spouses of combat-exposed national guard soldiers mediate impacts of soldiers' trauma exposure on their children?	US	Family approach
Hisle-Gorman, Harrington, Nylund, et al.[48]	2015	Impact of parents' wartime military deployment and injury on young children's safety and mental health	US	Children/ adolescents

(*Continued*)

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Table 1. (Continued)

Author(s)	Year	Title	Country	Family member of interest
Huffman, Matthews, & Irving[40]	2017	Family fairness and cohesion in marital dyads: Mediating processes between work-family conflict and couple psychological distress	US	Spouses/partners
Hutchinson	2006	Evaluating risk-taking behaviors of youth in military families	US	Children/ adolescents
Kees & Rosenblum	2015	Evaluation of a psychological health and resilience intervention for military spouses: A pilot study	US	Spouses/partners
Kelley, Finkel, & Ashby	2003	Geographic mobility, family, and maternal variables as related to the psychosocial adjustment of military children	US	Family approach
Klein, Adelman, Thompson, et al.	2015	All military adolescents are not the same: sexuality and substance use among adolescents in the U.S. military healthcare system	US	Children/ adolescents
Knobloch, Ebata, McGlaughlin, et al.	2013	Depressive symptoms, relational turbulence, and the reintegration difficulty of military couples following wartime deployment	US	Spouses/partners
Koic, Franciskovic, Muzinic-Masle, et al.	2002	Chronic pain and secondary traumatization in wives of Croatian war Veterans treated for post traumatic stress disorder	Croatia	Spouses/partners
LaMotte, Taft, Weatherill, et al.	2014	Examining intimate partner aggression assessment among returning Veterans and their partners	US	Spouses/partners
Lester, Liang, Milburn, et al.	2016	Evaluation of a family-centered preventive intervention for military families: parent and child longitudinal outcomes	US	Family approach
Lester, Peterson, Reeves, et al.[23]	2010	The long war and parental combat deployment: effects on military children and at-home spouses	US	Family approach
Lester, Saltzman, Woodward, et al.	2012	Evaluation of a family-centered prevention intervention for military children and families facing wartime deployments	US	Family approach
Levin, Bachem, & Solomon	2017	Traumatization, marital adjustment, and parenting among Veterans and their spouses: a longitudinal study of reciprocal relations	US	Spouses/partners
Lipari, Palen, Ashley, et al.	2017	Examination of Veteran fathers' parenting and their adolescent children's substance use in the United States	US	Family approach
Lucier-Greer, Arnold, Mancini, et al.[59]	2015	Influences of cumulative risk and protective factors on the adjustment of adolescents in military families	US	Children/ adolescents
Lucier-Greer, O'Neal, Arnold, et al.	2016	Adolescent mental health and academic functioning: empirical support for contrasting models of risk and vulnerability	US	Children/ adolescents
MacDonell, Bhullar, Thorsteinsson, et al.	2016	Depression, anxiety, and stress in partners of Australian combat Veterans and military personnel: a comparison with Australian population norms	Australia	Spouses/partners

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Author(s)	Year	Title	Country	Family member of interest
Mancini, Bowen, O'Neal, et al.	2015	Relationship provisions, self-efficacy and youth well-being in military families	US	Children/ adolescents
Mansfield, Kaufman, Engel, et al.[62]	2011	Deployment and mental health diagnoses among children of US army personnel	US	Children/ adolescents
Mansfield, Kaufman, Marshall, et al.[9]	2010	Deployment and the use of mental health services among U.S. Army wives	US	Spouses/partners
McGuire, Kanesarajah, Runge, et al.	2016	Effects of multiple deployments on military families: A cross-sectional study of health and well-being of partners of children	Australia	Family approach
McNulty	2003	Does deployment impact the health care use of military families stationed in Okinawa, Japan?	US	Family approach
Millegan, Engal, Liu, et al.	2013	Parental Iraq/Afghanistan deployment and child psychiatric hospitalization in the US military	US	Children/ adolescents
Millegan, McLay, & Engel	2014	The effects of geographic moves on mental healthcare utilization in children	US	Children/ adolescents
Monson, Fredman, Macdonald, et al.	2010	Effect of cognitive-behavioral couple therapy for PTSD: a randomized controlled trial	US & Canada	Spouses/partners
Moriarty, Winter, Robinson, et al.[55]	2016	A randomized controlled trial to evaluate the Veterans' in-home program for military Veterans with TBI and their families. Report on Impact for family members.	US	Caregivers
Mueller & Callina	2014	Human-animal interaction as a context for thriving and coping in military-connected youth: The role of pets during deployment	US	Children/ adolescents
Murphy, Palmer, & Busuttil	2015	Mental health difficulties and help-seeking beliefs within a sample of female partners of UK Veterans diagnosed with posttraumatic stress disorder.	UK	Spouses/partners
Nichols, Martindale-Adams, Graney, et al.	2013	Easing reintegration: telephone support groups for spouses of returning Iraq and Afghanistan service members	US	Spouses/partners
Oblea, Badger, & Hopkins-Chadwick	2013	Effect of short-term separation on the behavioural health of military wives	US	Spouses/partners
O'Donnell, Varker, Perry, et al.	2013	Effect of center-based counselling for Veterans and Veterans' families on long-term mental health outcomes	Australia	Family approach
Okafor, Lucier-Greer, & Mancini	2016	Social stressors, coping behaviors, and depressive symptoms: A latent profile analysis of adolescents in military families	US	Children/ adolescents
Orthner & Rose	2009	Work separation demands and spouse psychological well-being	US	Army families
O'Toole, Burton, Rothwell, et al.	2017	Intergenerational transmission of post-traumatic stress disorder in Australian Vietnam Veterans' families	Australia	Family approach
Padden, Connors, & Agazio	2011	Stress, coping, and well-being in military spouses during deployment separation	US	Spouses/partners
Piette, Striplin, Marinec, et al.	2015	A randomized trial of mobile health support for heart failure patients and their informal caregivers: impacts on caregiver-reported outcomes	US	Caregivers

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Table 1. (Continued)

Author(s)	Year	Title	Country	Family member of interest
Pressley, Dawson, & Carpenter	2012	Injury-related hospital admissions of military dependents compared with similarly aged non-military insured infants, children, and adolescents	US	Family approach
Reed, Bell, & Edwards[45]	2016	Adolescent well-being in Washington State military families	US	Children/ adolescents
Renshaw & Campbell	2011	Combat Veterans' symptoms of PTSD and partners' distress: the role of partners' perceptions of Veterans' deployment experiences	US	Family approach
Renshaw, Allen, Rhoades, et al.[18]	2011	Distress in spouses of service members with symptoms of combat-related PTSD: secondary traumatic stress or general psychological distress?	US	Spouses/partners
Richardson, Mallette, O'Neal, et al.[44]	2016	Do youth development programs matter? An examination of transitions and well-being among military youth	US	Children/ adolescents
Rowe, Doss, Hsueh, et al.	2011	Coexisting difficulties and couple therapy outcomes: psychopathology and intimate partner violence	US	Family approach
Saban, Mathews, Collins, et al.	2016	The man I once knew: grief and inflammation in female partners of Veterans with traumatic brain injury	US	Spouses/partners
Sautter, Glynn, Cretu, et al.	2015	Efficacy of structured approach therapy in reducing PTSD in returning Veterans: a randomized clinical trial	US	Spouses/partners
Schumm, Monson, O'Farrell, et al.	2015	Couple treatment for alcohol use disorder and posttraumatic stress disorder: pilot results from U.S. military Veterans and their partners	US	Spouses/partners
Schvey, Sbrocco, Stephens, et al.	2015	Comparison of overweight and obese military-dependent and civilian adolescent girls with loss-of-control eating	US	Children/ adolescents
Skomorovsky	2014	Deployment stress and well-being among military spouses: The role of social support	Canada	Spouses/partners
Sones, Madsen, Jakupcak, et al.	2012	Evaluation of an educational group therapy program for female partners of Veterans diagnosed with PTSD: a pilot study	US	Spouses/partners
SteelFisher, Zaslavsky, & Blendon	2008	Health-related impact of deployment extensions on spouses of active duty army personnel	US	Spouses/partners
Stevens, Pickett, Wilder Schaaf, et al.[52]	2015	The relationship between training and mental health among caregivers of individuals with polytrauma	US	Caregivers
Sullivan, Capp, & Gilreath[13]	2015	Substance abuse and other adverse outcomes for military-connected youth in California: results from a large-scale normative population survey	US	Children/ adolescents
Taylor Jr, Ezel, Kuchibhatla, et al.	2008	Identifying trajectories of depressive symptoms for women caring for their husbands with dementia	US	Caregivers

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Author(s)	Year	Title	Country	Family member of interest
Trump, Lamson, Lewis, et al.	2015	His and hers: The interface of military couples' biological, psychological, and relational health	US	Spouses/partners
Wadsworth, Cardin, Christ, et al.[43]	2017	Accumulation of risk and promotive factors among young children in US military families	US	Children/ adolescents
Walker, Cardin, Chawla, et al.	2014	Effectiveness of a multimedia outreach kit for families of wounded Veterans	US	Caregivers
Wang, Nyutu, Tran, et al.[41]	2015	Finding resilience: The mediation effect of sense of community on the psychological well-being of military spouses	US	Spouses/partners
Zerach & Solomon[51]	2016	Low levels of posttraumatic stress symptoms and psychiatric symptomatology among third-generation Holocaust survivors whose fathers were war Veterans	Israel	Children/ adolescents

US = United States; PTSD = posttraumatic stress disorder; IDF = Israel Defense Forces; OEF = Operation Enduring Freedom; OIF = Operation Iraqi Freedom; UK = United Kingdom.

Table 2. Overview of retrieved studies (*N* = 91)

Characteristic	Family member of primary interest			
	Spouses/partners (*N* = 37)	Children/adolescents (*N* = 26)	Family approach (*N* = 17)	Caregivers (*N* = 11)
Service				
Army	19	12	8	1
Multiple branches*	10	5	3	–
Not reported	14	14	8	9
Serving status				
Active duty	27	24	4	2
Veterans	13	7	9	10
Reserves/National Guard	9	4	2	0

Note: Totals may not equal *N*, as some studies included multiple groups.

* Indicates at least three service branches.

followed by children/adolescents (28.6%, *n* = 26), those using a family approach (18.7%, *n* = 17), and those providing caregiving support to serving or ex-serving personnel (12.1%, *n* = 11) (Table 1). When reported, members of army families were the most researched group, with a focus on active duty personnel. However, nearly half of the articles (49.5%, *n* = 45) did not explicitly report service branch, particularly in studies of Veteran families, either inferring this from geographical locations or assuming families were affiliated with multiple branches. Studies of caregivers largely centred on injured or ill Veterans and their families and therefore did not report service branch.

Who is commonly included in research on military family mental health and substance use?

While inclusion criteria for the studies overall were relatively broad, the most commonly represented family structure in the final sample of included articles was the traditional family structure of a heteronormative couple with children (Table 3).

Three papers reported on the current or prior serving status of female spouses/partners (Table 4), with one excluding such participants. However, this information was not routinely collected. There was also a lack of explicit consideration of LGBTQ relationships.

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Table 3. "Military families" included in mental health and substance use research

Most often	Less often	Rarely or never
Two-parent family:	• Unmarried couples	• Veterans not seeking services
• Husband (male) US Army, active duty	• Non-US research	• Couples without children
• Wife (female) civilian	• Air Force, Marines, Navy	• Dual-serving couples
• Children <18 years old	• National Guard/Reservist families	• LGBTQ couples/families
	• Living away from military facilities	• New relationships
	• Veterans seeking VA services	• Single parents
	• Rank – 3%–48% officers	• Male spouses/partners
	Other family members:	• Ex-spouses and families
	• Siblings	• Grandchildren
	• Parents, grandparents	• Children >18 years of age
	• Adult children	• Families post-service
	• Other caregivers	• Families with additional challenges (e.g., severe mental health or family violence)

US = United States; VA = Veterans Affairs.

While such families may be included in final samples, this results in an assumption of civilian status and heteronormativity among spouses/partners. A small number of unmarried partners and male spouses/partners were included in two studies.[39,40] Findings relating to male spouses/partners were excluded from analyses due to low numbers ($n < 5$)[41,42] and it was unclear if they were in opposite- or same-sex relationships.

Study samples of military-connected children/adolescents were more varied but again tended to be from heteronormative families where this information was provided (Table 5). Some information was provided on dual-serving parents[43,44] while state-wide surveys of school children sought participants with any parent who had recently served.[20,45,46] Study participants were generally evenly split between boys and girls. Ages ranged from 0 to 18 years, with most approximately 14 years of age at the time of the study. Of the 26 papers on children in military families, four included children under the age of 5 years,[47–50] while one focused on the adult children of Israeli Veterans who had also survived the Holocaust.[51] None of the studies explicitly stated if children under 18 years of age were the biological children of the couple in question, if they were from blended families, or if they were adopted.

The greatest variation in the types of families included in studies were seen among studies using a family approach to examine intra- and inter-generational mental health and substance use between multiple members of the same family (Table 6). Such studies included non-married, cohabiting relationships, male spouses/partners, female Veterans, and couples without children, although for 15 of the 17 papers, the final samples still primarily contained female spouses and children of military couples.

Samples of caregivers were also broader, but again participants were largely the female partners or spouses of personnel and Veterans (> 90% female, > 70% spouses/partners) (Table 7). The exceptions were a study of caregivers of post-2001 Veterans[52,53] and a study of Bedouin servicemen,[54] in which more than 60% of respondents were parents.

Who is seen less often in research on military family mental health and substance use?

The continual reflection of traditional, two parent families with children in research on military family mental health and substance use has resulted in the reduced visibility of more diverse family structures (Table 3). Within the predominately U.S.-based literature found in this review, this includes specific groups such as the families of non-army personnel, National Guard/reserves, those living away from military bases or outside their home nation, and Veterans not seeking Veterans Affairs (VA) services. Some of these groups were explicitly excluded from the study due to the research question but the reason for exclusion was not always clearly stated. Of particular note is the lack of research on military couples without children, dual-serving couples, new and

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Table 4. Studies focusing on spouses/partners

Author	Year	Study design		Intended study population					Final study population		
		Study design	Method	Service	Serving status	Recruitment method	Inclusion criteria	Exclusion criteria	Final sample	*N*	Response
Church & Brooks	2014	Cross-sectional	Survey	Not reported	Veterans	Convenience sample	Participants in 6-week retreat for creative therapy for PTSD	–	Av. age 48.8yrs; no reference to gender	109	99%
Mansfield, Kaufman, Marshall, et al.	2010	Observational	Administrative TRICARE data from military dependents	Army	AD	–	Dependents aged 18–48 years using outpatient medical care via military medical insurance	Dependents of Reserve/NG, AD serving < 5yrs	All female with male serving partner	250,626	NA
Knobloch, Ebata, McGlaughlin, et al.	2013	Cohort	Questionnaires once per month for 3 months	Army, Air Force, Marines	AD, NG	Online forums, social media, family readiness officers, chaplains, military family life personnel	Heterosexual couples; personnel returned from deployment within 30 days; parents of ≥ 1 child; both partners participating	Did not complete phase 1 survey within 1 week.	98% married, 1% engaged, 1% serious couple; 14% dual serving	118 couples	Not reported
Andres	2014	Cohort	Questionnaire	Not reported	AD	Not reported	Married or cohabiting couples	–	All women; 64% married; 63% with children	153	Not reported
MacDonell, Bhullar, Thorsteinsson, et al.	2016	Cross-sectional	Questionnaire	Army, Navy, Air Force	Veterans	Newsletter to organization for partners of Veterans	Current/former partners of serving members with combat experience	–	All female & married to Veteran at one time; mean age 60.8 yrs	282	Not reported
				Not reported	Veterans	Sample of those sent newsletter	Partners living with Veteran	–	All female; mean age 60.1 yrs	50	
			Online survey	Army	AD	Online survey	Partners of Special Air Service Regiment personnel (SASR)	–	All female; mean age 34.4 yrs	40	
				Not reported	AD	Online survey	Partners of currently serving personnel	–	All female; mean age 32.4 yrs	38	
Skomorovsky	2014	Cross-sectional	Survey	Army, Navy, Air Force	AD	Not reported	Spouse of deployed personnel deployed in last 6 months	–	91.1% female; 20.3% dual serving; 66% with children	639	21.3%
Koic, Franciskovic, Muzinic-Masle, et al.	2002	Cross-sectional	Questionnaire	Not reported	Veterans	Not reported	Female spouses of male Veterans 1) with & 2) without PTSD	–	All female; avg. age 39.6 yrs	80	–

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Table 4. (Continued)

Author	Year	Study design		Intended study population					Final study population		
		Study design	Method	Service	Serving status	Recruitment method	Inclusion criteria	Exclusion criteria	Final sample	*N*	Response
Caspi, Slobodin, Kammerer, et al.	2010	Cross-sectional	Interviews	Not reported	AD, Veterans	Via husbands recruited for study of trauma & PTSD	Married to Bedouin servicemen who gave permission for contact, cohabiting	–	All female & married; avg. 3.5 births	129	69.6%
Fields, Nichols, Martindale-Adams, et al.	2012	Cross-sectional	Interviews	Army, Navy, Air Force, Marine Corps	AD, NG, reserves	Via events, VA medical centres & bases, online.	Married or living as married for ≥ 1-year, service member deployed during relationship, currently ≥1-month post-deployment	Auditory impairment preventing telephone use; consent for spouse participation not given by service member	All female & married; avg. age 37.4 yrs; no reference to children	86	Not reported
Renshaw, Allen, Rhoades, et al.	2011	Cross-sectional	Interviews, questionnaire	Not reported	AD	Selected from study assessing relationship intervention	Married, AD partner, personnel with probable military-related PTSD	Dual-serving; couples with female personnel	All women; heterosexual relationships; avg. age 27.1 yrs	190 couples	Not reported
Faulk, Gloria, & Steinhardt	2013	Cross-sectional	Survey	Army	AD	Convenience sampling at military event	Wives of infantry personnel deployed to Iraq/Afghanistan	–	All female & married; avg. age 27 yrs; 83% with children	367	Not reported
Schumm, Monson, O'Farrell, et al.	2015	Intervention	Interviews, questionnaire	Not reported	Veterans	Not reported	Partner & Veteran who; met criteria for PTSD & alcohol abuse/dependence; used alcohol in past 90 days; primary substance of abuse was alcohol; did not require inpatient treatment/ detoxification; agreed to limit alcohol intake; willing to forgo other treatment; couple cohabitating ≥ 1 year	Either partner with; psychiatric disorder, at risk for homicide/ suicide, made attempts in last year, partner PTSD or substance disorder, severe IPV within past 3 years	All female	9 couples	Not reported
Andres, Moelker, & Soeters	2012	Cohort	Survey	Army, Navy, Air Force, military police (MP)	AD	Personnel deploying to Afghanistan or Bosnia with partner as primary contact	Partners of deploying soldiers	Cancelled/ delayed deployment, both partners deployed or relationship breakdown	T1 97.4% female; 58.8% married; 57.0% with children	T1 453; T2 386; T3 235	52% T1, 46% T2, 37% T3

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Dekel, Solomon, & Bleich	2005	Cross-sectional	Surveys, clinical interviews	Not reported	Veterans	IDF psychiatric clinics determining eligibility for compensation	Married male Israeli Veterans with PTSD diagnoses	Drug abuse problems, psychosis	Not reported	215 couples	Not reported
Wang, Nyutu, Tran, et al.	2015	Cross-sectional	Survey	Army, Navy, Marine, Air Force	AD	Facebook	Female spouses of AD personnel	Male spouses (n = 1)	All female; mean age 32.2yrs	207	Not reported
Blow, Gorman, Ganoczy, et al.	2013	Cross-sectional	Survey	Not stated	NG	Mandatory reintegration workshops following 12-month deployment in Iraq/ Afghanistan	Spouses in committed romantic relationship with service member	–	95.6% female; 78.1% married, 70.3% with children	674 spouses; 661 couples; 19 dual serving	Wave 1 35.9%, wave 2 71.4%
Goff, Crow, Reisbig, et al.	2009	Cross-sectional	Survey	Army	AD	Military medical clinic	Male soldiers & female partners with OEF/OIF deployment; aged 18+, in relationship for at least 1 year	Current substance abuse or IPV; female personnel excluded from this study, LGBTQ & cohabiting couples	All female; 95.6% married	45 couples	80.36%
Trump, Lamson, Lewis, et al.	2015	Cross-sectional	Survey, biological health data	Not reported	AD, reserves, Veterans	Service members via military family medical clinics	Currently married active duty, reserve or retired personnel	Service member deployed; receiving marital therapy; female personnel excluded from this study, LGBTQ & cohabiting couples	All female, married	75 couples	Not reported
SteelFisher, Zaslavsky, & Blendon	2008	Cross-sectional	Survey	Army	AD	Random digit dialing of respondents on and off bases	Army spouses living on or near (5–10 miles) 10 major US Army bases	–	Mean age 31.2 yrs; 77% with children; no information on gender; 78.4% enlisted personnel	798 spouses of deployed personnel	55.6%

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Table 4. (Continued)

Author	Year	Study design		Intended study population					Final study population		
		Study design	Method	Service	Serving status	Recruitment method	Inclusion criteria	Exclusion criteria	Final sample	*N*	Response
LaMotte, Taft, Weatherill, et al.	2014	Cross-sectional	Questionnaires	All branches	Veterans	Recruited from larger study; both partners provided data on IPV	Male Veterans exposed to combat during deployment & PTSD criterion A experience; married/ cohabiting for ≥ 6 months	Not OEF/OIF Veteran, not living near study site, not relationship distressed	83% married, 11% cohabiting; avg. age 38.9yrs	65 couples	Not reported
Huffman, Matthews, & Irving	2017	Cross-sectional	Surveys	Army	AD	US Army Personnel recruited from five different military installations in the US. Those who participated were asked to provide contact details for theirs. Spouses were sent an online survey by the research team.	Married to service member	–	90% female; 73% reported having children	78 couples	Not reported
Nichols, Martindale-Adams, Graney, et al.	2013	Intervention	Survey	77.9% Army – rest not reported	AD, reserves/ NG	Study website, brochures, email, military family advocates; VA; Wounded Warrior	Married/living as married to service member deployed to Iraq/Afghanistan; ≥1 month post-deployment	–	All married women	86	80.2% follow-up data
Kees & Rosenblum	2015	Intervention	Survey	Not reported	AD, Veterans	Military/civilian providers, NG Family programs, Family Readiness Groups, NG Armouries, community events, VA, Veterans Service Organizations, social media, word of mouth	Spouses or partners of personnel or Veteran who has deployed, is deployed or is preparing to deploy in post-9/11 conflicts; commits to a minimum of 6 of 8 scheduled sessions	–	All women; 70% married; 50% with children	10	Not reported
Flittner O'Grady, Thomaseo Burton, Chawla, et al.	2012	Intervention	Surveys	Army (57%), Air Force (15%), Marine Corp (15%)	AD	Shopping malls near US military bases	Primary caregivers of child 2–5 years old & spouse, partner, close relative, family member of enlisted service members (E2–E6); experienced 2+ deployments in child's life	–	75% female; 86% married	300 families	Not reported

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Gewirtz, DeGarmo, & Zamir	2016	Intervention	Online survey (6 months); in-home assessments (baseline, 12 months)	Army, Air Force	NG, Reserves	Deployment & reintegration events for NG/R personnel, mailings, media word of mouth	Families with ≥1 child aged 5–12 & ≥1 parent had deployed to Iraq/ Afghanistan	–	84% married, 90% Caucasian sample, Fathers deployed in 96% of families, mothers in 18%, both in 13%.	336 families; 314 spouses	12-month assessment completed by 81% spouses
Sautter, Glynn, Cretu, et al.	2015	Intervention	Clinician-administered clinical interviews, surveys at multiple time-points	Not reported	Veterans	Not report	OEF/OIF Veterans cohabitating with opposite-sex partners ≥ 6 months	IPV, substance dependence, psychotic symptoms, suicidality/ homicidality, partners with PTSD diagnosis.	Only heterosexual couples; Veterans 96.4% male; 81.48% married	69 couples	Not reported
Monson, Fredman, Macdonald, et al.	2010	Intervention	Survey, clinical interview data	Not reported	Veterans	Clinician referral, media, community postings	Couples in which one partner met PTSD criteria; both between 18–70 yrs	Substance dependence, bipolar/psychotic disorders, suicidality/homicidality, cognitive impairment, IPV	PTSD-identified patients were predominantly female (65% intervention; 85% control); not necessarily married (40% intervention; 25% control)	40 couples	Not reported
Gewirtz, McMorris, Hanson, et al.	2014	Cross-sectional	Survey	Army, Air Force	AD, reserves	Military organizations, media coverage, word of mouth	Families with ≥1 child between 4–12 years at home & ≥1 parent with ≥1 OEF/OIF/OND deployment	–	Mostly NG, reserves, 5.9% AD. 90.6% in relationship; 19.6% deployed women	118 mothers	Not reported
Sones, Madsen, Jakupcak, et al.	2012	Intervention	Survey (baseline, 10 wks)	Not reported	Veterans	Urban VA hospital via flyers, referrals	Women cohabitating with Veteran in serious or committed relationship; Veteran diagnoses with PTSD	Unmanaged psychosis, manic episodes in past year, alcohol/ substance dependence in either partner; participating in therapy; IPV	All women; vets avg age 51.3 years	23	Not reported

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Table 4. (Continued)

Author	Year	Study design		Intended study population					Final study population		
		Study design	Method	Service	Serving status	Recruitment method	Inclusion criteria	Exclusion criteria	Final sample	*N*	Response
Oblea, Badger, & Hopkins-Chadwick	2013	Cohort	Survey	Army	AD	Identified via husbands' enrolment/ future attendance at training program	Female spouses of male officers from U.S. Army	Depression/ taking anti-depressants; pregnant; accompanying husbands to training site	Avg. age 33 yrs; 75% white; 28 had children; 75% had college degree	32	41.9%
Murphy, Palmer, & Busuttil	2015	Cross-sectional	Survey	Navy, Army, Air Force	Veterans	Via Veterans receiving treatment for PTSD at military charity; postal survey	Female spouses of Veterans receiving treatment	Veteran did not give consent	Women in relationship with male Veterans; avg. age 46yrs; 54% had children at home; 5% previously served;	100	72% of Veterans provided consent; 70.9% spouses responded
Dolphin, Steinhardt, & Cance	2015	Cohort	Survey during deployment & 3 months following return	Army	AD	Via FRG website	Wives of AD infantry soldiers stationed at base in SW US deployed on OEF	–	Avg. age 25yrs; 60% married to junior enlisted, 9% officers, 31% NCOs.	252	Not reported
Burton, Farley, & Rhea	2009	Cross-sectional	Survey	Not reported	AD	Military- community service organizations, support groups, FRGs	Spouses of AD US personnel in combat zone for ≥ 1 month of ≥ 6-month deployment	Spouses of personnel deployed ≤ 1 month or returned from combat ≥ 3 months ago	Mean age 27.8yrs; mean number of children 1.65	130 spouses – 62 with deployed husbands	Not reported
Levin, Bachem, & Solomon	2017	Cross-sectional	Survey	Army	AD	State contacted Veterans & spouses	Combat Veterans & spouses	Not reported	Avg. age 58.3yrs; avg. number of children 3.23	105	Not reported
Padden, Connors, & Agazio	2011	Cross-sectional	Survey	Army	AD	Family Readiness Groups	Spouses of AD personnel deployed out of country for ≥ 5 months; no plan to move from installation to live with relatives during deployment	Not reported	Avg. age 31.7yrs; 20% partners of junior enlisted, 33.3% NCOs, 15.2% chief warrant officers, 20% company grade officers, 11.4% field grade officers; 75.2% had children	105	Not reported

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Green, Nurius, & Lester	2013	Cross-sectional	Survey	Army, Marine	AD	Flyers at military bases	AD parent currently deployed or returned from deployment in last 12 months; at least one parent able to participate; ≥1 child aged 6–12 yrs	Psychosis or serious psychological impairment	Mean age 33.yrs; all women; 98% married; 60.3% NCOs	163	92%
Orthner & Rose	2009	Cross-sectional	Survey	Army	AD	5th Survey of Army Families (SAF)	Army spouses not experiencing current or recent separation	Male spouses: ≤ 3% sample	Avg. age 34 yrs	24,793	43%

PTSD = posttraumatic stress disorder; AD = active-duty (serving as Regular); NG = National Guard; OEF = Operation Enduring Freedom; OIF = Operation Iraqi Freedom; NCO = non-commissioned officer.

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Table 5. Studies focusing on children/adolescents

Author	Study design			Intended study population					Final study population		
	Year	Study design	Method	Service	Serving status	Recruitment method	Inclusion criteria	Exclusion criteria	Final sample	*N*	Response
Chandra, Lara-Cinisomo, Jaycox, et al.	2010	Cross-sectional	Survey	Army, Navy, Marines, Air Force	AD & reserves	National Military Family Association camp	One child 11–17yrs randomly selected per family; primary caregiver	Relevant contact details	Children & primary caregiver	1,507	48%
Mansfield, Kaufman, Engel, et al.	2011	Cohort	Administrative TRICARE outpatient data	Army	AD	N/A	Children < 4 years; parent AD for ≥ 5yrs	Mean age over study period < 5yrs or > 17 yrs; children of Reserve, NG	No overall description of participants	307,520	N/A
Klein, Adelman, Thompson, et al.	2015	Cross-sectional	Survey	Army	AD, Veterans	Clinic based recruitment	Eligible US Military Health care due to parent	None reported	38% male; avg. age 17yrs	223	90%
Richardson, Mallette, O'Neal, et al.	2016	Cross-sectional	Survey	Army	AD	Data collected from youth at US Army garrisons, one in Europe	≥ 1 AD parent; 11–14yrs; participation in military programming	None reported	50.9% male; mean age 12.4yrs; 18.4% had parent currently deployed; 44% lived outside continental US; 8.4% dual serving	749	Not reported
Barker & Berry	2009	Cohort	Survey	Not reported	AD & reserves	Spouses approached at FRGs	Families with 1 AD soldier & ≥ 1 child 0–47 months	None reported	Mostly male soldiers & female child; avg. age 19–22 months	S1 = 27; S2 = 20; S3 = 14	Not reported
Lucier-Greer, O'Neal, Arnold et al.	2016	Cross-sectional	Survey	Army	AD	Community-based methods	11–18yrs with ≥ 1 AD parent	None reported	50% male; avg. age 13.4yrs; 8.1% dual serving parents	1,036	Not reported
Schvey, Sbrocco, Stephens, et al.	2015	Cross-sectional	Anthropometric measurements	Not reported	AD	Physician & clinic referral; flyers; mail-outs	12–17yrs; presence of LOC; overweight/obese	None reported	Avg. age 15yrs; all girls	23	Not reported
Reed, Bell, & Edwards	2016	Cross-sectional	Survey	Not reported	AD, Veterans	Randomly selected schools & students in 8th, 10th & 12th grades, Washington State	Parent with military service in past 6 years	Missing data on parental military service in past 6 years or outcomes of interest	Not reported	9,565–9,986 (varies by outcome)	50–77%

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Cozza, Guimond, McKibben, et al.	2010	Cross-sectional	Interviews	Not reported	AD, other (not specified)	Through hospital clinical teams at tertiary care military medical centres	Spouses of combat-injured service members	None reported	All male personnel; all married with children	41 spouse reports of child distress	Not reported
Wadsworth, Cardin, Christ, et al.	2017	Cross-sectional	Interview, survey linked to administrative records	Army, Navy, Air Force, Marine	AD	Families on AD & reserve Family database mailed information letter, telephone calls	Families living on US bases, AD with ≥ 1 child 0–10yrs, ≥ 1 serving parent	None reported	Not reported for children. Parents 94% female, 97% married, 6% in service, 15.7% had served	680	41%
Hisle-Gorman, Harrington, Nylund, et al.	2015	Cohort	Administrative health-care Military Health System data 2006 & 2007	Not reported	AD	Not reported	3–8yrs with AD parent enrolled in Military Health System	Patients without unique ID; unable to link to parents' record; children of NG/reserves; parent deployed in 2006 & 2007, only 2007	Avg. age4–5yrs; 51% male; 90% married parents; includes female military; 12% parent deployed, of which 16.5 had injury. Most	487,460	N/A
Flittner O'Grady, MacDermid Wadsworth, Willerton, et al.	2015	Cross-sectional	Telephone & web surveys	Army, Navy, Marine, Air Force	AD, reserves	Probability sampling using Defense Manpower Data	Families living in US with child 0–10yrs with 1 parent serving in military of O-6 grade or less.	None reported	51% children male; 33% 0–2yrs, 38% 3–5yrs, 29% 6–11 yrs.	680 families	41%; 49% of completed web survey (n = 301)
Zerach & Solomon	2016	Cohort	Survey	Not reported	Veterans	Via fathers who provided contact information; oldest adult children recruited first	Not reported	Not reported	Avg. age 35yrs; most with prior military service; most married	123 father-child dyads	Not reported
Hutchinson	2006	Cross-sectional	Survey	Not reported	AD & Veterans	Via adolescent clinics	Adolescents presenting at clinics serving military population	None reported	Not reported	908	51.3% invited; 88.7% response
Acion, Ramirez, Jorge, et al.	2013	Cross-sectional	Survey	Not reported	AD & reserves	Schools invited to participate - parents received letter & instructions for completion of online survey	Iowa Youth Survey - 6th, 8th & 11th graders in public or private middle, junior & high schools with parent in military & their deployment status	None reported	Avg. age 13.13yrs; 58.72% male; 43.57% grade 6	775 with parent away from home; 983 with recently returned parent	69% - 86% excluding schools that declined to participate

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Table 5. (Continued)

Author	Study design			Intended study population					Final study population		
	Year	Study design	Method	Service	Serving status	Recruitment method	Inclusion criteria	Exclusion criteria	Final sample	*N*	Response
Mueller & Callina	2014	Cross-sectional	Survey	Not reported	Not reported	Online survey link sent through school-based program, email & social media	Grades 6–12	None reported	Avg. age 15.0yrs; 60% female; 50 with deployed family member	286 youth from military families	Not reported
Lucier-Greer, Arnold, Mancini, et al.	2015	Cross-sectional	Survey	Army	AD	Multiple methods including print, radio, flyers, email	Aged 11–18yrs on/near Army installations (3 in US, 1 Europe); ≥ 1 AD parent	NA	72.4% in enlisted families; 8.1% in dual serving	1,036	Not reported
Chartrand, Frank, White, et al.	2008	Cross-sectional	Survey	Marines	AD	On-base child-care centres	Parents of children 1.5–5yrs	Behavioural disorder or developmental disability; NG/Reserve parents	Avg. age 36 months; approx. 50% male; mostly married parents	169 parents; 135 children	73%
Millegan, Engal, Liu, et al.	2013	Cohort	Administrative health-care data	Army, Navy, Marine, Air Force, Other	AD	Health care utilization & demographic data from Medical Data Repository (MDR)	Aged 9–17yrs; OIF & OEF deployment of parents.	Children of NG & reserves; children with missing data; serving	50.8% male; avg. age 12.3yrs; 32% with parent deployed in OIF/ OEF	377,565	N/A
Millegan, McLay & Engal	2014	Cohort	Administrative health-care data	Army, Navy, Marine, Air Force, Coast Guard, Other	AD	Health care utilization & demographic data from Medical Data Repository (MDR)	Aged 6–17yrs	Children of: NG & reserves; with any missing data; with two AD parents	50.8% male; avg. age 10.8yrs	548,336	N/A
Cederbaum, Gilreath, Benbenishty, et al.	2014	Cross-sectional	Survey	Not reported	AD & Veterans	California Healthy Kids Survey 2011	Schools with avg. daily attendance ≥ 400 military students/10%. 5th, 7th, 9th, 11th grades	5th grad students excluded as not asked relevant questions	51% female; 9% military parent, 4.3% military sibling; even across grades	14,299; 1,957 military	86.5%
Gilreath, Cederbaum, Astor, et al.	2013	Cross-sectional	Survey	Not reported	AD & Veterans	California Healthy Kids Survey 2011	Schools with avg. daily attendance ≥ 400 military students/10%. 5th, 7th, 9th, 11th grades	N/A	53% female; even across grades; 9.2% parent, 4.3% sibling in military; 73% no experience of deployment	14,299; 1,957 military	86.5%

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Gorman, Eide, & Hisle-Gorman	2010	Cross-sectional	Administrative healthcare Military Health System data 2006 & 2007	Not reported	AD	Not reported	3–8yrs with AD parent enrolled in Military Health System	Patients without unique ID; cannot link to parent; children of NG/ reserves; claims prior to child's enrolment/after parent left military	Avg. age 5yrs; 50.6% male; 90% male military parent; 90.5% married	642,397	NA
Mancini, Bowen, O'Neal, et al.	2015	Cross-sectional	Survey	Army	AD	Advertising, flyers.	Families with at least 1 AD personnel & up to 2 adolescents aged 11–18yrs; survey taken at youth centre at same time; both parents if married	-	Even gender; 69.2% lived with both parents, 25.6% with step = parents, 5.1% other family types	273	Not reported
Okafor, Lucier-Greer, & Mancini	2016	Cross-sectional	Survey	Army	AD	Recruited via advertising, word of mouth at military base	Adolescents aged 11–18yrs in AD Army families	N/A	Even gender, 72.4% aged 11–14yrs	1,036	Not reported
Sullivan, Capp, & Gilreath	2015	Cross-sectional	Survey	Not reported	AD & Veterans	California Healthy Kids Survey	256 school districts included in 2013 CHKS	5th graders as not asked about substance use	7.9% parent/ caregiver in military; even genders & grades; 51% Hispanic	688,713	85%

AD = active-duty (serving as Regular); NG = National Guard.

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Table 6. Studies using a family approach

Author	Year	Study design		Intended study population					Final study population		
		Study design	Method	Service	Serving status	Recruitment method	Inclusion criteria	Exclusion criteria	Final sample	*N*	Response
Lipari, Palen, Ashley, et al.	2017	Cross-sectional	Survey	Not reported	Veterans	National Survey on Drug Use & Health	Male Veterans & adult children; Non-institutionalized people 12yrs or older; limited to fathers aged 30–62yrs	AD personnel; female Veterans and adult children dyads	Not reported	1,500 Veteran & 9,200 non-Veteran pairs with children 12–17yrs	Not reported
Rowe, Doss, Hsueh, et al.	2011	Cohort	Survey	Not reported	Veterans	First visit for couples therapy	Not reported	N/A	87% male Veteran, civilian partner; 96% married or co-habiting	177 couples	82%
Renshaw & Campbell	2011	Cross-sectional	Survey	Army, Air Force	NG/ Reserve Veterans	Voluntary post-deployment workshops	Not reported	Veteran did not report deployment history, did not deploy	98% partners were female, mean age 32.8, all married	206 couples	50%
Doss, Rowe, Morrison, et al.	2012	Cohort	Survey	Not reported	Veterans	Referred or self-referred for couples therapy at VA	Not reported	Missing data	Heterosexual couples; 85% married, 11% cohabiting; 42% with ≥ 1 child	177 couples	82%
Herzog, Everson, & Whitworth	2011	Cross-sectional	Survey	Army	NG,	NG Brigade Combat Team family program mailout	NG soldier, spouse & child aged 2–18yrs	Missing data from any family member	Heterosexual couples only	54 families	Not reported
McNulty	2003	Cohort	Survey	Army, Navy, Marine, Air Force	AD	Health care visits & during pre-deployment briefs	Families assigned to bases in Okinawa, Japan	N/A	All female; 88% with children; no dual serving	299 spouses, 89 children	Not reported
Ahmadi, Azampoor-Afshar, Karami, et al.	2011	Cross-sectional	Survey	Not reported	Veterans	Routine visits with psychiatrist at Veteran clinic	Iraq & Iran War (1980–88) Veteran with PTSD; 35–50yrs; married ≥ 5yrs & living together	Substance abuse; spouse with psychiatric condition	All female; avg. age 41.4yrs; 4% no children	100 couples	Not reported

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O'Donnell, Varker, Perry, et al.	2013	Intervention	Counsellor administered assessment, survey	Not reported	Veterans	Eligible Veterans & family members (spouse or child) invited to counselling; 12-month follow-up via postal surveys	Attending counselling; moderate-severe depression, anxiety, alcohol misuse; completed at least 5 sessions	Not reported	63 contemporary Veterans; 84 older vets; 54% total sample male	128 Veterans; 184 family members	4,327 met criteria of which 16% completed 5th session; 46% follow-up
Lester, Saltzman, Woodward, et al.	2012	Intervention	Surveys & clinician completed assessment	Marine, Navy	AD	51.2% self-referred, 42.6% referred by military, medical or social providers; 6.2% via other, e.g. volunteer or friend	AD military family coping with deployment or combat related stress resident at 11 installations	Not reported	97.2% female non-military primary caregivers; 16.3% military primary caregivers female; 95.6% married	488 families – 742 parents; 873 children	67.8% completed
Lester, Liang, Milburn, et al.	2016	Intervention	Survey	Not reported	AD	Via media, word of mouth, events, referrals	AD families with ≥ 1 child 3–17 years with military parent serving at installations	Active domestic violence or child abuse cases	41% parents service members, 67% of which were male; 99% of civilian parents female; 54% children male; avg. age 7.3yrs	2,615 families, 3,499 parents (1,426 serving), 3,810 children	Not reported
Kelley, Finkel, & Ashby	2003	Cross-sectional	Survey	Not reported	AD	Letter from schools, advertisement in school newsletter, & newspaper, Girl Scout office	Mother-child dyads of male service members	N/A	All married	86 mother-child dyads	Not reported
Pressley, Dawson, & Carpenter	2012	Cross-sectional	Administrative medical records	Not reported	AD, Veteran	N/A	Children 0.1–17yrs with health insurance from non-needs-based payer; military dependents enrolled in CAMPUS, Tricare, CHAMPVA	N/A	States participating in database that did not report coverage	12,310 military & 730,065 non-military dependents	N/A
O'Toole, Burton, Rothwell, et al.	2017	Cohort	Clinical interviews	Army	Veteran	Randomly selected Veteran cohort: Partners & children recruited via Veterans	Veterans deployed to Vietnam 1962–1972; female partners & children 18 yrs+	N/A	Adult children of Australian Vietnam Veterans – avg. age 38yrs;	293 adult children	78.5% Veterans gave consent; 56% children responded

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Table 6. (Continued)

Author	Year	Study design		Intended study population					Final study population		
		Study design	Method	Service	Serving status	Recruitment method	Inclusion criteria	Exclusion criteria	Final sample	*N*	Response
Lester, Peterson, Reeves, et al.	2010	Cross-sectional	Survey	Army & Marines	AD	Posted letter to houses at installations, flyers within the community	AD parent currently deployed/returned within the year from OEF/OIF; ≥ 1 child 6–12yrs, 1 parent available for study	Severe neuro-psychological impairment or psychosis	272 children, 45% female, mean age 8.5yrs; 163 female care-givers, mean age 33.4yrs; 65 AD parents;	171 families; 126 Army, 45 Marine	Not reported
McGuire, Kanesara-jah, Runge, et al.	2016	Cross-sectional	Survey	Army, Navy, Air Force	AD, reserve, Veteran	Lists of ADF deployed to Timor-Leste 1999–2010; ADF gave consent to contact partner	Partners (spouse, de facto, long term) of ADF member	Not reported	Partners mean age 41.7yrs; 71.8% experienced ≥1 deployment; 10.4% 5 or more	1,332	47% ADF gave consent; 36% spouses & children responded
DeGraff, O'Neal, & Mancini	2016	Cross-sectional	Survey	Army	AD	Print & radio ads, flyers at youth centres, military & community stores/ restaurants	Service member, spouse, child(ren)	Dual & single parents; families where only 1 partner completed the surveys	85.7% ADF men, 64.8–70.8% adults 31–40yrs; 61.9% adolescents 11–14yrs	273 families	Not reported
Dirkzwager, Bramsen, Ader, et al.	2005	Cross-sectional	Survey	Army, Navy, Air Force	Not reported	Recruited via peacekeepers (no priority for one particular family member was indicated)	Not reported	Not reported	708 partners (68.7%), 322 parents (31.3%); 99% SPs female, 62% parents	708 partners (68.7%), 322 parents (31.3%)	51% peace-keepers responded; 70% had family member respond

AD = active-duty (serving as Regular); NG = National Guard.

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Table 7. Studies focusing on caregivers

Author	Year	Study design		Intended study population					Final study population		
		Study design	Method	Service	Serving status	Recruitment method	Inclusion criteria	Exclusion criteria	Final sample	N	Response
Bejjani, Snow, Judge, et al.	2015	Cross-sectional	Survey	Not reported	Veterans	Veteran mailed invitations & provided caregiver contact details	Family member/ friend providing most assistance to Veteran (personal care, daily living, health decisions); Veteran ≥ 50yrs with ≥ 1 dementia diagnosis in VA records in past 14yrs; VA primary care; in Alzheimer's Association service areas	N/A	94% women; 68.4yrs avg. age; 72.2% spouses	486	Not reported
Bass, Judge, Snow, et al.	2013	Intervention	Interviews	Not reported	Veterans	Veteran mailed invitations & provided contact information for caregiver	Family member/ friend providing most assistance to Veteran (personal care, daily living, health decisions); Veteran ≥ 50yrs with ≥ 1 dementia diagnosis in VA records in past 14yrs; VA primary care; in Alzheimer's Association service areas	N/A	94.9% caregivers women, 97.5% Veterans men; 72.6% caregivers spouses	486	31%
Griffin, Lee, Bangerter, et al.	2017	Cross-sectional	Survey	Not reported	Veterans	Post & telephone calls	Caregiver (any - parents, spouses, other family, non-family; OEF/OIF Veteran; polytrauma, including TBI; care from polytrauma rehab centre between 2001–2009; discharged from centre ≥ 3mths; alive at start study	N/A	77% female; 47.6 yrs avg. age; 61.5% parents, 32.1% spouses, 6.4% other family/non-family	564	Not reported
Walker, Cardin, Chawla, et al.	2014	Intervention	Survey	Army, Marine	Veterans	Flyers at VA polytrauma centres, websites, military/Veteran events, market research databases, shopping malls	Adults in families where service member injured on most recent deployment & required ≥1 night hospital stay; caregivers of child 2–8yrs; willing to participate in interviews; access to DVD player	Child with additional needs; travelling within month	93% married; 83% AD service members; 63% Army, 27% Marines	153	Not reported
Caspi & Klein	2012	Cross-sectional	Survey	Not reported	AD	Door-to-door recruitment from households in village identified as having IDF members; snowball sampling	Male Bedouin IDF service members & co-habiting wife/ mother; PTSD diagnoses chosen over other DSM disorders, those with no diagnosis/ higher symptom scores	N/A	65.8% spouses; 34.2% mothers (including multiple sons	317 IDF, 196 women	94% IDF, 91% completed interviews

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Table 7. (Continued)

Author	Year	Study design		Intended study population					Final study population		
		Study design	Method	Service	Serving status	Recruitment method	Inclusion criteria	Exclusion criteria	Final sample	N	Response
Moriarty, Winter, Robinson, et al.	2016	Intervention	Survey	Not reported	Veterans	Veterans with TBI recruited from VA polytrauma centre; family member identified by Veteran as actively involved in their life	Resident in Philadelphia area; TBI diagnosis; Vietnam era to present; English language; family member/partner living with them or within 30mins	Veteran at high risk of violence	73% partners, 14.8% mothers, 4.9% sibling; 7.4% other; 42.9yrs avg. age; 93.8% female; 100% Veterans male; 61.7% PIF, 23.5% OEF	317 men, 196 women	Not reported
Piette, Striplin, Marinec, et al.	2015	Intervention	Survey	Not reported	AD, Veterans	VA clinic medical records & sent information – could identify up to 4 caregivers (relative/friend)	Heart failure & <40% ejection fraction; ≥1 outpatient visit in last year; VA primary provider; phone calls in English; caregiver not living at patient's home	Dementia, bipolar disorder, or schizophrenia; in nursing facility; prescribed oxygen; receiving palliative care or had life-threating condition	60% married/ partners	369	Not reported
Stevens, Pickett, Wilder Schaaf, et al.	2015	Intervention	Survey	Not reported	Veterans	VA medical & admin records of next of kin	Primary caregiver of VA patients who served during OEF/OIF; polytrauma injuries or sequelae, including TBI; discharged for ≥ 3mths between 2001–2009; alive at time of survey	NA	60% parent, 34% partner, 6% other	507	67%
Taylor Jr, Ezel, Kuchibhatla, et al.	2008	Cohort	Survey	Not reported	Veterans	Not reported	Spouse caregivers of VA Veterans clinically diagnosed with Alzheimer's disease or vascular dementia	Non-spouse caregivers; did not provide depression data	Caregiver avg. age 69yrs; Veterans 75.1yrs	1,580 caregiver- recipient dyads	Not reported
Ebrahimzadeh, Shojaee, Golhasani-Keshtan et al.	2014	Cross-sectional	Survey	Not reported	Veterans	Via Organization of Veterans & Martyrs Affairs of Iran	Caregiver spouses of Veterans with spinal cord injury		All wives; 80% with children	72	60%
Saban, Mathews, Collins, et al.	2016	Cross-sectional	Survey	Not reported	Veterans	VA polytrauma clinic, social media, letters	Female partner ≥ 18 years providing unpaid care to Veteran with moderate/severe TBI in past 3 mo-10 years	Not reported	90% married; avg. age 43.1 yrs; no reference to children	40	Not reported

AD = active-duty (serving as Regular); NG = National Guard; OEF = Operation Enduring Freedom; OIF = Operation Iraqi Freedom.

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unmarried relationships, LGBTQ families, single parents, and male spouses/partners.

Attempts by researchers to use a looser, more functional definition of family were not always successful. Some studies were able to include other family members, such as siblings, parents, and grandparents but this research focused on caregivers for younger Veterans with traumatic brain injury (TBI) or polytrauma[52,53,55] (Table 6). Even with this broader approach to recruitment, the majority of participants were female spouses/partners (60%–73%), reflecting wider societal expectations of caregiving for women.

What might explain who is included in the research?

The explicit or implicit exclusion of specific groups of military families, either at recruitment or during data analysis, determined which military families were represented in research on mental health and substance use. For example, families with additional challenges – such as spouses/partners and military-connected children reporting previous severe mental health problems including PTSD, psychosis, and suicidality; participants in therapy; participants experiencing pregnancy; participants reporting substance abuse, domestic violence, or family dysfunction; and separated and divorced couples – were often deemed ineligible to participate and therefore excluded. Other common exclusion criteria included spouses/partners of personnel who did not deploy or who deployed for short periods of time, families of Veterans who had not deployed to Iraq and/or Afghanistan, dual-serving families, and National Guard/Reserve families. However, the reasons for choosing particular groups of military families and not others – even if they were experiencing or had experienced the same aspect of military life – were not clearly stated.

Implicit exclusion occurred largely as an unintended result of recruitment or data collection. Convenience sampling was often used in studies of military families. Research teams targeted family readiness groups or VA services, advertised on or near military installations or family facilities on base, or used briefings to recruit via personnel. Social media was used in a small number of studies. The children of military personnel were recruited in similar ways to spouses/partners but also through the addition of questions of military service by parents or siblings in established school-based surveys. As a result of recruitment methods that focused around military facilities, family members who were ineligible for military services and those living outside the community were unable or less likely to participate. Although many studies were open to male spouses/partners, few collected data on these participants; however, due to low numbers, this data had to be excluded during analysis.[41,42] Unconscious researcher bias or the political environment within individual militaries may also have impacted the diversity within samples, with few studies asking about the prior military history of spouses/partners or whether couples were part of minority communities such as LGBTQ.

DISCUSSION

The findings from this review demonstrate that the traditional, heteronormative couple – comprised of a male member of the military married to a female civilian with children – was the most commonly represented family structure within quantitative studies of military family mental health and substance use. Other groups of military families were explicitly or implicitly excluded from the research as a result of recruitment strategies, perceived heightened vulnerabilities or failure to collect information on military experiences from family members.

Much of the research included in this review focused on mental health and substance use among female spouses/partners of active-duty service personnel with children. This choice is not necessarily problematic provided this group reflects outcomes among the majority of military families. Further, this may be an appropriate decision if the research question focuses on family members who are eligible for services or support provided under military policy guidelines.[31] However, only 33% of active duty U.S. personnel are married with children, of which the majority are aged under 5 years,[29] yet the majority of research is focused on outcomes in this group. This review has highlighted how the continual focus on this subset of military families within military family mental health research – albeit the one most often the focus of military policy and directives – prevents development of understanding of the outcomes of other military families that are less commonly, or rarely, included in research in this area, particularly male spouses/partners, couples without children, LGBTQ couples and families, parents of serving and ex-serving personnel, single parents, and Veterans not accessing VA services. There was a particular lack of research of children aged over 18 years, likely due to their inability to access health services through military personnel once they

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reached a certain age[31] and therefore more difficulty in locating and recruiting this population into studies. However, provision for this group is made with military policies on military families, suggesting that this is area that fits within the remit of military interest.[31] There was also a notable lack of research on the experiences of military families post-service.[56]

Research is becomingly increasing representative of other family structures;[28,57,58] however, more resources should be focused on exploring how families under-represented in the research experience military life. Exposure to multiple, cumulative risk factors may be particularly problematic among these military families, with access to protective factors that may buffer against risk and prevent negative outcomes limited by aspects of military life.[43,59] This suggests that under-represented families who are often excluded from the research, such as single parents, those with additional mental health problems and those not accessing military services, may have greater risk exposure but have fewer available resources. The continual exclusion of these groups from the research literature could result in an under-reporting of the adverse consequences associated with military family life and a failure of military policy and programs to support military families who are in need.

While it is beyond the scope of this article to provide a definition of military families, there are a number of steps researchers can take to diversify the family structures included in the evidence base on military families. Many of the potential explanations for the continued focus of research on traditional military families stem from decisions made during study design and recruitment. The majority of included studies used convenience sampling to recruit participants, advertising on or near military bases, through military-connected organizations and charities, military schools or childcare settings, or health facilities such as the VA. Recruitment of family members, in particular spouses and children, through Veterans or via personnel attending military debriefings or reintegration meetings, was also common. While there may be valid reasons for using such methods, they can also unintentionally reinforce the inclusion of traditional military families over others who may not have access to the same services or entitlements provided by the military. Future studies should explore alternative methods, where possible, for approaching members of the military community to improve the inclusivity and diversity of military families in research. This could include increased use of social media and recruitment via military organizations with a broader remit for the military families that they support. Researchers should also consider routinely including questions to identify spouses/partners who are currently, or who have previously, served in the Armed Forces, and LGBTQ families if safe to do so. The inclusion of such questions would avoid key assumptions regarding the civilian status of spouses/partners and the heterosexual nature of couple relationships, although may prove more difficult as a result of ongoing policy decisions in the United States.[60,61] An additional explanation is the cyclical relationship between policy and research. To date, only the U.S. DoD provides an explicit definition of military and Veteran families, with other countries drawing boundaries based on eligibility for services.[31] Policy definitions vary across and within countries[31] and may also vary across time, affecting who is included in current and future research. Studies using data from TRICARE medical records will, by definition, reflect those family members who are deemed by policy to be eligible for military healthcare services.[9,62] While this may be appropriate if a study is focused on the outcomes of those eligible for such services, this should be clearly stated in the aims to operationalize the definition of military family used, especially for researchers outside the country of data collection. However, even within the United States, definitions in political and policy spheres vary. These discrepancies could be exploited by researchers to increase the diversity of military families included in the literature. For example, the U.S. Joint Chiefs of Staff have defined military families as "active-duty service members, members of the National Guard and Reserve, and Veterans, plus the members of their immediate and extended families, as well as the families of those who lost their lives in service to their country."[63(p.4)] Adopting a similar broad definition of military families in future studies would help diversify research participants while ensuring the findings remain broadly aligned with policy definitions from within the military community. Diversity among the participants of studies on military families may also be improved by taking steps to increase collaboration between researchers, policy makers, and practitioners in the field to improve recruitment and focus research resources on under-represented families.[64]

Implications and future directions

There are consequences to the continued representation of traditional, heteronormative military families in

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mental health and substance use research. The potential disconnect between the realities of military families and policy definitions may impact the support and benefits that increasingly diverse military families are entitled to if the latter do not keep pace with societal change. A failure to accurately reflect the diversity of military families in research may impact on the generalizability of findings regarding estimates of mental health and substance use and the success of interventions for improving the mental health and well-being of military families. If studies of mental health and substance use continue to be based on families of married heterosexual couples, then estimates may fail to provide an understanding of mental health and well-being of military families that are more diverse or who have additional challenges. It also means that interventions and support may be unintentionally aimed at families who are able to better manage the challenges of military life rather than those who may be at greater need of assistance and therefore the intended users.

Future studies should increase research on under-represented family structures (Table 3). This could be through including additional questions in pre-existing or up-coming studies to identify more diverse families – such as asking spouses/partners if they are currently serving, or have previously served. Studies should also be established that specifically focus on these groups or over-sample to ensure adequate sample sizes are obtained for quantitative analyses. Qualitative studies could be employed to identify unique needs within under-represented communities and guide further longer-term quantitative studies. To improve variation in study samples, researchers should also adopt more innovative recruitment methods to increase opportunities for participation among families who may not access the usual services such as briefing sessions or military charities that are often used for finding study participants. Taking a research approach that incorporates Patient and Public Involvement (PPI), including representatives from under-represented military family groups, may help to improve inclusion of these diverse family members in research. This process has previously been used to successfully recruit LGBTQ service members using respondent driven sampling (RDS).[65] However, given their access to military families, recruiting a sufficient number of participants will continue to require buy-in and support from military leaders, political representatives, policy makers, and charitable organizations working with military families, as well as families themselves. Sensitivity to the changing political situation of each country should also be considered as well as the potential impacts of identification, especially for non-heterosexual couples and their families. The lack of research from outside the United States in this area should also be noted given the differences in social and cultural factors, health care and support, and operational and military differences between countries.[66]

Strengths and limitations

This review used a systematic approach to examine how military families are defined and represented in international empirical research on mental health and substance use. The findings highlight the implicit and explicit exclusion of certain groups of families from research studies which should be addressed in future research, and the continued need for research from outside the United States. The findings also complement a recent policy review,[31] together providing an understanding of how the term *military families* is operationalized across sectors and the implications for the ongoing relationship between research and policy.

There are limitations to this review. The conclusions apply only to articles on mental health and substance use among military families published in academic journals until October 2017 and may not be applicable in studies of other outcomes in this populations. However, given the increased academic and media focus on this subject area, it is perhaps the topic most in need of research to confirm or contradict common assumptions. The majority of the research is based on U.S. studies or research conducted in Five Eyes nations. Findings may therefore not be applicable to other contexts such as those with conscription. While the authors are confident of the inclusion of key studies, additional search terms relating to parents, siblings and other family members may have broadened our findings. The inclusion of grey literature may also have increased the number of studies. The authors also acknowledge that the scope of some of the included research is itself limited by the policies outlining eligibility to services such as housing on military bases and healthcare.

Conclusion

Research on mental health and substance use among the family members of service personnel continues to reflect the traditional, heteronormative family comprised of a male service member married to a female civilian with whom he has children. While this may represent the largest proportion of families, there is a need to reflect

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outcomes across an increasingly diverse community. Particular groups were excluded from the research evidence, either explicitly by researchers or implicitly due to a failure to collect appropriate data. As a result, the influences of military life on the mental health and well-being of military families who do not fit the traditional, heteronormative stereotype are not adequately reflected in the current research literature. Future studies should aim to ensure recruitment and study populations reflect increasing diversity among the military by using alternative and more creative methods of recruitment and targeting under-represented military families.

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Kate Sullivan, PhD, is an Assistant Professor at the Silver School of Social Work at New York University. She received her PhD from the University of Southern California's Suzanne Dworak-Peck School of Social Work. Her work employs quantitative and qualitative methods to explore the impact of trauma and other risk exposures on family process and mental health outcomes, primarily among the families of service members and Veterans.

Sandra McKeown is a Health Sciences Librarian at Queen's University. Prior to becoming an academic librarian in 2016, she spent eight years working as a hospital librarian at London Health Sciences Centre. She has a decade of experience collaborating on knowledge synthesis teams and meets regularly with faculty and students to advise on synthesis activities and methods. Sandra developed the formalized synthesis library service at Queen's University and has presented and taught on systematic review topics at various conferences.

Susan Burchill is a Master of Science student researching the connection between high school music, mental health, and academic success. She received the Evelyn Shapiro Award for Health Services Research in 2019. She is a co-author on several health policy reports for Manitoba Health through the Manitoba Centre for Health Policy.

Nicola T. Fear, DPhil (Oxon), joined King's College London in 2004 having trained as an epidemiologist at the London School of Hygiene and Tropical Medicine and University of Oxford and after working within the UK Ministry of Defence. Since 2011, Nicola has been Director of the King's Centre of Military Health Research (KCMHR). In 2014, she was awarded a Chair in Epidemiology. Prof Fear leads the KCMHR military cohort study and several studies examining the impact of military service on families.

Carl A. Castro (colonel, U.S. Army, retired), PhD, is currently Professor and Director of the Military and Veteran Programs at the Suzanne Dworak-Peck School of Social Work at the University of Southern California. He is one of the leading military health theorists in the world today.

COMPETING INTERESTS

Nicola T. Fear is trustee for two UK Veteran charities and an advisor to the Independent Group Advising on the Release of Data (IGARD), NHS Digital. Nicola T. Fear is part-funded by a grant from the UK Ministry of Defence. Rachael Gribble, Alyson L. Mahar, Mary Keeling, Kate Sullivan, Susan Burchill, Sandra McKeown and Carl A. Castro declare no conflicts of interest.

This article has been peer reviewed.

CONTRIBUTORS

Rachael Gribble, Alyson L. Mahar, Mary Keeling, and Kate Sullivan conceived and designed the study with assistance from Nicola T. Fear and Carl A. Castro. Sandra McKeown conducted the literature search. Rachael Gribble, Alyson L. Mahar, Mary Keeling, Kate Sullivan, and Susan Burchill extracted the data. The manuscript was drafted by Rachael Gribble, Alyson L. Mahar, Mary Keeling, and Kate Sullivan. All authors edited and revised the manuscript and approved the final version submitted for publication.

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APPENDIX 1: REVIEW SEARCH TERMS

Search terms for 'families' and 'military personnel' were initially run separately. The findings were then combined with terms for 'mental health', including those for substance use, and the final search conducted. The following search strategy was used in Ovid Medline.

1 family/
2 spouses/
3 exp parent-child relations/
4 Marriage/
5 family.mp.
6 families.mp.
7 wife.mp.
8 wives.mp.
9 spouse*.mp.
10 partner*.mp.
11 couple*.mp.
12 adolescent/ or exp child/ or exp infant/
13 child.mp.
14 children.mp.
15 adolescen*.mp.
16 off spring.mp.
17 youth.mp.
18 signifi cant other*.mp.
19 husband*.mp.
20 or/1–19
21 Military Personnel/
22 military.mp.
23 soldier*.mp.
24 service personnel.mp.
25 coast guard*.mp.
26 national guard*.mp.
27 active duty.mp.
28 air force.mp.
29 army.mp.
30 navy.mp.
31 Veterans/
32 Veteran*.mp.
33 ex-service person*.mp.
34 reservist*.mp.
35 reserve* offi cer*.mp.
36 or/21–36
37 20 and 36
38 Military Family/
39 37 or 38
40 Mental Health/
41 mental disorders/ or anxiety disorders/ or anxiety, separation/ or neurotic disorders/ or panic disorder/ or phobic disorders/ or mood disorders/ or depressive disorder/ or depressive disorder, major/ or dysthymic disorder/ or exp substance-related disorders/ or "trauma and stressor related disorders"/ or adjustment disorders/ or stress disorders, traumatic/ or psychological trauma/ or stress disorders, post-traumatic/ or stress disorders, traumatic, acute/ or depressive disorder, treatment-resistant/
42 Anxiety/
43 depression/ or stress, psychological/
44 (mental and (health or issues or disorder* or illness*)).mp.
45 (psychological* and (stress* or distress*)).mp.
46 occupational stress injur*.mp.
47 anxiety.mp.
48 depress*.mp.
49 alcoholism.mp.
50 ((alcohol or substance* or drug*) adj3 (abus* or misus* or disorder* or depend* or addict* or problem* or "use" or using)).mp.
51 alcohol drinking/ or binge drinking/ or marijuana smoking/
52 exp Street Drugs/
53 ptsd.mp.
54 vicarious trauma*.mp.
55 secondary trauma*.mp.
56 traumatic stress.mp.
57 posttraumatic stress.mp.
58 or/40–57
59 Combat Disorders/
60 20 and 59
61 39 and 58
62 60 or 61
63 limit 62 to yr = "2002 -Current"
64 limit 63 to (case reports or clinical conference or comment or consensus development conference or consensus development conference, nih or editorial or meta analysis or "review" or systematic reviews)
65 63 not 64

REVIEW

The state of military families in Canada: A scoping review

Lynda Manser

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ABSTRACT

Introduction: For some families, the military way of life fosters close social support networks and adaptability. For others, the stresses and strains resulting from military operational requirements are challenging. Canadian Forces Morale and Welfare Services reviewed the most recent Canadian research to detail the issues currently facing Canadian military families. **Methods:** The scoping review yielded 72 articles and reports. Additionally, exclusive demographic data on family members were analyzed using data compiled by Chief Force Development. **Results:** Of the 72 Canadian articles, 53 were published within the past five years. These were organized thematically into categories, including demographics, common military lifestyle challenges, common family transitional challenges, and family resiliency. **Discussion:** Canadian military families commonly face three military journey challenges and three family journey challenges: geographical relocations due to postings; absences from family due to operational tempo; operational illness, injury, or death; personal well-being and mental health; financial stress; and intimate partner relationships. The majority of families are resilient and manage these challenges successfully; only a small percentage struggle. For those who struggle, access to systems of care and supports could enhance their resilience to manage these transitional challenges. Overall participation rates in programs and services are currently low, but the majority of those who used them perceived that they were helpful. For families to experience a stabilized family life in the face of military challenges, they need to be aware of, and able to advocate for services that are available and aligned with when, where and how they need them.

Key words: Canadian Armed Forces (CAF), Canadian Forces Morale and Welfare Services, demographics, family relations, financial stress, intimate partner relationships, lifestyle, mental health, military challenges, military family, military personnel, military relocations, resilience, services available

RÉSUMÉ

Introduction : Dans certaines familles, le mode de vie militaire favorise l'adaptabilité et d'étroits réseaux de soutien social. Dans d'autres, le stress et la tension liés aux exigences des opérations militaires représentent un défi. Les Services de bien-être et moral des Forces armées canadiennes ont analysé les plus récentes recherches canadiennes pour identifier plus précisément les enjeux qu'affrontent les familles des militaires canadiens. **Méthodologie :** L'examen exploratoire a permis d'extraire 72 articles et rapports. De plus, les chercheurs ont analysé des données démographiques exclusives sur les membres des familles à partir de données compilées par le Chef – Développement des Forces. **Résultats :** Cinquante-trois des 72 articles canadiens avaient été publiés dans les cinq années précédentes. Les chercheurs les ont classés par catégories, y compris la démographie, les difficultés courantes du mode de vie militaire, les difficultés de transition courantes des familles et la résilience des familles. **Discussion :** Les familles des militaires canadiens affrontent souvent trois difficultés dans le parcours des militaires et trois difficultés dans le parcours des familles : réinstallations géographiques à cause des affectations, absences à cause du rythme des opérations, maladies, blessures ou décès pendant les opérations, bien-être et santé mentale individuels, stress financier, relations avec le conjoint. La majorité des familles sont résilientes et gèrent bien ces difficultés. Seul un petit pourcentage d'entre elles ont plus de mal. Pour celles-ci, l'accès aux systèmes de soins et de soutien peut accroître leur résilience à gérer ces difficultés de transition. Actuellement, les taux de participation globaux aux programmes et aux services sont faibles, mais la majorité des personnes qui les utilisent les jugent utiles. Pour que les familles connaissent une vie familiale stable malgré les enjeux militaires, elles doivent revendiquer des services disponibles et adaptés au moment, à l'endroit et à la manière dont ils en ont besoin et connaître ceux qui sont en place.

Mot-clés : famille des militaires, personnel militaire, santé mentale, relations familiales, mode de vie, démographie, satisfaction personnelle, mode de vie militaire, difficultés des militaires, bien-être, stress financier, réinstallations

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des militaires, rythme des opérations, relations avec le conjoint, Forces armées canadiennes, opérations militaires, résilience, services disponibles, Services de bien-être et moral des Forces armées canadiennes, Chef – Développement des Forces

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INTRODUCTION

Life in the Canadian military can be quite different from that experienced by civilians in Canada. For many families, the military way of life often fosters close family ties, adaptability and an appreciation for the importance of duty and responsibility. Military families are linked by a shared Canadian military identity and culture. It is not uncommon for tight bonds between military families to form quickly and to endure for years. While military families are perceived as the strength behind the uniform, and often buoyed by a profound sense of duty and pride, their dedication to the Canadian Armed Forces (CAF) requires sacrifice, adaptability, resourcefulness, and resilience.[1]

Military service is considered a career rather than a job. A CAF member's career path begins at one of the CAF Recruiting Centres and detachments across Canada, where they decide whether they want employment in the Regular Force (full-time) or Reserve Force (part-time), whether they are joining as an Officer or Non-Commissioned Member, and which of the approximately 100 occupations they would be suited to best.[1] The career paths are unique and different depending on these decisions. Once accepted and the Oath of Allegiance is taken, they will complete their in-depth on-site Basic Officer Training Course or Basic Military Qualification Course. After initial training, CAF members receive their first posting which is dependent on where their new skills are most needed. A posting is a reassignment to a new job, and sometimes requires a geographical relocation for the military member and their family. Posting duration varies greatly depending on the member's occupation and rank. Postings allow for diversity in the scope of a member's career experiences and are meant to enhance training and experience as well as to keep members alert and ready to handle new challenges.

Throughout the remainder of their career, additional individual training is required at set periods to develop specific skills for their trade, to increase rank or responsibilities, and to maintain proficiency in emerging technologies and strategies.[1] Collective unit training is also required throughout their career to build cohesive teams and skills. These additional trainings may require the military member to be temporarily separated from their affiliated unit/base for more than a 24-hour period (temporary duty), and as such, usually away from their family as well.

CAF members can also expect to be deployed domestically or overseas at various times throughout their careers.[1] A deployment is a temporary relocation of the military member (without their family) to an operational setting. The type and frequency of deployments depend on an individual's skill set, rank and qualifications, as well as the needs of the specific mission. Deployments can last a few days or weeks when providing disaster relief, or last for 6–12 months as part of an international commitment like those in Latvia or Kuwait or in the past like Afghanistan or Bosnia.

With this type of career path fairly consistent across most CAF occupations, there are three transitional challenges commonly assumed that distinguish the military from other professions and occupations: mobility, separation, and risk.[2] Few occupations have the requirement to be available to serve in a variety of conditions 24 hours a day, 7 days a week, in locations across the country and the world. Families may face challenges associated with frequent relocation, such as finding new family health care providers, re-establishing child care, moving children between schools and education systems, professional licensing, and dealing with inconveniences such as changing driver's and vehicle licences when moving between provinces.[3] They may also deal with the financial instability resulting from frequent moves, whether it be the loss of employment, different tax systems or changes to post-living differentials. Families share in the stresses and strains that may result from deployments of their loved ones into dangerous operational duty, and the prolonged separations they entail. From recruitment through training and temporary duty, through postings and deployments, possibly through injury, and finally through to release, families must adapt to the challenges that sometimes arise from these transitions.

On the surface, it may seem easy to point to a few unique challenges facing military families. However, the solutions are not as easy to point to. While there are micro and systemic barriers to easing challenges in a simple manner, the amount of research that has recently been conducted to better understand military family experiences in Canada provides detailed information on the scope of the issues, the scale of the number of

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families affected by those issues, and potential recommendations and strategies to improve their experiences. To inform the development of the Comprehensive Military Family Plan as part of Canada's Defence Policy, Canadian Forces Morale and Welfare Services conducted research to detail the issues currently facing Canadian military families. To understand the scope of these issues, a scoping review was conducted, focused on a broadly defined research question ("What are the most common challenges facing military families in Canada?"), with study inclusion/exclusion criteria developed post hoc at the study selection stage, in order to "chart" the data according to key themes and issues. A wide variety of study types, and more than 70 articles and reports published predominantly in the last five years were reviewed as part of this scoping review. And to understand the scale of these issues, the demographics of military family members were analyzed to determine who they are and where they are living.

METHODS

The scoping review followed the methodological framework of Arskey and O'Malley[4] through five stages.

Stage 1. Identifying the research question

The scoping review included three concepts: "military family members," "military lifestyle challenges," and "family resiliency." The target population was family members of Regular Force personnel posted in Canada. The outcome of interest, the well-being of Canadian military families, was addressed through the following research question: "What are the most common challenges facing military families in Canada?"

Stage 2. Identifying relevant studies

The goal was to be as comprehensive as possible in the identification of relevant studies and reviews, including published and unpublished literature, suitable to answer the research question. Literature searches were conducted electronically using EBSCO Information Services and through the Google search engine. Key articles were identified and reference-mined, identifying additional literature that did not surface in the electronic sweep. Professional networks were accessed for sources. Information was also drawn from internal reports prepared for the National Defence, CAF, and Military Family Services. Finally, exclusive demographic data on family members as of August 2017 were analyzed by the author using data compiled by Chief Force Development.[5]

Stage 3. Selecting the studies

Criteria for selection were devised post hoc to allow for familiarity with the literature. If the literature did not meet these criteria, there were not included in the scoping review. The inclusion criteria included:

- literature available in English and/or French;
- literature published in the past 10 years (post-2008) for timely relevance;
- studies examining CAF personnel and member(s) of their family (broadly defined to include spouses, children, other dependents, parents, siblings, etc.);
- studies with search terms explored including family resilience, well-being, mental health, transition, adjustment, deployments, posting relocations, military lifestyle, and unique operational stressors;
- studies employing quantitative, qualitative, or mixed methodology; and
- studies and reports not publicly available but prepared specifically for National Defence, CAF, or Military Family Services.

This report does not include research on military families conducted outside Canada. In the past, outside of anecdotal feedback, much of our theoretical understanding of Canadian military families have come from research conducted in the United States with their military families. But as more Canadian research is conducted, we see considerable differences on the impacts of the military lifestyle on Canadian military families as compared to our American counterparts, presumably due to critical differences in socioeconomic status, culture, income levels, national policies and regulations, provincial and state policies and regulations, and military requirements and services. For instance, in Canada, unlike in the United States, military families are dependent on the civilian health care system. When relocations are required for postings, families need to navigate access to a family doctor as well as any required specialists, often across provincial jurisdictions in which systems and eligibility for services may differ.[6]

Some of the research findings included in this report are not in the public domain. In general, research commissioned by Military Family Services is for internal use and the reports are not available publicly.

Most of the existing research and demographics focus on the military family as a single entity (e.g., examined as a common unit). However, families are not a single distinct entity. Therefore, findings only reflect the

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general experiences of families but not necessarily the uniqueness of individual family experiences.

Stage 4. Charting the data

Relevant information was extracted into a data charting form to organize details useful for answering the research question.

Stage 5. Collating, summarizing, and reporting results

Literature identified as meeting the inclusion criteria were reviewed and categorized including the geographic location of the study, how the family or family member was defined, and what aspect of their life/well-being/resilience/military lifestyle and operational challenge was examined.

RESULTS

Of all the articles and reports reviewed, 72 met the inclusion criteria. All of these were Canadian reports published between 2009 and 2018, with almost 70% of them between 2015 and 2018 (see Figure 1). Approximately half of these articles and reports were available publicly on websites or in various peer-reviewed journals. The other half were not in the public domain, as they either were commissioned by Military Family Services or were statistical reports on CAF personnel information, both of which had the intended purpose of informing internal strategic direction for programs, services and resources rather than for public education. All articles in both the public domain and those internal to Military Family Services and CAF report on results from a variety of different study types – literature reviews, environmental scans, personnel human resources data analyses, and qualitative and quantitative studies. Some of the qualitative studies had small sample sizes (n = 50) but delved deeply into specific issues; others had large samples sizes (n = 8,000) but covered a wide range of issues lightly. Qualitative study designs ranged from interviews to focus groups to anonymous online surveys. Some studies used stratified samples while others relied on snowball sampling. No studies were longitudinal. Not all 72 articles and reports are detailed; only those who have been directly cited are in the reference list.

Articles were thematically organized into categories, including demographics, common military lifestyle challenges, common family transitional challenges, and family resiliency.

DISCUSSION

Canadian military family demographics[7]

In August 2017 there were 63,269 Regular Force members posted in Canada. More than half of all Regular Force personnel posted in Canada were under the age of 35 (54%) or had less than 11 years of service (54%). Combined, those under the age of 35 with less than 11 years of service represented 44% of all Regular Force personnel posted in Canada.

Just over half (56%) of all Regular Force members were in a legal relationship (married or common-law), and 44% were single of which 8% have dependent family members. Almost half of all Regular Force members posted in Canada (47%) had children. In addition to the 63,269 Regular Force members posted in Canada, there were 94,279 other family members (including spouses = 34,906; children = 57,639; and other family dependents = 1,734).

Almost 40% of all Regular Force personnel posted in Canada lived in Ontario. More than 80% lived on or within a 30-minute drive away from their posted base.

Common challenges facing Canadian military families

Canadian military families commonly face three military journey transitional challenges and three family journey challenges: geographical relocations due to postings; absences from family due to operational tempo; operational illness, injury or death; personal well-being and mental health; financial stress; and intimate partner relationships.[1] The vast majority of families manage these challenges successfully and are resilient (80%); only a small percentage (10%) struggle.[8]

Military lifestyle challenge 1. Geographic relocations due to postings

Approximately one-quarter of all Regular Force personnel are required to relocate to a new location each year due to a posting.[9] An estimated 10,000 families are required to relocate each year, of which approximately 8,000 must move to a new province or territory.[1] While relocations appear to be the biggest challenge for military families, and the consequences of relocations are stressful and challenging to address (e.g., financial, intimate partner relationship, health care for non-military family members, spousal employment and child care / education), the majority manage relocations successfully with little external support.[1] Some family personas face more difficulties with relocations than others (e.g., single

Figure 1: Research trends by publication year

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parents, caring for elderly parents or special needs children, adolescents, dual service couples), and may require additional external supports.[10–11]

Military lifestyle challenge 2. Absences from family due to operational requirements

Approximately two-thirds of military families experience periods of absence from their loved one due to operational requirements.[8,12,13,14] The frequency and length of absences vary greatly. While absences appear to increase the stress level for family members, specifically during the deployment phase as opposed to pre- or post-deployment, the majority of families quickly return to regular functioning after the deployment, without the requirement of external formal supports.[15] Similarly, for families affected by Imposed Restriction absences, more than half felt the absence strained their relationships, but most believed their relationships improved afterwards.[16] Imposed Restrictions are intended to be short-term solutions to mitigate potential friction between military service and family life. The CAF expects that its members will relocate their families when posted to a new location, but they recognize that there are factors and circumstances that may temporarily require the member to elect to be separated from the family and proceed unaccompanied to the new place of duty. This is considered an Imposed Restriction. While this policy effectively addresses some of the disruptions that frequent relocations can have on spousal employment, childcare and education, and family medical care, it has raised other concerns about the long-term effect that extended separation may have on family members. In general, spouses and partners (the family member most commonly studied) show high levels of mastery, self-esteem, active coping strategies and support from their CAF partner with respect to absences.[12,13,17] Some family personas face more difficulties with absences than others (e.g., single parents, parents of CAF members, younger children, dual service couples), and may require additional external supports.[18]

Military lifestyle challenge 3. Operationally-related illness, injury or death

While only approximately 1% of military families are affected by illness or injury resulting in medical release from the CAF, the impacts of the illness/injury on these families can be significant.[19] These impacts vary depending on a wide range of factors. For most medically released Veterans, their spouse/partner was their primary

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caregiver. In general, injured members and spouses both found the following most stressful on a day-to-day basis: "physical/mental health," "work," "family," and the "military release."[20] While the majority make the military to civilian transition successfully, some do struggle.[21] This applies to both the military member and their family members, as the family also goes through the transition from a military family identity and culture to a civilian identity and culture.[22]

Family challenge 1. Personal well-being and mental health

About one-quarter of military families are concerned with their work-life balance, and to a lesser degree, their personal well-being and mental health.[14] But the majority are physically and mentally healthy.[8] Those caring for special needs children or elderly parents feel their emotional well-being suffers more as a result of the increased caregiving burden.[11] Children in military families may be using public mental health services more than children in the general population.[23]

Family challenge 2. Financial stress

Financial stress affects some military families. About 10% of families say financial problems are their biggest challenge.[14] Challenges contributing to their financial stress include "finding suitable employment for the non-military spouse," "unable to afford extracurricular activities," and "trouble paying debt or bills."[14] Relocation negatively impacts the financial situation of about half of families who must move due to a posting.[16,24] Housing and cost of living are the two major contributors to financial stress specifically related to relocations, with non-military spousal employment a lesser contributor.[16,24]

Family challenge 3. Intimate partner relationship

While the majority of military couples are satisfied with their intimate partner relationship, a small percentage (8%) are concerned with it.[14] Most commonly, couples who are concerned with their relationship are having "problems communicating/expressing feelings," "arguments," "growing apart or in different directions," and "little or no physical affection."[14] Relocations, deployments, Imposed Restrictions, and illness/injury all place additional stressors on the intimate partner relationship, though most recover quickly afterward.[1] A small percentage (5%) have experienced some sort of family violence.[12] Work-family conflict and marital dissatisfaction were found to be predictors of emotional and physical intimate partner violence. Emotional intimate partner violence negatively impacts psychological well-being[25] and significantly predicted psychological distress.[26]

Military family resiliency

When the military journey and the family journey combine, at times these transitional challenges can compound or even collide, impacting the family more intensely. And depending on the family (where they are on their journey, what their composition is, what state their collective resiliency is at, etc.), each transitional challenge will be experienced and reacted to differently.

In a review of existing research on military families and resilience, it appears that little is known about the practices and processes enacted by resilient military families.[27] The study researchers posit that resilience involves ongoing work through bidirectional interactions across multi-systemic levels mediated through boundary maintenance, shared identities, family belief systems, organization patters and communication processes. These researchers conclude that while it is incumbent upon the military family to take responsibility for their own resilience, the military institution can also take responsibility for their families' resilience through the development and implementation of relevant policies and programs.

Canadian research findings suggest that 4 out of 5 military families are resilient and supported within a healthy CAF community, and only 1 in 10 feel they do not successfully meet the challenges of the military lifestyle.[24] A higher percentage (9 out of 10) believe they successfully meet the overall responsibilities they have in their lives.[28] However, some families need additional support to access CAF, community and provincial systems of care. As well, just like any family, a military family can experience resiliency under the right conditions, but should they experience enough stressors, they can become at risk for a variety of poor outcomes. Access to systems of care and supports at the CAF level, community level, and the provincial level would enhance their resilience to manage the transitions inherent with CAF operational requirements and their family journey challenges.

Only about one-third of CAF spouses believe that the CAF looks after military families, while one-third did not think so, and one-third were neutral.[8] Overall participation rates in programs and services are low,

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but the majority of those who used programs and services were satisfied with the services they received and perceived that they assisted them in coping with their situations.[8] Most commonly, families tend to rely on non-military sources, such as personal networks, private doctors/counsellors, or the Internet.[14] The most common reasons for not using CAF community supports included "not thinking the support was required to deal with their problem," "the program/service did not meet their needs," or "they were not aware of the support." [14]

Conclusion

While the amount of research conducted over the past 10 years on issues facing military families is extensive, there are still many gaps in the overall knowledge base, including the basic demographics of military families. Research to date has mostly focused on families as a single entity (e.g., examined as a common unit experiencing the same issues), but families are not a single distinct entity. Future research needs to examine different types and personas of families, especially those who may have higher needs (e.g., single parents, special needs, etc.). And more research is needed specifically to better understand the needs of children and youth in military families. Research is also needed on the interaction of various factors, rather than simple questions on primary challenges. Research is needed to better understand the protective factors at play that seem to be inherently contributing to the high rate of military family resilience without systemic interventions or supports. Ideally, longitudinal research would be conducted to understand the cumulative impacts and trajectories of families throughout the course of the military career. And finally, research needs to be conducted acknowledging the ecological framework that families exist in, looking not only at the individual or the family unit, but also the communities they are part of, the provinces they live in, and the CAF itself as an institution and a culture.

There is a clear and basic requirement for existing military family services to be aligned with the current research on their needs and challenges. Services must be focused on these current needs in a way that reflects both the numbers of families affected and the locations where those needs are being realized. The multitude of CAF services needs to be communicated more effectively to families, to ensure that when families need assistance to be more resilient, they know where to access those supports and that their resiliency is not hindered by a lack of knowledge of where help is available. Services need to align not only with the needs of families but also delivered using evidence-based practices and strategies that support the determinants of wellness and the domains and factors for resilience, at the individual, family and community levels. Ultimately, services for families need to be aligned with their realities, families need to be aware of those services, families need to know how to advocate for themselves and others on how to access those services, and if services are not available to address their needs, then we need to develop them collectively.

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Children's agency: Developing a digital app to voice family narratives

Marg Rogers[a] and Jo Bird[a]

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ABSTRACT

Children negotiate their lives through the narratives to which they are exposed in digital, print and oral form. The *Rose's Story* app project drew on a philosophy that positions children as social agents. We used the social and contextual elements underlying children's experiences with technology to develop a digital app for young children from the Australian military community by leveraging family narratives to portray children's agency. Data to develop the app was taken from a 2017 study involving 2 to 5 year-old children from 11 Australian Defence Force families. Findings from the *Rose's Story* app project can be applied practically to impact the well-being of children from military families, their parents, educators, and the broader community by increasing understanding and empathy. This article outlines effective ways to utilize a productive medium for children's voices to be heard, as well as identifies potential barriers.

Key words: app project for military children, Australia, children as active agents in families, children's agency, digital storytelling, early childhood, military families, military family narratives, Rose's Story app

RÉSUMÉ

Les enfants négocient leur vie par les récits auxquels ils sont exposés sous forme numérique, imprimée et orale. Le projet d'application *Rose's Story* puise dans une philosophie qui positionne les enfants comme agents sociaux. À l'aide des éléments sociaux et contextuels qui sous-tendent les expériences des enfants en matière de technologie, une application numérique destinée aux jeunes enfants du milieu militaire australien a été créée à partir des récits familiaux pour décrire l'agentivité des enfants. Les données utilisées pour créer l'application ont été tirées d'une étude réalisée en 2017 auprès d'enfants de deux à cinq ans issus de 11 familles des Forces armées australiennes. Les résultats du projet d'application *Rose's Story* peuvent être utilisés concrètement et avoir des répercussions sur le bien-être des enfants des familles des militaires, de leurs parents, des éducateurs et de l'ensemble de la communauté, car ils accroissent la compréhension et l'empathie. Le présent article fait ressortir des moyens efficaces d'utiliser un médium productif pour faire entendre la voix des enfants et relever les obstacles potentiels.

Mots-clés : agentivité des enfants, enfants comme agents actifs dans les familles, Australie, applications pour les enfants des militaires, familles des militaires, narrations numériques, application numérique pour les enfants des militaires, Rose's Story, petite enfance, récits des familles des militaires

INTRODUCTION

Until 15 years ago, little research was conducted directly with children under the age of 9 years in the Western world.[1,2] Generally, young children were not seen as competent communicators and they were unable to understand and make sense of the world around them.[3,4,5] As such, most research was comprised of the opinions of parents and other adults in children's lives, such as caregivers and educators.[1,6] Before the mid-1990s, most research was conducted *about* children, rather than being conducted with input *from,* or *with* children, so "the views of children as active agents and key informants in matters pertaining to their health and well-being"[7(p.419)] were ignored. Although much progress has been made through the work of participatory researchers, such as Clark and Moss,[2] there is a shortage of research on approaches to gathering children's opinions. For example, there are several studies clarifying children's preferences for outdoor learning environments[8] in early childhood services, but little research exists on preferences for indoor learning

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environments.[8] Overall, children's voices and narratives, and those of their families, have often gone unheard.

CHILDREN AS SOCIAL AGENTS

The United Nations[9] Convention of the Rights of the Child (UNCRC) was ratified in Australia in 1990, giving credence to children's opinions and sparking an interest in using participatory research methods with children in early childhood and primary settings.[2] One popular method is the Mosaic approach, the framework of which is shown in Figure 1. Mazzoni and Harcourt[10] posited that children were adept communicators, while Clark and Statham[11] asserted that children are knowledgeable about their lives and the issues that affect them. Once children have an audience, they are often keen to share narratives about topics and experiences,[12,13] likely because humans are intrinsically drawn to narrative and therefore weave their experiences into narrative from a very young age.[14]

THE IMPORTANCE OF NARRATIVE

A narrative is a way of describing, understanding, or representing events,[15] and narratives are entrenched in all cultures around the world.[16,17] Humans are innately attracted to narrative[18] because it provides context about the world[17] and is a means to develop one's own story[19] as well as to relay versions of events to others.[14] A historical absence of children's voices in military family narratives poses difficulty, as children are social agents constantly acting in, reacting to, and changing their worlds.[7] Narratives appeal to those of varying cultural, educational, and socioeconomic backgrounds because they are easily remembered, predictive, orderly, solution-oriented, and invoke emotion and imagination.[19]

The narrative of the military child

Young children's understandings and experiences of parental deployment within an Australian Defence Force (ADF) family[2] was the first research study in Australia to collect data directly from children with military families. It received ethics approval from the University of New England, Australia. The study employed a resilience strengths-based perspective to examine the parental deployment experience of children in Australian military families. In Australia, military deployments generally last 3 to 9 months, but they can be shorter for training courses. The study sought to determine what children aged 2 to 5 years understood about parental deployments, and what they experienced while their military parent was away.

Researchers engaged directly with children from 11 ADF families, along with their parents and educators. The families were from four military bases in three Australian states. The Mosaic method was employed to collect data through multiple means, including discussions, observation, journal entries, storybook elicitation,

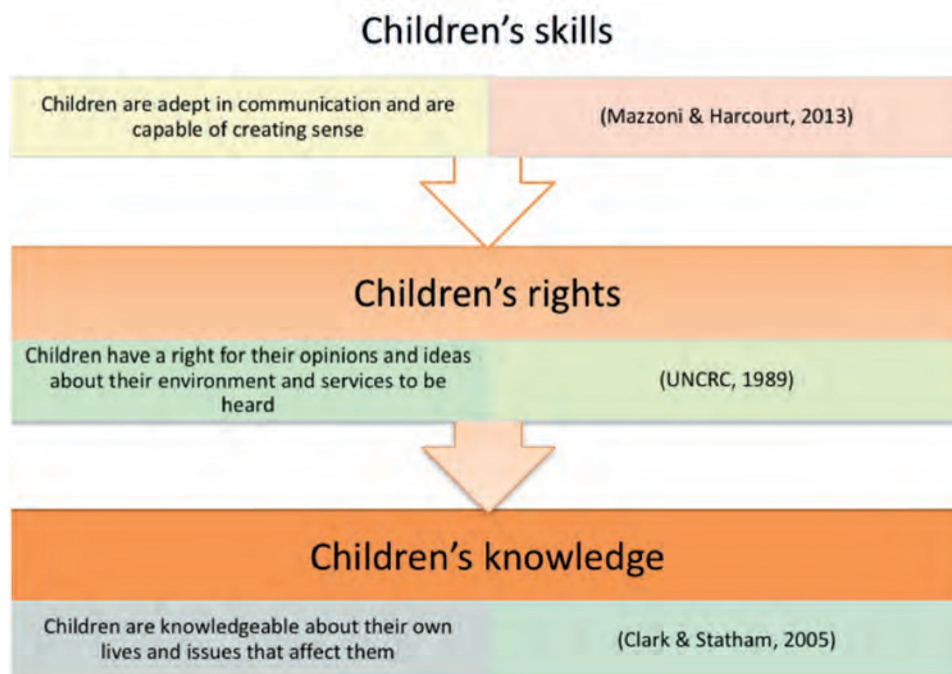

Figure 1. Mosaic approach framework (adapted from Clark and Moss[2])

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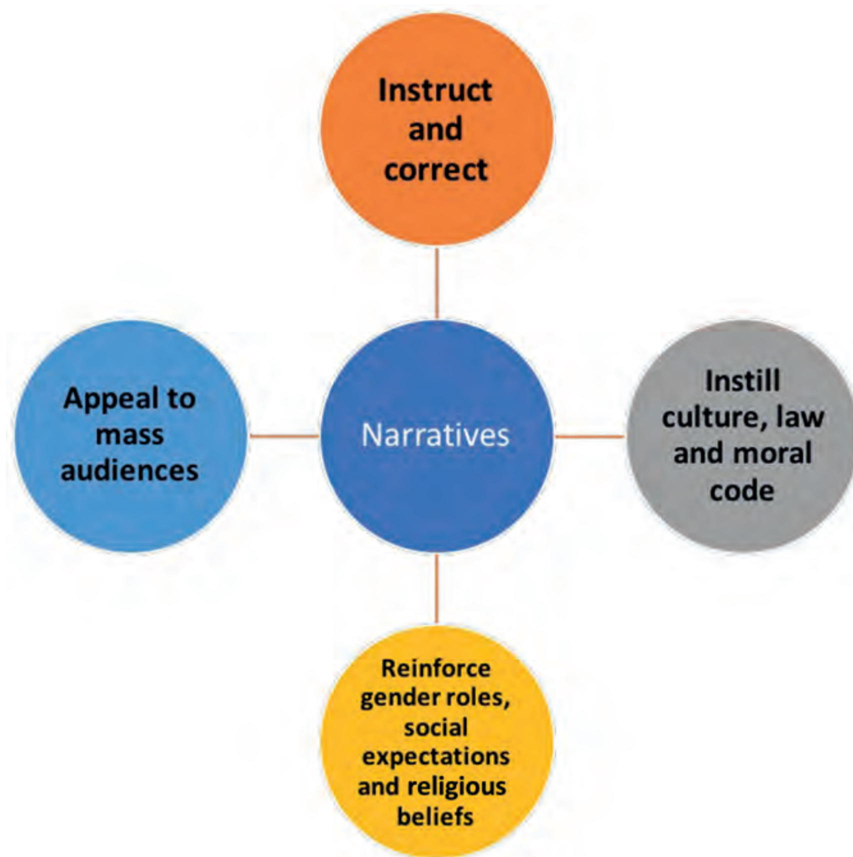

Figure 2. The use of narratives through history

arts and crafts, puppet play, role-playing, rhyming, and music. Data was validated by children, parents, and educators. Data was analyzed narratively and thematically to bring stories together and arrange them into patterns to reveal an overall picture, similar to the way in which a mosaic pattern is created.

The study revealed a need for age- and culturally appropriate resources for children of ADF families experiencing deployment.[20] Parents and educators requested more resources for children in the form of storybooks.

Narrative in storybooks

Children's storybooks are a sophisticated form of narrative that use visuals, as well as text, to add weight to messages. Through family readings, books can become part of the visual information children use to reason and form ontological viewpoints, as described by Johnson.[21] As Fulford[22] explains, "children grow into adults by learning stories, and so do nations and communities."[22(p.33)] Humans are likely to listen to moral messages in a narrative when they empathize with the characters, and are provided a safe place to practice emotional responses, which is especially important for children as they develop empathy.[14]

Using data from the ADF family study, draft storybooks were created and adapted based on the experiences of the children and their families.[23,24] One of the books, *Waiting for Daddy, Rose's Story*, is depicted in Table 1. It discusses the various stages of the deployment cycle, reactions to deployment by children and family members, strategies employed, and protective factors used. Although the narrative is told within the context of a single family, the story is an amalgamation of the experiences of many participant families. The books were used, in e-book form, as research tools at home by parents participating in the study, as well as in print form by the researcher. The books allowed children to explore emotions and provided a natural starting point for discussions about parental deployment. They also helped to validate the children's identities as members of a defence family and normalized their experiences.[25]

Additionally, the books assisted in explaining language used by adults discussing deployment and explored difficult experiences that required complex levels of understanding, such as the concept of time.[26]

Children were highly engaged with the books created, as they depicted parental deployment experiences

similar to their own and were portrayed through the eyes of relatable characters. This was something not previously available in literature marketed to their age group, or within the context of an Australian military family experiencing deployment. It was empowering for children in the study to see their family narratives in a book, providing them with a sense of agency (see Table 1).

DEVELOPMENT OF A STORYBOOK APP

Parents involved in the study also requested a digital storybook app be developed, similar to one available in the United States (US), and used by some ADF families. Although Australian children related to the character in the U.S. app, parents identified that the narrative and contextualized elements, such as the uniforms, flags, and

Table 1. Examples of experiences, responses, strategies, and protective factors within the deployment cycle depicted in *Waiting for Daddy: Rose's Story*, http://www.defence.gov.au/DCO/_Master/documents/Books/Roses-Story.pdf

Part of the deployment cycle	Experience	Responses, strategies, protective factors within the story
Pre-deployment	Rose saying farewell to her father at the airport	**Responses**: **Emotional**: reacting to her mother's responses with uncertainty by not asking a question **Cognitive**: confusion about time concepts
Deployment	Missing her father	**Responses**: **Emotional**: increased irritability, teary episodes, and clinginess **Physical**: difficulty falling asleep or sleeping through the night, mother's tiredness from single parenting **Cognitive**: confusion about time concepts **Strategies**: • helping her mother with tasks in the house and garden • drawing a picture to send to her father • asking her mother repeatedly when her father will return **Protective factors**: • grandparent visits to assist caring for the children • ADF funded postage on parcels to deployed parents **Coping strategies**: • utilizing digital media to record the father reading the children a bed time story which they play back when he is deployed
Reunion	Going back to the airport	**Responses**: • **Emotional**: excitement of the other family members • **Emotional**: frustration due to the long wait at the airport • **Emotional**: displays from family members, learning to wait for parents to have time together • **Cognitive**: reminding her father of her age • **Social**: noticing the actions of other defence families **Protective factors**: • waiting with other defence families at the airport **Coping strategies**: • a grandparent present at the airport
Re-integration	Spending time with her father during an outing	**Responses**: • **Emotional**: enjoying her father's attention and love **Coping strategies**: • drawing a picture of an activity Rose and her father could do together at the park, or one they could do with their non-deployed parent which can be saved and sent to their deployed parent

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accents, were not culturally appropriate. Current literature supports this argument, as children find a sense of "belonging, agency, and social power" in digital culture.[27] Being able to create an app where the narrative is personalized to individual children can increase enjoyment and learning.[28] Children seamlessly navigate varying roles in virtual worlds[29] and seeing characters on a screen navigate situations similar to their own can give them confidence to handle challenges in the real world.

Apps need to be both educational and appropriate to be impactful[30–33] and children need to relate not only to the characters and experiences depicted, but also to the voices, vocabulary, and culture (i.e., military families) in order for an app to be successful as a narrative.[28]

With this in mind, the authors adapted *Waiting for Daddy, Rose's Story* into a storybook app, available through the iTunes App Store, and free for download to an iPad.[34] The decision to provide the app for free was done largely to ensure ease of access and avoid barriers to its use. Using feedback provided by the ADF families involved in the study, an Australian speaker was selected to narrate the digital storybook and the tale was set in a familiar context – an Australian family home belonging to an ADF family. Activities were included in the app to make it more meaningful to individual children.[28] Plans for future versions include the ability for children to insert their own names and images into the app to further personalize the stories.

Maintaining and enhancing the children's agency in the app

The app maintained the integrity of the ADF family narratives portrayed in the original e-book by preserving and enhancing the initial storyline. This included adding audio options (to allow children to listen to the story if they were unable to read it on their own), and drawing and painting tools (to create artwork for deployed parents that could be saved to an iPad, then messaged or emailed to the parent). Further examples of the app's activities are outlined in Table 2.

Table 2. App activities that increase children's sense of agency within: *Rose's Story*, https://itunes.apple.com/us/app/roses-story/id1439753804?ls=1&mt=8

Part of the deployment cycle	Experience	Responses, strategies, protective factors within the story	App activities
Pre-deployment	Rose saying farewell to her father at the airport	**Emotional**: reacting to her mother's responses with uncertainty by not asking a question **Cognitive**: confusion about time concepts	• Decorating the plane for her father and making it fly away
Deployment	Missing her father	**Responses**: **Emotional**: increased irritability, teary episodes, clinginess **Physical**: difficulty falling asleep or sleeping through the night, mother's tiredness from single parenting **Cognitive**: confusion about time concepts by asking the mother repeatedly when her father is coming home	• counting the sheep to help Rose's mother fall asleep • creating happy and sad faces to increase knowledge and awareness of emotions
		Strategies: • helping her mother with tasks in the house and garden, working with • drawing a picture to send to her father	• drawing a picture that they can save and send to their own parent • helping post the picture • designing a new earth mover for Rose's father to use at work which they can save and send to their own parent

(Continued)

Table 2. (Continued)

Part of the deployment cycle	Experience	Responses, strategies, protective factors within the story	App activities
		• helping to cook items to post to the father	• helping Rose's Mum choose what to cook for dinner
		Protective factors: • grandparent visits to assist caring for the children • ADF funded postage on parcels to deployed parents **Coping strategies**: • utilizing digital media to record the father reading the children a bed time story which they play back when he is deployed	• choosing and wrapping items to post to Rose's father
Reunion	Going back to the airport	**Responses**:	• Activating the animation to hug members of the family for support
		Emotional: • excitement of the other family members • frustration due to the long wait at the airport • seeing emotional displays from family members, learning to wait for parents to have time together • cognitive: reminding her father of her age • social: noticing the actions of other defence families **Protective factors**: • waiting with other defence families at the airport	
		Coping strategies: • a grandparent present at the airport	• Decorating a "welcome home" banner for Rose's father
Re-integration	Spending time with her father during an outing	**Responses**: • **Emotional**: enjoying her father's attention and love	
		Coping strategies:	• Drawing a picture of an activity Rose and her father could do together at the park, or one they could do with their parent which can be saved and sent to their parent

ADF = Australian Defence Force.

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DIGITAL TECHNOLOGY IN EARLY CHILDHOOD

Digital technology is ubiquitous in early childhood,[35] and the field has shifted from asking if educators *should* use technology in early childhood education to seeking to understand *how* to most effectively use digital technology to teach young children. However, resistance remains from some educators who believe technology should not be integrated into practice, which could be due to a lack of professional development[36] or personal philosophical beliefs. The app development project team encountered a number of institutional barriers when producing the storybook app, as it was determined to be a "non-traditional research output" as compared to a traditional research output. Barriers to development included dilemmas by the ethics committee where a lack of clear processes around developing an app exist compared to other traditional research outputs (such as a hard copy storybook, conference papers, or journal articles).

Many research studies show the use of technology can enhance learning,[37] as children show an interest in digital technology, and harnessing this interest to support their experiences beyond the screen may have significant implications for their futures.[38] The introduction of tablets and related technologies has many positive benefits for young children[32,39,40] due to the touch screen nature and highly intuitive icons that do not require reading comprehension for use.[41,42]

CONCLUSION

Overall, digital apps provide an engaging and culturally significant way to portray family and cultural narratives. They can be a powerful way for children to connect with both family and their military communities, engendering a sense of agency and belonging. Blakeney-Williams and Daly believe that using children's stories "enables the learner to develop a sense of self and creates a sense of community."[43(p.49)] As technology increases in importance in early childhood education, digital apps will likely become a more accessible and attractive platform for children, families, educators, and researchers to portray children's agency.

Despite potential organizational barriers, researchers may find digital apps useful for their research output potential and ability to deepen children's sense of social agency, as described by Rogers et al.[44]

This article serves as a blueprint for developing story-based apps for children for their emotional, social, and language skills development, and for their wellness. This was achieved by using narrative-driven engagement with children, their parents, and educators, to gather content for children's narratives in the form of e-books and subsequent interactive digital apps. Interactive digital apps are an effective medium for disseminating children's voices. More study is needed in this area to find practical research outputs, as they have great potential to improve the lives of deployed military members and their families as well as those who educate and care for the children of deployed members.

The authors plan to develop similar interactive web-based applications from family narratives, allowing them to be used from a range of digital devices to increase accessibility. A partnership with the Defence Community Organisation (DCO) has been formed making the e-books available on their website. The DCO is a not-for-profit organization funded by the ADF to support defence personnel and their families. The app will be promoted in a funded project to create two free, online research-based programs to assist parents and educators to better support 2- to 5 year-old children from military families (see www.ecdefenceprograms.com).

Limitations

The initial research study on which the app was based was conducted in a single country; therefore, care should be taken not to generalize the findings. Although military families and military culture are similar throughout the world, some aspects differ with respect to social, community, and organizational expectations, attitudes, and supports.

Further research

The authors have gathered evaluations from educators on the effectiveness of the app as a way to portray the narrative of defence families and the experiences of children within these families. They have planned further research to collect evaluations from children and their parents. Within the broader field, further research into the power of digital narratives in promoting children's agency is required.

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CONTRIBUTORS

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