

## Original quantitative research

# A cross-sectional study of mental health and well-being among youth in military-connected families

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### Abstract

**Introduction:** The study objective was to compare the mental health and risk-taking behaviour of Canadian youth in military-connected families to those not in military-connected families in a contemporary sample. We hypothesized that youth in military-connected families have worse mental health, lower life satisfaction and greater engagement in risk-taking behaviours than those not in military-connected families.

**Methods:** This cross-sectional study used 2017/18 Health Behaviour in School-aged Children in Canada survey data, a representative sample of youth attending Grades 6 to 10. Questionnaires collected information on parental service and six indicators of mental health, life satisfaction and risk-taking behaviour. Multivariable Poisson regression models with robust error variance were implemented, applying survey weights and accounting for clustering by school.

**Results:** This sample included 16 737 students; 9.5% reported that a parent and/or guardian served in the Canadian military. After adjusting for grade, sex and family affluence, youth with a family connection to the military were 28% more likely to report low well-being (95% CI: 1.17–1.40), 32% more likely to report persistent feelings of hopelessness (1.22–1.43), 22% more likely to report emotional problems (1.13–1.32), 42% more likely to report low life satisfaction (1.27–1.59) and 37% more likely to report frequent engagement in overt risk-taking (1.21–1.55).

**Conclusion:** Youth in military-connected families reported worse mental health and more risk-taking behaviours than youth not in military-connected families. The results suggest a need for additional mental health and well-being supports for youth in Canadian military-connected families and longitudinal research to understand underlying determinants that contribute to these differences.

**Keywords:** *military families, adolescents, mental health, life satisfaction, risk-taking behaviour*

### Introduction

Youth in military-connected families experience a unique set of stressors. Prolonged absences from the serving parent(s) during training or deployment, the inherent

risk of the parent's injury or death and frequent geographical relocations that disrupt education, extracurricular activities and peer groups can all negatively impact youth mental health and well-being.<sup>1,2</sup> In addition, compared to nonmilitary personnel,

### Highlights

- Youth in military-connected families experience unique stressors related to a parent's military career that may negatively impact their mental health and well-being. Existing research is limited primarily to cohorts of children and youth in US military families.
- Canadian youth in military-connected families reported worse mental health and life satisfaction and greater risk-taking behaviours than youth not in military-connected families.
- International focus on the consequences of parental military careers and the best means of addressing these risks for their children is needed.

military personnel are more likely to report their own adverse childhood experiences and trauma, which may impact parenting.<sup>3,4</sup>

Growing up in a military family also demands adaptive social networks and may affect youths' sense of belonging and access to community support.<sup>1,2,5</sup> The pathways that underlie this risk may be understood using the family stress model.<sup>6,7</sup> This model describes how distress and feelings of insecurity shared among family members adversely affect parenting practices and dyadic adjustment, with subsequent risks for children's maladjustment.<sup>8</sup>

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For instance, maternal depression, a robust risk factor for emotional and behavioural problems in youth,<sup>9</sup> is prevalent among nonserving spouses in military families<sup>10,11</sup> particularly around the time of deployment.<sup>12</sup> Other research has found that parental posttraumatic stress disorder in military families is also associated with poorer mental health in children.<sup>7,13</sup>

Although there is a substantive literature documenting poor mental health among children and youth in military families, most epidemiological research has been carried out in the US.<sup>14</sup> The experience of military-connected families in the US might not represent families in other countries, given differences in military lifestyle (i.e. conflicts, geographical relocations, deployments, rhythm and intensity of operations) as well as differences in how the military is perceived and valued in other countries.<sup>15-21</sup> In addition, previous research has focussed on comparisons among youth from military-connected families and examined the impact of deployment, parental combat or parental posttraumatic stress disorder on youth mental health.<sup>1,13,22-25</sup> While these pathways and determinants of worse mental health in US military families likely hold true in other countries, this information does not provide families, advocates and policy makers with knowledge of the direct or indirect impact a parent's military career has on child health and well-being. There is a need to estimate the burden of poor mental health and well-being among youth in military-connected families relative to youth not in military-connected families across many countries to understand the consistency of the relationship across contexts.

The objective of this study was to investigate the association between membership in a military-connected family and indicators of mental health, positive emotions and behaviours, life satisfaction and risk-taking behaviours in a representative sample of Canadian youth.

## Methods

### Ethics approval

The Health Behaviour in School-aged Children in Canada survey was granted ethics approval from the General Research Ethics Board at Queen's University, as well as the Health Canada and Public Health Agency of Canada Research Ethics Board. Active or passive consent, depending

on individual school board practices, was obtained from the participating pupils, their parents or guardians and schools.

### Study design and population

This study was cross-sectional, using data from the 2017/18 (8th cycle) Health Behaviour in School-aged Children (HBSC) in Canada study.<sup>26</sup> The Canadian HBSC is conducted every four years in collaboration with the World Health Organization,<sup>27</sup> and is a nationally representative, school-based survey of youth in Grades 6 to 10 (Grade 6 to Secondary 4 in Quebec). Sampling of schools was stratified by province/territory, language of instruction, public/Roman Catholic designation and community size, with replacement. Children attending private schools (in Quebec, this includes Catholic schools), learning at home or on First Nation or Inuit reserves, street youth not in school and incarcerated youth, all of whom together make up less than 7% of Canadian youth, were not eligible to participate.<sup>28</sup> Sampling weights were created within grades to ensure that each province and territory was proportionally represented.

Students completed a questionnaire using either paper and pencil or online software, dependent upon the preferences of the local school board, that was typically administered by a teacher in a classroom setting in a single session lasting 40 to 75 minutes. The sample included 21 541 students in Grades 6 to 10 (typically aged 11–15 y) from 287 schools representing all provinces and two territories (Yukon and the Northwest Territories). Survey weights were created to ensure that each province and territory was proportionally represented by grade.

### Study measures

The survey included internationally standardized mandatory and optional questions.<sup>26</sup> Military connection was measured as a dichotomous variable. Students were asked to respond “yes,” “no” or “I don't know” to the question: “Does one of your parents/guardians currently serve, or have they served, in the Canadian Armed Forces military (i.e. Army, Navy, Air Force)?” Students responding “yes” were categorized as being military-connected. Students who indicated they did not know or who did not answer the question were excluded.

Three indicators of poor mental health, one indicator of positive emotions and behaviours, one measure of life satisfaction and one measure of risk-taking behaviour were studied. Low well-being was measured using the 5-item World Health Organization Well-Being Index (WHO-5).<sup>27</sup> Lower scores are related to lower well-being. The items asked, “How often over the past two weeks have you: felt cheerful and in good spirits; felt calm and relaxed; felt active and energetic; woken up feeling fresh and rested; and had your daily life filled with things that interest you?” There were six response options, ranging from “All of the time” (value = 1) to “At no time” (value = 6). The items were summed and rescaled from 0 to 25, then multiplied by 4, for a range of 0 to 100. A score ≤ 50 indicated low well-being.<sup>29,30</sup>

Feelings of hopelessness were measured using the item, “During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?” Response options were “yes” and “no.” Persistent sadness or hopelessness is a criterion for and predictor of clinically significant depression and suicide ideation.<sup>31</sup>

Emotional problems were assessed using the following eight items: “How often have you felt low or depressed?”; “How often have you felt nervous?”; “How often have you had difficulties getting to sleep” (5 response options: 1 = “About every day” to 5 = “Rarely or never”); and “I have trouble making decisions”; “I often wish I were someone else”; “I often feel helpless”; “I often feel left out of things”; “I often feel lonely” (5 response options: 1 = “Strongly agree” to 5 = “Strongly disagree”).<sup>30</sup> The items were summed (range 8–40;  $\alpha = 0.86$ ), and the presence of high levels of emotional problems was defined as being in the bottom tertile.

Prosocial behaviour, indicative of positive emotions and behaviours, was measured using five items describing whether the student helps out or is kind to others without being asked.<sup>30</sup> Responses ranging from “Definitely not like me” (value = 1) to “Definitely like me” (value = 6) were summed, and being in the top third was taken to indicate high prosocial behaviour.

Life satisfaction was measured using the Cantril ladder.<sup>32</sup> For this measure, a

picture of a ladder is presented, and students are asked to rate where they feel they currently stand (from 0 = “Worst possible life” to 10 = “Best possible life”). Low life satisfaction was defined as 5 or less.

Finally, “overt risk-taking” combined items describing the frequency of engagement in the following behaviours: lifetime alcohol consumption, lifetime drunkenness history, alternative tobacco use, lifetime smoking history and caffeinated energy drink consumption.<sup>33</sup>

Sociodemographic data included age, sex and grade. Age in years was calculated using self-reported date of birth and the date of survey completion. Sex (“Male,” “Female,” “Neither term describes me”) and current grade were self-reported. Cultural and racial backgrounds\* were selected from a list of options reproduced from Statistics Canada. Family affluence was measured using the 6-item Family Affluence Scale (FAS III), an index of material assets in the home, and categorized into approximate quintiles based on the full sample distribution.<sup>34</sup> Urban versus rural status was defined according to the geographical location of the student’s school, based on Statistics Canada categories of community size.<sup>35</sup> Students missing data on grade, sex or family affluence were excluded from the sample.

### Analysis

Students with complete responses to all items used in the multivariable models were included in each analysis. In previous experiences using HBSC data, imputed and complete case analyses have had substantively similar results in most cases, with some gains in statistical efficiency,<sup>36</sup> which is consistent with the findings of other Canadian youth surveys reporting on mental health.<sup>37</sup> The demographic characteristics of military-connected students and those not connected to the military were described and compared using Rao-Scott chi-square tests that adjusted for clustering by school.

Bivariate and multivariable modified Poisson regression models with robust error variance were used to estimate relative risks (RR) and associated 95% confidence intervals (CIs) examining the

associations between having a military connection and mental health. Multivariable models adjusted for sex, grade and family affluence. Models were estimated for the overall sample, and in strata defined by grade group (Grades 6–8 vs. 9–10) and sex (male vs. female). All models were adjusted for school-level clustering using generalized estimating equations. Analyses were 80% powered to detect relative risks of 1.10 to 1.18 in the overall sample, 1.17 to 1.31 in boys, 1.14 to 1.25 in girls, 1.14 to 1.34 in the younger grade group and 1.12 to 1.25 in the older grade group ( $\alpha = 0.05$ , two-sided). The HBSC sample weights were applied only to those not connected to the military. All analyses were conducted using SAS version 9.4 (SAS Institute, Inc., Cary, NC, US).

### Results

Overall, 21 541 youth in Grades 6 to 10 responded to the survey. The final weighted sample included 16 737 students after excluding students who did not know if their family had a military connection ( $n = 2573$ ; weighted  $n = 2111$ ) and students with missing data on key baseline variables ( $n = 3544$ ; weighted  $n = 2693$ ). Students who were excluded were more likely to be male (53% vs. 47%) and in Grades 6 to 8 (67% vs. 58%), and less likely to have a family military connection (5.7% vs. 9.5%) compared to those included in this study. Approximately 9.5% of the full unweighted sample (1470 students) reported having a military connection. Students with a military connection were slightly more likely to identify as boys (51% vs. 45%) and were significantly more likely to be White (76% vs. 71%), from a rural or small centre (57% vs. 46%), and in the highest affluence quintile (24% vs. 19%; Table 1).

Overall, 29.5% of youth in military-connected families reported low well-being, 37.5% reported feelings of hopelessness, 38.4% were in the top third of the sample distribution for emotional problems, 22.7% reported low life satisfaction, 31.5% were in the top third for demonstrating prosocial behaviour and 22.4% reported engaging in overt risk-taking behaviour (Table 2).

After adjusting for grade, sex and family affluence, youth with a connection to the

military were significantly more likely to report negative indicators of mental health than those without a military connection. Youth in military-connected families were 28% more likely to report low well-being (RR = 1.28, 95% CI: 1.17–1.40), 32% more likely to report hopelessness (RR = 1.32, 1.22–1.43), 22% more likely to report the presence of emotional problems (RR = 1.22, 1.13–1.32) and 42% more likely to report low life satisfaction (RR = 1.42, 1.27–1.59).

The associations between being connected to the military, low well-being and low life satisfaction were stronger in younger students (Grades 6–8) compared to students in Grades 9 to 10 (Table 3). For example, military-connected youth in Grades 6 to 8 were 42% more likely to report low well-being than those without a military connection (RR = 1.42, 1.24–1.62), compared with 15% in those in Grades 9 to 10 (RR = 1.15, 1.03–1.30). The associations between being connected to the military and other mental health outcomes were generally similar for students in Grades 6 to 8 versus 9 to 10. The associations between being connected to the military and negative mental health were generally similar in boys and girls (Table 4).

After adjusting for covariates, we did not detect a difference in the likelihood of reporting high prosocial behaviour between youth in military-connected families and those not in military-connected families (Table 2). The likelihood of demonstrating prosocial behaviour for youth in military-connected families relative to those not in military-connected families was consistent across school grades (Table 3) and between girls and boys (Table 4).

Youth in military-connected families were 37% more likely to report engaging in overt risk-taking behaviours relative to those not in military-connected families, after adjusting for covariates (RR = 1.37, 1.21–1.55; Table 2). These associations were also consistent across grades (Table 3) and between boys and girls (Table 4).

### Discussion

This study examined emotional and behavioural health in youth of military families in Canada in comparison with their nonmilitary counterparts in a national school-based health survey. We observed

\* Terminology used in the study.

**TABLE 1**  
Demographic characteristics of students with and without a military connection

	Military-connected students		Students without a military connection <sup>a</sup>		<i>p</i> <sup>b</sup>
	n	(%)	n	(%)	
<b>Total</b>	1 470	(100)	15 267	(100)	
<b>Sex</b>					
Boys	750	(51.0)	6 931	(45.4)	
Girls	692	(47.1)	8 161	(53.5)	< 0.001
“Neither term describes me”	28	(1.9)	175	(1.1)	
<b>Grade</b>					
6–8	881	(59.9)	8 872	(58.1)	
9–10	589	(40.1)	6 394	(41.9)	0.64
<b>Cultural and racial<sup>c</sup> background</b>					
White	1 096	(76.0)	10 634	(70.6)	
Black	39	(2.7)	664	(4.4)	
Latin American	13	(0.9)	217	(1.4)	
Indigenous	74	(5.1)	410	(2.7)	
East & Southeast Asian	18	(1.3)	496	(3.3)	< 0.001
South Asian	11	(0.8)	574	(3.8)	
West Asian	8	(0.6)	283	(1.9)	
Other (including multiple responses)	184	(12.8)	1 790	(11.9)	
Missing	27		200		
<b>Urban/rural status</b>					
Rural area (< 1000)	43	(2.9)	124	(0.8)	
Small centre (1000–29 999)	795	(54.1)	6 836	(44.8)	
Medium centre (30 000–99 999)	288	(19.6)	2 717	(17.8)	< 0.001
Large urban centre (≥ 100 000)	344	(23.4)	5 589	(36.6)	
<b>Family affluence</b>					
Quintile 1 (lowest)	242	(16.5)	2 856	(18.7)	
Quintile 2	327	(22.2)	3 340	(21.9)	
Quintile 3	279	(19.0)	2 369	(15.5)	< 0.001
Quintile 4	267	(18.2)	3 867	(25.3)	
Quintile 5 (highest)	355	(24.2)	2 845	(18.6)	

**Data source:** Health Behaviour in School-aged Children study in Canada, 2017/18.<sup>26</sup>

<sup>a</sup> All values are weighted.

<sup>b</sup> *p* value from Rao-Scott chi-square test comparing overall distribution in students with and without a military connection, and adjusted for clustering by school.

<sup>c</sup> Terminology used in the HBSC study.

that youth in military-connected families were more likely to report scores consistent with low well-being, hopelessness, low life satisfaction and frequent engagement in overt risk-taking behaviours compared to youth not in military-connected families. These findings support the hypothesis that the exposure of children to the triad of military family lifestyle dimensions—risk, protracted absence and relocation—may have a negative impact on mental health and well-being.<sup>38</sup> Our findings also support the strengths and resiliency of military-connected youth. We observed similar rates of prosocial

behaviour in youth in military-connected families and not in military-connected families, suggesting comparable socio-emotional development despite the increased risks of emotional and behavioural problems.

Our results are consistent with the international literature documenting worse mental health and well-being among children and youth in military-connected families.<sup>1,24,25,39-41</sup> Children and youth in Canadian military families had a higher risk of seeing a physician for outpatient mental health services, specifically for

visits related to nonpsychotic disorders (e.g. depression), pervasive developmental disorders (e.g. autism) and disruptive behaviour disorders (e.g. attention deficit disorder).<sup>42</sup> Relative to the general population, children and youth in military families outside of Canada were more likely to report higher mean emotional and behavioural difficulties scores, higher rates of externalizing and internalizing behaviours and high rates of suicidal ideation or attempts.<sup>1,24,25,39-41</sup>

Our study also supports research from the United States showing a greater engagement

**TABLE 2**  
Associations between being connected to the military and mental health indicators

Outcome	Military connection		No military connection		Crude RR <sup>a</sup> (95% CI)	Adjusted RR <sup>a,b</sup> (95% CI)
	n Total	% Yes	n Total	% Yes		
Well-being, low	1422	(29.5)	14 883	(24.5)	1.24 (1.13–1.35)	1.28 (1.17–1.40)
Hopelessness, yes	1423	(37.5)	14 941	(29.3)	1.28 (1.18–1.39)	1.32 (1.22–1.43)
Emotional problems, high	1378	(38.4)	14 494	(32.8)	1.17 (1.08–1.27)	1.22 (1.13–1.32)
Life satisfaction, low	1437	(22.7)	15 070	(16.6)	1.37 (1.22–1.53)	1.42 (1.27–1.59)
Prosocial behaviour, high	1421	(31.5)	14 877	(31.9)	0.98 (0.90–1.07)	1.00 (0.92–1.09)
Overt risk-taking, high	1385	(22.4)	14 564	(17.2)	1.42 (1.21–1.66)	1.37 (1.21–1.55)

**Data source:** Health Behaviour in School-aged Children study in Canada, 2017/18.<sup>26</sup>

**Abbreviations:** CI, confidence interval; RR, relative risk.

<sup>a</sup> Adjusted for clustering by school and weighted; relative risk estimated using modified Poisson regression with robust error variance.

<sup>b</sup> Adjusted for sex, grade and family affluence scale.

of children and youth in military-connected families in risk-taking behaviours.<sup>40,43</sup> Qualitative and quantitative studies focussed on the mechanisms contributing to these differences in mental health and risk-taking behaviour, including highlighting which pathways have facilitated families in successfully meeting these occupational challenges, are needed to develop programs and services to effectively address root causes. Learning how military-connected youth define good mental health and how they situate their parent's or caregiver's career in their overall health and well-being is critical.

The dimensions of a parent's military career may contribute stressors resulting in poor mental health and well-being in youth relative to their peers. Canadian

military families report three common challenges: geographical relocations, absences from serving family members and their risk of illness, injury and death.<sup>44</sup> Within Canada, surveys of military relocation experiences have highlighted the impact of moves on children's education and may be a rationale for requesting a posting to a particular location or for the military parent to relocate unaccompanied.<sup>45</sup> Studies within populations of children and youth connected to military families in the United States and United Kingdom have documented worse mental health for those with a parent who is currently or recently deployed, experiencing posttraumatic stress disorder (PTSD) or misusing alcohol, and following geographical relocations.<sup>11,24,46-48</sup>

Depending on the context and composition of the family, these stressors may

have differing intensities of impact on youth mental health.<sup>45</sup> They may compound or interact for a family over time during the trajectory of the parent's military career, over the life course of the family and around key milestones such as parental deployment or geographical relocations.<sup>38</sup> As a result, these stressors and experiences are also dynamic, both within and across families, as well as within and across children and youth.

A parent's military career also provides many benefits for youth and their families, as well as occasions to adapt and grow in response to these same occupational lifestyle dimensions.<sup>49</sup> A military parent or caregiver is employed, which has important advantages economically for families. For example, youth in

**TABLE 3**  
Associations between being connected to the military and mental health indicators, by grade group

Outcome	Grades 6–8		Grades 9–10	
	Crude RR (95% CI)	Adjusted RR <sup>a</sup> (95% CI)	Crude RR (95% CI)	Adjusted RR <sup>a,b</sup> (95% CI)
Well-being, low	1.36 (1.18–1.56)	1.42 (1.24–1.62)	1.13 (1.01–1.27)	1.15 (1.03–1.30)
Hopelessness, yes	1.25 (1.11–1.40)	1.29 (1.15–1.44)	1.33 (1.19–1.48)	1.36 (1.22–1.52)
Emotional problems, high	1.23 (1.09–1.37)	1.28 (1.14–1.43)	1.13 (1.03–1.24)	1.16 (1.06–1.28)
Life satisfaction, low	1.46 (1.27–1.69)	1.54 (1.34–1.77)	1.26 (1.07–1.48)	1.28 (1.09–1.51)
Prosocial behaviour, high	0.97 (0.87–1.08)	0.98 (0.88–1.10)	1.00 (0.88–1.15)	1.02 (0.90–1.16)
Overt risk-taking, high	1.39 (1.11–1.74)	1.35 (1.08–1.69)	1.35 (1.18–1.54)	1.34 (1.17–1.53)

**Data source:** Health Behaviour in School-aged Children study in Canada, 2017/18.<sup>26</sup>

**Abbreviations:** CI, confidence interval; RR, relative risk.

<sup>a</sup> Adjusted for clustering by school and weighted; relative risk estimated using modified Poisson regression with robust error variance.

<sup>b</sup> Adjusted for sex, grade and family affluence scale.

**TABLE 4**  
Associations between being connected to the military and mental health indicators, by sex

Outcome	Boys		Girls	
	Crude RR (95% CI)	Adjusted RR <sup>a</sup> (95% CI)	Crude RR (95% CI)	Adjusted RR <sup>a,b</sup> (95% CI)
Well-being, low	1.20 (1.02–1.41)	1.24 (1.05–1.47)	1.30 (1.16–1.46)	1.30 (1.17–1.46)
Hopelessness, yes	1.41 (1.22–1.63)	1.43 (1.24–1.65)	1.28 (1.16–1.40)	1.29 (1.17–1.41)
Emotional problems, high	1.15 (0.99–1.35)	1.18 (1.01–1.38)	1.25 (1.13–1.38)	1.26 (1.14–1.39)
Life satisfaction, low	1.40 (1.17–1.68)	1.45 (1.21–1.74)	1.43 (1.25–1.64)	1.46 (1.27–1.67)
Prosocial behaviour, high	1.00 (0.87–1.15)	0.98 (0.85–1.12)	1.02 (0.90–1.14)	1.01 (0.90–1.14)
Overt risk-taking, high	1.35 (1.13–1.62)	1.37 (1.17–1.60)	1.36 (1.08–1.70)	1.31 (1.09–1.57)

**Data source:** Health Behaviour in School-aged Children study in Canada, 2017/18.<sup>26</sup>

**Abbreviations:** CI, confidence interval; RR, relative risk.

<sup>a</sup> Adjusted for clustering by school and weighted; relative risk estimated using modified Poisson regression with robust error variance.

<sup>b</sup> Adjusted for sex, grade and family affluence scale.

Canadian military-connected families live in higher-income areas than those who are not connected to the military.<sup>50</sup> In addition, for some youth, moving frequently will allow them to see more of the world or their own country, enjoy new experiences, learn how to adapt to new and different learning and social situations, enhance their relationship building skills, expand their social network across provinces and territories and strengthen family bonds.<sup>14,49</sup> While Canadian military families report being generally strong and adaptive,<sup>44</sup> there is little research into the mechanisms of positive interaction and outcomes of these stressors, and further exploration is needed.<sup>49</sup>

In Canada, previous work documenting outpatient mental health visits and delays in specialist care from psychiatrists and pediatricians, alongside the findings of our study, suggests possible unmet mental health care needs for youth in military families.<sup>42,51</sup> In addition to publicly or privately funded civilian mental health services and programs, families have access to specialized supports and services offered by the Canadian Armed Forces, such as the counselling and crisis services at Military Family Resource Centres, telehealth and other virtual mental health supports. To date, there are no Canadian evaluations of the effectiveness or sufficiency of mental health care services for children and youth in military families or barriers to engaging in care. Studies of military families in the United States have identified barriers to engaging military-connected adolescents in mental health care.<sup>1,24,25,39-41</sup> The national availability of culturally competent mental health care and accessible supports and services is

critical to ensure that children and youth are not “paying a price for their parent’s service to the nation”<sup>5,p.8</sup> with their own mental health and well-being.

### Strengths and limitations

Our results reflect the largest Canadian sample of youth in military families studied to date, covering all provinces and two territories, and include broad assessments of mental health, well-being and risk-taking. While the measures of mental health were brief and not diagnostic, these measures have been validated and tested for face validity, and are used across multiple cycles of national and international research using the HBSC data to understand the mental health and well-being of youth. We do not anticipate differences in the use of these scales between youth in and not in military-connected families. Different measures that apply validated screens for psychiatric disorders using diagnostic criteria are needed to address remaining gaps in the epidemiology of mental illness among children and youth in military-connected families. This study did not explore possible military-specific and core explanations for differences in mental health and risk-taking behaviour engagement, such as parental absences or risk of parental harm, family or peer relationships, school performance or experiences of bullying.

In addition, our survey did not collect information on length of parental military service, deployments or number of military-related relocations. Having this additional information would help policy makers understand how these complex relationships are mediated or modified by

variables such as parental risk-taking behaviour, history of parental adverse childhood experiences or other characteristics of military and public safety personnel that contribute to the health and well-being of their children. Both qualitative and quantitative studies, including studies comparing the experiences of youth in military and public safety sector families, are needed to provide a more nuanced understanding of youth in military-connected families and inform policy makers where resources could be directed to improve mental health and well-being.

### Conclusion

It is critical that we continue to consider the family alongside the serving member, as well as the dynamic and complex nature of military and family life trajectories and their impact on youth, both during and following parental military service. Youth in military-connected families were more likely to report hopelessness, low well-being, low life satisfaction and greater engagement in risk-taking behaviours than youth not in military-connected families, while also demonstrating similar rates of prosocial behaviour despite the increased risks of emotional and behavioural problems. Understanding the key mechanisms by which these mental health differences emerge and translate into medical diagnoses is needed. In addition, it is necessary that we discern the long-term trajectories of youth in military-connected families experiencing poor mental health and well-being to determine how best to intervene. Future research focussing on these hypothesized etiological pathways, as well as on better understanding resiliency and adaptation among

those who meet these challenges differently, is necessary to allow the developing and testing of interventions to address excess mental health risks in youth associated with a parent's military career.

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## Conflicts of interest

The authors have no conflicts of interest relevant to this article to disclose.

## Authors' contributions and statement

AM—conceptualization, data curation, methodology, writing – original draft. HC—methodology, writing – review and editing. MK—data curation, formal analysis, writing—review and editing. NK—formal analysis, writing—review and editing. FE—methodology, writing—review and editing. WC—data curation, methodology, writing—review and editing. WP—data curation, methodology, supervision, writing—review and editing.

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