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2022 Report on Suicide Mortality in the Canadian Armed Forces (1995 to 2021)

David Boulos MSc

Directorate of Mental Health

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2022 Report on Suicide Mortality in the Canadian Armed Forces (1995 to 2021)

Author: David Boulos MSc
Directorate of Mental Health (DMH)

Reviewed by:
Dr. B Garber, Research and Analysis Section Head, DMH; and
Capt(N) IV Beck, Director Mental Health, DMH

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Correspondence to: Capt(N) IV Beck, Director Mental Health, DMH

Approved by: MGen JGM Bilodeau, Surgeon General

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Abstract

Introduction: Each death from suicide is tragic. Suicide prevention is an important public health concern and is a top priority for the Canadian Armed Forces (CAF). In order to better understand suicide in the CAF and refine ongoing suicide prevention efforts, the Canadian Forces Health Services annually examine suicide rates and the relationship between suicide, deployment and other potential suicide risk factors. This analysis, conducted by the Directorate of Mental Health (DMH), is an update covering the period from 1995 to 2021.

Methods: This report assesses suicide data for Regular Force males over the 1995 to 2021 period and Regular Force females over the 2003 to 2021 period, interpreting crude suicide rates by various characteristics, differences in rates between the Canadian population and the CAF using Standardized Mortality Ratios (SMRs), and differences suicide rates by deployment history using SMRs and direct standardization. It also examines variation in suicide rates by environmental command and uses data from Medical Professional Technical Suicide Reviews (MPTSR) to examine the prevalence of other suicide risk factors for suicide deaths that occurred in 2021 and during the prior five years, 2017-2021. This is the first annual report with a more detailed review of Regular Force female suicides.

Results: Over 2012 to 2021 there were 130 CAF Regular Force male suicide deaths with a mean age of 33.9 years and 67 suicide deaths over 2017 to 2021 with a mean age of 34.3. These mean ages were not statistically different from the mean age among all Regular Force males in each of these two periods. The crude suicide rates computed in each of the two periods were higher with statistical significance among Regular Force males who were separated, divorced, or widowed relative to other marital status categories. Additionally, the suicide rate tended to vary by rank category, and it was higher among the junior non-commissioned (JNCM) ranks with statistical significance relative to officer ranks for the 2012 to 2021 period.

In comparison, the general observations among CAF Regular Force females were similar to those among Regular Force males but the absolute numbers were lower. Over 2012 to 2021 there were 13 Regular Force female suicide deaths with a mean age of 31.5 years and five suicide deaths over 2017 to 2021 with a mean age of 34.2 years. These mean ages were not statistically different from the mean age among all Regular Force females in each of these two periods. Additionally, the crude suicide rate tended to be higher among Regular Force females who were single and those in lower rank categories; however, the confidence intervals overlapped for all categories of each characteristic which indicated that the differences were not statistically significant.

Crude suicide rates were assessed over time to assess for differences in suicide risk over time. There were no statistically significant increases in the overall suicide rates for either Regular Force males or females when comparing each 5-year incremental time segment over 1995 to 2021. The 5-year rates for males varied from a low of 19.9 per 100,000 population during 1995-1999 and 2000-2004 to a high of 24.5 per 100,000 in the more recent 2010-2014 and 2015-2019 periods and this difference was not statistically significant. Similarly, among Regular Force females the rates varied from 8.2 per 100,000 population in the more recent 2015-2019 period to a high of 15.5 per 100,000 in 2010-2014 and again, this difference was not statistically significant. The number of Regular Force males that died by suicide was not statistically higher than that expected based on male suicide rates in the Canadian male population for each period that was evaluated. In contrast, the number of Regular Force female suicides were higher with statistical significance than the number expected based on the suicide rate in the Canadian female population over the 10-year period from 2005-2014 and although also elevated for other assessed periods, these were not statistically significant.

Rate ratios that separately compared Regular Force males and females with a history of deployment to those without this history did not establish a statistically significant link between deployment and increased suicide risk. Among males with a history of deployment, the suicide rate tended to be elevated relative to those without this experience for almost all periods assessed but none were determined to be statistically significant. However, the rate ratio for the 2005-2014 period (age-standardized suicide rate ratio: 1.44 [95% CI: 0.97, 2.15]), which indicated a higher rate among those with a history of deployment, was close to being statistically significant. In contrast, the suicide rate among females with a history of deployments tended to be lower relative to those without this experience for almost all periods assessed and again, none were statistically significant. Moreover, the number of Regular Force females that died by suicide who had a history of deployment was low; this exemplifies the low suicide risk associated with deployment experience among females and it's associated with a limited power to conduct a statistical comparison.

These rate ratios also highlighted that, over 2002-2021 for males and 2003-2021 for females, being part of the Army command was associated with a slightly higher rate of suicide relative to those who were part of the other environmental commands but in both Regular Force males and females the difference was not statistically significant. Although not a statistical test, the 3-year, and 5-year, suicide rate moving averages provided an indication of how suicide rates fluctuated over time. These suggested that while Army commands appear to have had an elevated rate over 2008 to 2014 among males and 2011 to 2015 among females, the Army and non-Army command suicide rate differences appear to have changed from around 2015 or 2016 onwards. At approximately this time point, the rates became more comparable among male Army and non-Army commands and among female Army commands, the suicide rate drops to zero from 2017 onwards. However, in more recent years the suicide rates have reversed a little to the point where there appears to be a tendency for suicide rates to be a little more elevated among non-Army commands, particularly among Regular Force females.

For the 2002-2021 period, Regular Force males in the Army combat arms occupations had a statistically significant higher suicide rate (32.1/100,000 [95% CI: 26.0, 39.8]) compared to Regular Force males in other occupations (19.1/100,000 [95% CI: 16.3, 22.5]). Similarly, over the 2003-2021 period Regular Force females in the Army combat arms occupations had an elevated suicide rate (30.7/100,000 [95% CI: 3.7, 110.8]) relative to Regular Force females in other occupations (11.8/100,000 [95% CI: 7.1, 18.4]) but this difference was not statistically significant; however, the low numbers being compared limited the power of the assessment of these differences.

Results from the 2017-2021 MPTSRs for both males and females continue to support a multifactorial causal pathway (this includes biological, psychological, interpersonal, and socio-economic factors) for suicide rather than a direct link between single risk factors (such as Post-Traumatic Stress Disorder (PTSD) or deployment) and suicide. This was consistent with MPTSR findings from previous years. Additionally, all CAF members experienced the COVID-19 pandemic and there was no evidence that it contributed to suicide risk. Moreover, during the COVID-19 pandemic the suicide rate and its related characteristics in 2020 and 2021 were comparable to observations from previous years.

Conclusions: Suicide rates among Regular Force males and females in the CAF did not increase with any statistical significance over the period of observation described in these findings; however, after age standardization, the Regular Force female suicide rate was identified to have been higher with statistical significance relative to the rate in the Canadian female population during the 2005 to 2014 period while for Regular force males, the difference relative to the Canadian male population was not statistically significant for any period assessed. Despite the added stressors that member may have experienced as a result of the COVID-19 pandemic, the suicide rate and its related characteristics in 2020 and 2021 were comparable to observations

from previous years. However, small numbers do limit the ability, or power, of statistical assessments to detect differences with statistical significance when they are real and not chance occurrences. The elevated risk in Regular Force males under Army command, particularly those in combat arms occupations, and the increased suicide rate in Regular Force females relative to the Canadian female population during the 2005 – 2014 period are findings that continue to be under observation by the CAF.

Keywords: Age-adjusted rate; Canadian Armed Forces; Canadian population; deployment; rate ratio; rates; standardized mortality ratio; suicide.

Résumé

Introduction : Chaque décès par suicide constitue une tragédie. La prévention du suicide est un aspect important de la santé publique et une priorité des Forces armées canadiennes (FAC). Afin de mieux comprendre le suicide au sein des FAC et de parfaire les efforts continus en matière de prévention, les Services de santé des Forces canadiennes effectuent chaque année des analyses pour examiner les taux de suicide et la relation entre le suicide, le déploiement et d'autres facteurs de risque potentiels de suicide. La présente analyse, réalisée par le Directeur – Santé mentale (DSM), représente une mise à jour pour la période s'échelonnant de 1995 à 2021.

Méthodes : Le présent rapport évalue les données sur le suicide des hommes de la Force régulière de 1995 à 2021 et des femmes de la Force régulière de 2003 à 2021. Il interprète les taux bruts de suicide selon diverses caractéristiques, les différences de taux entre la population canadienne et les FAC au moyen des ratios standardisés de mortalité (RSM) et les taux de suicide chez les personnes ayant des antécédents de déploiement au moyen des RSM et de la standardisation directe. Il examine également la variation du taux de suicide selon le commandement d'armée et, au moyen de données tirées des examens techniques des suicides par des professionnels de la santé (ETSPS), la prévalence d'autres facteurs de risque en ce qui concerne les suicides survenus en 2021 et au cours des cinq années précédentes, soit de 2017 à 2021. Il s'agit du premier rapport annuel contenant un examen plus détaillé des suicides chez les femmes de la Force régulière.

Résultats : De 2012 à 2021, on compte 130 décès par suicide d'hommes de la Force régulière des FAC avec un âge moyen de 33,9 ans et, de 2017 à 2021, 67 décès par suicide avec un âge moyen de 34,3 ans. Ces âges moyens n'étaient pas statistiquement différents de l'âge moyen de l'ensemble des hommes de la Force régulière au cours de chacune de ces deux périodes. Les taux bruts de suicide calculés au cours de chacune des deux périodes étaient plus élevés, avec une augmentation statistiquement significative chez les hommes de la Force régulière qui étaient séparés, divorcés ou veufs par rapport aux autres catégories d'état civil. De plus, le taux de suicide avait tendance à varier selon la catégorie de grade, et il était plus élevé de façon statistiquement significative parmi les militaires du rang (MR) comparativement aux grades d'officier pour la période de 2012 à 2021.

En comparaison, les observations générales chez les femmes de la Force régulière des FAC étaient similaires à celles chez les hommes de la Force régulière, mais les nombres absolus étaient inférieurs. De 2012 à 2021, on compte 13 décès par suicide de femmes de la Force régulière des FAC avec un âge moyen de 31,5 ans et, de 2017 à 2021, 5 décès par suicide avec un âge moyen de 34,2 ans. Ces âges moyens n'étaient pas statistiquement différents de l'âge moyen de l'ensemble des femmes de la Force régulière au cours de chacune de ces deux périodes. De plus, le taux brut de suicide avait tendance à être plus élevé chez les femmes célibataires de la Force régulière et chez celles des catégories de grade inférieur. Cependant, les intervalles de confiance se chevauchaient pour toutes les catégories de chaque caractéristique, ce qui indiquait que les différences n'étaient pas statistiquement significatives.

Les taux bruts de suicide ont été examinés au fil du temps pour évaluer les différences liées au risque de suicide dans le temps. Chez les femmes comme chez les hommes de la Force régulière, les taux de suicide globaux n'ont pas connu d'augmentation statistiquement significative si l'on compare à chaque segment de temps supplémentaire de cinq ans de 1995 à 2021. Les taux sur cinq ans pour les hommes variaient d'un minimum de 19,9 pour 100 000 personnes de 1995 à 1999 et de 2000 à 2004 à un maximum de 24,5 pour 100 000 personnes dans les périodes plus récentes de 2010 à 2014 et de 2015 à 2019, et cette différence n'était pas statistiquement significative. De même, chez les femmes de la Force régulière, les taux variaient de 8,2 pour 100 000 personnes

au cours de la période plus récente de 2015 à 2019 à un sommet de 15,5 pour 100 000 personnes de 2010 à 2014, et, encore une fois, cette différence n'était pas statistiquement significative. Le nombre d'hommes de la Force régulière décédés par suicide n'était pas statistiquement plus élevé que le taux anticipé en fonction des taux de suicide observés au sein de la population masculine du Canada pour chaque période évaluée. En revanche, le nombre de suicides chez les femmes de la Force régulière était plus élevé, et ce, de façon statistiquement significative, que le nombre attendu d'après le taux de suicide au sein de la population féminine du Canada au cours de la période de 10 ans allant de 2005 à 2014. Bien qu'également élevés pour d'autres périodes évaluées, les chiffres n'étaient pas statistiquement significatifs.

Les ratios des taux de suicide comparant séparément les hommes et les femmes ayant participé à un déploiement n'établissent pas un risque accru de suicide comparativement à ceux qui n'ont jamais participé à un déploiement. Cela dit, l'écart observé n'est pas statistiquement significatif. Chez les hommes ayant participé à un déploiement, le taux de suicide avait tendance à être élevé par rapport à ceux sans cette expérience pour presque toutes les périodes évaluées, mais aucune n'a été jugée statistiquement significative. Cependant, le ratio des taux pour la période de 2005 à 2014 (ratio des taux de suicide ajusté selon l'âge : 1,44; intervalle de confiance [IC] à 95 % : 0,97 à 2,15]), qui indiquait un taux plus élevé chez les personnes ayant des antécédents de déploiement, était près d'être statistiquement significatif. En revanche, le taux de suicide chez les femmes ayant des antécédents de déploiement avait tendance à être plus faible par rapport à celles sans cette expérience pour presque toutes les périodes évaluées, et encore une fois, aucun n'était statistiquement significatif. Par ailleurs, le nombre de femmes de la Force régulière décédées par suicide qui avaient des antécédents de déploiement était faible; cela illustre le faible risque de suicide associé à l'expérience de déploiement chez les femmes et est associé à la possibilité limitée d'effectuer une comparaison statistique.

Ces ratios de taux montrent également que, de 2002 à 2021 pour les hommes et de 2003 à 2021 pour les femmes, le fait qu'un militaire fasse partie du commandement de la Force terrestre était associé à un taux de suicide légèrement plus élevé par rapport à un militaire relevant d'autres commandements. Cependant, tant chez les hommes que les femmes de la Force régulière, la différence n'était pas statistiquement significative. Bien qu'il ne s'agisse pas d'un test statistique, les moyennes mobiles des taux de suicide sur trois ans et cinq ans fournissent une indication de la façon dont les taux de suicide fluctuent dans le temps. Elles donnent à penser que si les commandements de la Force terrestre semblent avoir eu un taux élevé de 2008 à 2014 chez les hommes et de 2011 à 2015 chez les femmes, la différence entre les taux de suicide du commandement de la Force terrestre et d'autres commandements semble avoir changé à partir de 2015 ou 2016 environ. À peu près à ce moment-là, les taux sont devenus plus comparables entre le commandement de la Force terrestre et d'autres commandements pour les hommes, tandis que dans le commandement de la Force terrestre pour les femmes, le taux de suicide tombe à zéro à partir de 2017. Cependant, au cours des dernières années, le taux de suicide semble s'être légèrement inversé au point où il semble exister une tendance vers un taux de suicide un peu plus élevé au sein des autres commandements, en particulier chez les femmes de la Force régulière.

Pour la période de 2002 à 2021, les hommes de la Force régulière appartenant aux groupes professionnels des armes de combat de l'Armée canadienne affichaient un taux de suicide statistiquement plus élevé (32,1/100 000; IC à 95 % : 26,0 à 39,8) que les hommes de la Force régulière d'autres groupes professionnels (19,1/100 000; IC à 95 % : 16,3 à 22,5). De même, au cours de la période allant de 2003 à 2021, les femmes de la Force régulière appartenant aux groupes professionnels des armes de combat de l'Armée canadiennes affichaient un taux de suicide élevé (30,7/100 000; IC à 95 % : 3,7 à 110,8) par rapport aux femmes de la Force régulière d'autres groupes professionnels (11,8/100 000; IC à 95 % : 7,1 à 18,4), mais cette différence n'était pas statistiquement significative; cependant, le faible nombre de données comparées a limité la puissance de l'évaluation de ces différences.

Les résultats des ETSPS de 2017 à 2021 tant pour les hommes que pour les femmes continuent d'appuyer la théorie d'un enchaînement de causalité multifactoriel (qui comprend des facteurs biologiques, psychologiques, interpersonnels et socio-économiques) plutôt qu'un lien direct entre des facteurs de risque individuels (p. ex. l'état de stress post-traumatique [ESPT] ou le déploiement) et le suicide. Ces résultats concordent avec ceux des ETSPS des années précédentes. Par ailleurs, tous les membres des FAC ont été exposés à la pandémie de COVID-19, et il n'y a aucune preuve que cela a contribué au risque de suicide. De plus, pendant la pandémie de COVID-19, le taux de suicide et ses caractéristiques connexes en 2020 et 2021 étaient comparables aux observations des années précédentes.

Conclusions : Les taux de suicide des hommes et des femmes de la Force régulière des FAC n'ont pas augmenté de façon statistiquement significative au cours de la période d'observation décrite; cependant, une fois les taux standardisés selon l'âge, le taux de suicide des femmes de la Force régulière s'est avéré être supérieur, et ce, de façon statistiquement significative, à celui de la population féminine du Canada pour la période de 2005 à 2014, tandis que la différence entre le taux de suicide des hommes de la Force régulière et celui de la population masculine du Canada n'était pas statistiquement significative, quelle que soit la période visée. Malgré la présence de facteurs de stress supplémentaires que les militaires ont pu vivre en conséquence de la pandémie de COVID-19, le taux de suicide et les caractéristiques associées en 2020 et 2021 étaient comparables aux observations des années précédentes. Cependant, la faible quantité de données limite la capacité, ou le pouvoir, des évaluations statistiques à relever les différences statistiquement significatives lorsqu'elles sont réelles et non le fruit du hasard. Le risque accru de suicide chez les hommes de la Force régulière faisant partie de l'Armée canadienne, et particulièrement chez ceux appartenant aux groupes professionnels des armes de combat, et le taux de suicide plus élevé chez les femmes de la Force régulière que dans la population féminine du Canada au cours de la période de 2005 à 2014, sont des constatations que les FAC continuent de surveiller.

Mots clés : Déploiement; Forces armées canadiennes; population canadienne; ratio de taux; ratio standardisé de mortalité; suicide; taux; taux ajusté selon l'âge.

Executive Summary

The tragic loss of life of Canadian Armed Forces (CAF) members due to suicide requires ongoing focus to understand these difficult events and to refine CAF suicide prevention efforts. This report describes the suicide experience in the CAF and the descriptive characteristics of Regular Force males that died by suicide between 1995 and 2021 and Regular Force females that died by suicide between 2003 and 2021, with additional information on the risk factors associated with these deaths by suicide in the most recent period.

Methods

Data described in Section 3.1 [Results from the Medical Professional Technical Suicide Review (MPTSR) Reports, Regular Force Males and Females, 2021 updates] are drawn from the MPTSRs, focusing on 2021 for males and the 2017 – 2021 period for females. The MPTSR is one of the investigations that follows each CAF suicide. The MPTSR is a quality assurance tool for Canadian Forces Health Services (CFHS) that is requested immediately following the confirmation of all Regular Force and Primary Reserve Force suicides. Each MPTSR is typically conducted by a team consisting of a mental health professional and a primary care physician.

Epidemiological data described in Section 3.2 (Epidemiology of Suicide in Regular Force Members) and 3.3 (Epidemiology of Suicide in Regular Force Members, by Environmental Command) consists of identified suicide deaths that were obtained from the Directorate of Casualty Support Management up until 2012. As of September 2012, the number of suicides was tracked by DMH. Information on date of birth, military or other characteristics for the suicide deaths and comparable CAF population originated from the Directorate of Human Resources Information Management (DHRIM); this data was updated back to 2003 using data received in 2022. Finally, Canadian general population data and suicide counts, by age and sex, were obtained from Statistics Canada.

Frequencies, crude rates, standardized mortality ratios (SMRs) (i.e., an SMR is the ratio of the observed number of CAF suicides to the expected number of CAF suicides, which is the number expected if the CAF had the same age and sex-specific rates as the Canadian general population) and directly standardized rates were calculated. SMRs were calculated until 2020 in this report because Statistics Canada has released data for the Canadian general population only up to that year.

This report analyses only Regular Force males and females who have died by suicide. However, this is the first annual report with a more detailed review of Regular Force female suicides. The annual Reserve force suicide deaths were not analysed. There is a lack of access to data for Reservists as they receive much of their health care in the provincial system and the associated information tends to be unavailable during the MPTSR process.

Results

Mental Health Diagnosis of Regular Force Males that Died by Suicide in 2021 and Regular Force Females that Died by Suicide over 2017 – 2021

The mental disorders that were identified among the Regular Force males at the time of their suicide death in 2021 included depressive disorders (42.9%), anxiety disorders (14.3%), post-traumatic stress disorder (7.1%),

and/or other trauma and stress-related disorders (14.3%). A documented addiction or substance use disorder was reported in 50.0% of these suicide deaths, 14.3% had a traumatic brain injury in the past and 7.1% had been identified with a personality disorder. It was common (50.0%) for these members to have at least two active mental health problems at the time of death (i.e., a combination that could include: depressive disorders, trauma and stress-related disorders, anxiety disorders, addictions or substance-use disorders, traumatic brain injury or personality disorders).

In comparison, the mental disorders that were identified among the Regular Force females at the time of their suicide death in 2017 – 2021 included depressive disorders (40.0%), anxiety disorders (40.0%), and/ or non-PTSD trauma and stress-related disorders (20.0%). A documented addiction or substance use disorder was reported in 20.0% of these suicide deaths and 20.0% had been identified with a personality disorder. It was common (60.0%) for these members to have at least two active mental health problems at the time of death.

Work and Life Stressors of Regular Force Males Who Died by Suicide in 2021 and Regular Force Females Who Died by Suicide over 2017 – 2021

Several work and life stressors were assessed among Regular Force males and females who died by suicide, stressors that include failing relationship(s), friend/family suicide, family/friend death, family and/or personal illness, debt, professional problems or legal problems. At the time of death, 92.9% of the Regular Force males that died by suicide in 2021 were reported to have had at least one of these work and/or life stressors and just over half (57.1%) had two or more concomitant stressors prior to their death.

In comparison, all (100%) of the Regular Force females that died by suicide over 2017 – 2021 had two or more of these work and/or life stressors at the time of death. Additionally, all CAF members were exposed to the COVID-19 pandemic and as such, this was a common potential stressor among all subsets of this population; however, there was no evidence that it contributed to suicide risk. Moreover, during the COVID-19 pandemic the suicide rate and its related characteristics in 2020 and 2021 were comparable to observations from previous years.

Crude Suicide Rates

Regular Force Males:

Over the prior 10 years (2012 – 2021), there were 130 CAF Regular Force male suicide deaths and 67 in the prior 5 years (2017 – 2021) and the mean age was 33.9 years (95% CI: 32.3, 35.4) for the 2012 – 2021 period and 34.3 years (95% CI: 32.3, 36.3) for the 2017 – 2021 period. These were similar to the mean age among all Regular Force males in each of these two periods, 34.9 (95% CI: 34.9, 34.9) and 34.7 (95% CI: 34.7, 34.8) years for the 2012 – 2021 and 2017 – 2021 periods, respectively, and the differences were not statistically significant. The suicide rate for both the prior 5 years and 10 years was higher with statistical significance among Regular Force males who were separated, divorced, or widowed relative to other marital status categories. Additionally, the suicide rate tended to vary by rank category, higher among the junior non-commissioned (JNCM) ranks with statistical significance relative to officer ranks for the 2012 – 2021 period.

Consecutive 5-year crude suicide rates were computed to assess whether the rate changed over time. These 5-year crude suicide rates for Regular Force males varied from a low of 19.9 per 100,000 population during 1995 – 1999 and 2000 – 2004 to a high of 24.5 per 100,000 in the more recent periods, but these differences were not

statistically significant. The most recent 5-year (i.e., 2015 – 2019) suicide rate for Regular Force males (24.5/ 100,000 [95% CI: 19.2, 31.2]) was similar to the 2020 – 2021 two-year crude suicide rate of 23.3 per 100,000 population (95% CI: 15.2, 34.2) and the earlier 5-year rate for 2010 – 2014 (24.5/ 100,000 [95% CI: 19.2, 31.2]). Moreover, as the suicide rate confidence intervals for all measured 5-year periods had some degree of overlap, these differences in the crude rate were not statistically significant. The suicide rates that fall within the period covered by the COVID-19 pandemic, currently 2020 and 2021, will continue to be monitored moving forward as suicide rates among Regular Force males may possibly change after we move out of the pandemic period.

Regular Force Females:

Over the prior 10 years (2012 – 2021) there were 13 CAF Regular Force female suicides with a mean age of 31.5 years (95% CI: 27.0, 36.1) and there were five in the prior 5 years (2017 – 2021) with a mean age of 34.2 years (95% CI: 24.4, 44.0). These were a little lower than the mean age among all Regular Force females in each of these two periods, 35.6 (95% CI: 35.6, 35.7) and 35.5 (95% CI: 35.4, 35.6) years for the 2012 – 2021 and 2017 – 2021 periods, respectively, but the differences were not statistically significant. Additionally, the suicide rate tended to be higher among Regular Force females who were single and those in lower rank categories; however, the confidence intervals overlapped for all categories of each characteristic which indicated that the differences were not statistically significant.

Consecutive 5-year crude suicide rates were computed to assess whether the rate changed over time. The 5-year rates for Regular Force females varied from a low 8.2 per 100,000 population in the more recent 2015 – 2019 period to a high of 15.5 per 100,000 in 2010 – 2014, but these differences were not statistically significant. The most recent 5-year (i.e., 2015 – 2019) suicide rate (8.2/ 100,000 population [95% CI: 2.2, 20.9]) was lower than the 2020 – 2021 two-year crude suicide rate of 14.3 per 100,000 population (95% CI: 2.9, 41.6) and the earlier 5-year rate for 2010 – 2014 crude rate (15.5/ 100,000 [95% CI: 6.2, 32.0]), but again, these differences were not statistically significant. As with Regular Force males, the female suicide rate confidence intervals for all measured 5-year periods had some degree of overlap, suggesting a low likelihood of statistically significant differences among the crude rates over time; however, given the small numbers being compared, the statistical comparisons had low power to detect relatively small differences that may be real. The suicide rates that fall within the period covered by the COVID-19 pandemic, currently 2020 and 2021, will continue to be monitored moving forward as suicide rates among Regular Force females may possibly change after we move out of the pandemic period.

Comparison of CAF Regular Force Member Suicide Rates to Canadian Rates Using Standardized Mortality Ratios

Standardized mortality ratios (SMRs) were computed to compare the suicide rate among Regular Force members to the rate among the Canadian population after controlling for age differences in the two populations. Note that an SMR above 100% suggests that the suicide rate is higher in the Regular Force population whereas an SMR below 100% suggests that the suicide rate is lower in the Regular Force population and the 95% confidence intervals help us determine whether the difference is statistically significant. The 5-year SMRs for Regular Force males were above 100% only for the more recent periods of 2010 – 2014 (118% [95% CI: 92, 151]) and 2015 – 2019 (114% [95%CI: 89, 145]) but both were statistically non-significant, indicating that, for both periods, the observed number of Regular Force male suicides was similar to what would be expected in the Canadian male population, after controlling for population age differences. The most recent SMR that we

could compute was for the single year of 2020 and while it was elevated above 100%, the wide confidence intervals that included 100% indicate that it was not statistically significant.

In comparison, we computed SMRs among Regular Force females but for broader periods because of the lower suicide numbers being compared and these SMRs were all above 100%. For the 10-year period of 2005 – 2014, the SMR was 215% (95% CI: 111, 377) and it was statistically significant. The 6-year period SMR for 2015 – 2020 was 141% (95%CI: 52, 307) and it was not statistically significant. The elevated and significant 2005 – 2014 SMR indicates that the observed number of Regular Force female suicides for that period were more than would be expected in the Canadian female population, after controlling for population age differences.

Impact of Deployment on CAF Regular Force Member Suicide Rates

SMRs were also computed separately for members with a history of deployment and those without a history of deployment, individually comparing their suicide risk to the risk in the Canadian male population. For the initial two periods assessed, 1995 – 1999 and 2000 – 2004, the SMRs were very similar between those with a history of deployment and those without this experience and as each SMR confidence interval included 100%, suicide risk differences relative to the risk in Canadian male population were not statistically significant. The following two 5-year periods, 2005 – 2009 and 2010 – 2014, resulted in SMRs for those with deployments that were above 100% and higher relative to those without deployments but for each period, the suicide risk differences relative to the Canadian male population were not statistically significant. The 2015 – 2019 period indicated a bit of a reversal, as the higher SMR was observed in those without a deployment history but again, the suicide risk differences relative to the Canadian male population were not statistically significant. Additionally, the most recent SMRs, which were only computed with a single year of data (i.e., 2020), suggested that, once again, the SMR was higher among individuals with a history of deployments, but the suicide risk differences relative to the Canadian male population were not statistically significant.

In comparison, among the Regular Force female suicide deaths over 2003 - 2020 there weren't many who had a history of deployment, which is an observation that exemplifies a low suicide risk associated with deployment experience among females. The data for the full 2003 – 2020 period indicated that the Regular Force female suicide rate, relative to the Canadian female population and adjusting for age differences, was elevated in both those with a deployment history and those without this experience but it was only statistically significant among those without a deployment history. The results of the 10-year 2005 – 2014 period SMRs were similar to what was observed for the full 2003 – 2020 period, where the SMRs were above 100% both for those with and for those without a history of deployment but only statistically significant for those without this experience. Similarly, the more recent 2015 – 2020 period SMRs (i.e., 6 years) were somewhat reflective of what was found for the full 2003 – 2020 period but the number of Regular Force female suicides with a deployment history was zero for this shorter timeframe. Moreover, these findings largely follow the earlier observation that overall, Regular Force females had a higher suicide rate relative to the Canadian female population for the 2005 – 2014 period; however, the number of Regular Force female suicides with a history of deployment was low, and while this suggests a lower associated suicide risk, the small numbers limit the ability to make definitive judgements.

Impact of Environmental Command on CAF Regular Force Member Suicide Rates

For Regular Force males, an age-standardized suicide rate ratio was calculated to compare Army to non-Army commands for the 2002 – 2021 period. This rate ratio was not statistically significant (1.13 [95% CI: 0.87, 1.47]), indicating an equivalent suicide rate among Regular Force males in the Army and non-Army commands.

This finding was supported by the SMRs computed for each command over consecutive 5-year periods, where none of the SMRs were statistically significant. However, the SMRs were a little elevated over 100%, but not statistically significant, for two commands and these included the Army command during both the 2007 – 2011 and 2012 – 2016 periods and the Air Force command during the abbreviated 2017 – 2020 period (i.e., 4-years). In comparison, the age-standardized suicide rate ratio for Regular Force females that compared Army to non-Army commands for the 2003 – 2021 period was similarly not statistically significant (1.23 [95% CI: 0.42, 3.57]). This is reflected in the SMRs computed for each command and each assessed period in which, for each period, the different command SMRs were similar. However, the Army command SMR, although not statistically significant, was a little elevated relative to other commands for the 2003 – 2012 period.

Suicide rate moving averages, although not a statistical test, provides an indication of how suicide rates fluctuate over time for Army and non-Army commands. These moving average rates suggested that while Army commands appeared to have had an elevated rate over 2008 to 2014 among males and 2011 to 2015 among females, the difference between Army and non-Army command suicide rates changed from around 2015 or 2016 onwards. At approximately this time point, the rates became more comparable among male Army and non-Army commands and among female Army commands, the suicide rate drops to zero from 2017 onwards. However, in more recent years the suicide rate appears to have reversed a little to the point where there appears to be a tendency for suicide rates to be a little more elevated among non-Army commands, particularly among Regular Force females. As mentioned earlier, this moving average assessment is not a statistical test.

The Army combat arms occupations were also assessed for their influence on suicide rates. Over the 2002 – 2021 period the crude suicide rate among Regular Force males in the Army combat arms occupations was found to be higher than the overall rate among Regular Force males in other occupations (i.e., 32.1/ 100,000 [95% CI: 26.0, 39.8] for Army combat arms occupations versus 19.1/ 100,000 [95% CI: 16.3, 22.5] among others) and this difference was statistically significant. In contrast, over the 2003 – 2021 period the crude suicide rate among Regular Force females in the Army combat arms occupations was found to be not statistically different than the overall rate among other occupations (i.e., 30.7/ 100,000 [95% CI: 3.7, 110.8] for Army combat arms occupations versus 11.8/ 100,000 [95% CI: 7.1, 18.4] among others). However, as the confidence intervals between these two rates among Regular Force females overlap substantially, it is not possible to say that the suicide rates are statistically significant given that the numbers being compared are low and this influences the power to detect differences that may be real. Additionally, there were only two suicides among females from the Army combat arms occupation group and these occurred during the 2010 – 2014 period and, with zero suicides in this occupation group outside this period, this suggests an elevated suicide rate in this occupation group but only during the briefer 2010 – 2014 period.

Conclusion

Suicide rates among Regular Force males and females in the CAF did not increase with any statistical significance over the period of observation described in these findings; however, after age standardization, the Regular Force female suicide rate was identified to be higher with statistical significance relative to the rate in the Canadian female population over the 2005 to 2014 period while for Regular force males, the difference relative to the Canadian male population was not statistically significant. Additionally, despite the added stressors associated with the COVID-19 pandemic, the suicide rate and its related characteristics in 2020 and 2021 were comparable to observations from previous years. However, small numbers do limit the ability, or power, of statistical assessments to detect differences with statistical significance when they are real and not chance occurrences. The elevated risk in Regular Force males under Army command, particularly those in combat arms occupations, and the increased suicide rate in Regular Force females relative to the Canadian

female population are findings that continue to be under observation by the CAF and suicide prevention programs have been advised to implement this information into their prevention efforts.

Sommaire

La perte tragique de vie par suicide des membres des Forces armées canadiennes (FAC) requiert notre attention continue afin de comprendre ces événements difficiles et parfaire nos efforts de prévention du suicide au sein des FAC. Le présent rapport décrit le phénomène du suicide au sein des FAC ainsi que les caractéristiques descriptives des hommes de la Force régulière décédés par suicide de 1995 à 2021 et des femmes de la Force régulière décédées par suicide de 2003 à 2021, et fournit des renseignements supplémentaires sur les facteurs de risque associés à ces décès par suicide au cours des périodes les plus récentes.

Méthodes

Les données décrites dans la section 3.1 [Résultats des rapports d'examen technique des suicides par des professionnels de la santé (ETSPS), hommes et femmes de la Force régulière, mise à jour de 2021] sont tirées des ETSPS et se concentrent sur 2021 pour les hommes et sur la période allant de 2017 à 2021 pour les femmes. L'ETSPS est l'une des enquêtes qui suivent chaque suicide des FAC. L'ETSPS, un outil d'assurance de la qualité pour les Services de santé des Forces canadiennes (SSFC), est effectué dès que tout suicide est confirmé dans la Force régulière ou dans la Première réserve. Chaque ETSPS est généralement mené par une équipe composée d'un professionnel de la santé mentale et d'un médecin de soins primaires.

Le Directeur – Gestion du soutien aux blessés a fourni les données épidémiologiques relatives aux décès par suicide reconnus décrites dans la section 3.2 (Épidémiologie des suicides chez les membres de la Force régulière) et la section 3.3 (Épidémiologie des suicides chez les membres de la Force régulière, selon le commandement d'armée) pour la période allant jusqu'à 2012. Depuis septembre 2012, le Direction – Santé mentale (DSM) assure le suivi des données sur le nombre de suicides. Les renseignements relatifs à la date de naissance, aux caractéristiques militaires ou autres associés aux décès par suicide et à la population comparable des FAC proviennent de la Direction – Gestion de l'information des ressources humaines (DGIRH); ces données ont été mises à jour jusqu'en 2003 à l'aide des données reçues en 2022. Enfin, les données sur la population générale canadienne et les taux de suicide en fonction de l'âge et du sexe ont été obtenus auprès de Statistique Canada.

Les fréquences, les taux bruts, les ratios standardisés de mortalité (RSM, c.-à-d. le ratio du nombre observé de suicides dans les FAC et du nombre de cas escomptés dans les FAC, soit le nombre escompté si les FAC correspondaient à la population générale canadienne d'un point de vue de l'âge et du sexe) et les taux standardisés de façon directe ont été calculés. Les RSM ont été calculés jusqu'en 2020 dans le présent rapport, car Statistique Canada n'a publié des données pour la population générale canadienne que jusqu'à cette année.

Ce rapport ne porte que sur l'analyse des suicides survenus chez les hommes et les femmes de la Force régulière. Il s'agit toutefois du premier rapport annuel contenant un examen plus détaillé des suicides chez les femmes de la Force régulière. Les décès annuels par suicide au sein de la Force de réserve ne sont pas visés par cette analyse. Il y a un manque d'accès aux données pour les réservistes, car la prestation d'une grande partie de leurs soins de santé est assurée par le système provincial, et les renseignements connexes ont tendance à ne pas être accessibles pendant le processus d'ETSPS.

Résultats

Diagnostic de maladie mentale chez les hommes de la Force régulière qui sont décédés par suicide en 2021 et chez les femmes de la Force régulière qui sont décédées par suicide de 2017 à 2021

Au nombre des troubles mentaux connus au moment du décès par suicide chez les hommes de la Force régulière en 2021 figuraient les troubles dépressifs (42,9 %), les troubles anxieux (14,3 %), le trouble de stress post-traumatique (7,1 %) ou d'autres troubles liés à des traumatismes et au stress (14,3 %). Des troubles connus liés à la dépendance et à la consommation de substances ont été signalés dans 50,0 % de ces décès par suicide, 14,3 % avaient subi un traumatisme crânien par le passé, tandis que des troubles de la personnalité avaient été diagnostiqués à 7,1 % d'entre eux. Il était fréquent (50,0 %) que la personne présente au moins deux diagnostics liés à la santé mentale au moment du décès (c.-à-d. une combinaison qui pouvait comprendre des troubles dépressifs, des troubles liés à des traumatismes et au stress, des troubles anxieux, des troubles liés à la dépendance ou à la consommation de substances, des traumatismes crâniens ou des troubles de la personnalité).

En comparaison, les troubles mentaux désignés chez les femmes de la Force régulière au moment de leur décès par suicide de 2017 à 2021 comprenaient des troubles dépressifs (40,0 %), des troubles anxieux (40,0 %) ou des troubles liés à des traumatismes non liés au trouble de stress post-traumatique et au stress (20,0 %). Des troubles connus liés à la dépendance ou à la consommation de substances ont été signalés dans 20,0 % de ces décès par suicide, et 20,0 % avaient été désignés comme ayant un trouble de la personnalité. Il était fréquent (60,0 %) que ces militaires présentent au moins deux diagnostics liés à la santé mentale au moment de leur décès.

Facteurs de stress professionnel et personnel chez les hommes de la Force régulière qui sont décédés par suicide en 2021 et chez les femmes de la Force régulière qui sont décédées par suicide de 2017 à 2021

Plusieurs facteurs de stress professionnel et personnel ont été évalués chez les hommes et les femmes de la Force régulière qui se sont suicidés, facteurs de stress tels que l'échec d'une relation, le suicide d'un ami ou d'un membre de la famille, le décès d'un ami ou d'un membre de la famille, une maladie personnelle ou d'un membre de la famille, des dettes, des problèmes professionnels ou des problèmes juridiques. Au moment du décès, au moins un facteur de stress professionnel ou personnel était présent dans 92,9 % des cas de suicide survenus en 2021 chez les hommes de la Force régulière, tandis qu'un peu plus de la moitié des cas (57,1 %) présentait au moins deux facteurs de stress concomitants avant le décès.

En comparaison, toutes les femmes (100 %) de la Force régulière qui se sont suicidées entre 2017 et 2021 présentaient au moins deux de ces facteurs de stress professionnel ou personnel au moment du décès. De plus, tous les membres des FAC ont été exposés à la pandémie de COVID-19 et, à ce titre, il s'agissait d'un facteur de stress potentiel courant parmi l'ensemble de cette population. Cependant, il n'y a aucune preuve que cela a contribué au risque de suicide. De plus, pendant la pandémie de COVID-19, le taux de suicide et ses caractéristiques connexes en 2020 et 2021 étaient comparables aux observations des années précédentes.

Taux bruts de suicide

Hommes de la Force régulière :

Au cours des 10 années précédentes (de 2012 à 2021), il y a eu 130 décès par suicide chez les hommes de la Force régulière des FAC et 67 au cours des 5 années précédentes (de 2017 à 2021), et l'âge moyen était de 33,9 ans (IC à 95 % : 32,3 à 35,4) pour la période de 2012 à 2021 et 34,3 ans (IC à 95 % : 32,3 à 36,3) pour la période de 2017 à 2021. Ces chiffres étaient similaires à l'âge moyen de tous les hommes de la Force régulière au cours de chacune de ces deux périodes, 34,9 ans (IC à 95 % : 34,9 à 34,9) et 34,7 ans (IC à 95 % : 34,7 à 34,8) pour les périodes de 2012 à 2021 et de 2017 à 2021, respectivement, et les différences n'étaient pas statistiquement significatives. Le taux de suicide pour les 5 à 10 années précédentes était plus élevé, avec une augmentation statistiquement significative chez les hommes de la Force régulière qui étaient séparés, divorcés ou veufs par rapport aux autres catégories d'état civil. De plus, le taux de suicide avait tendance à varier selon la catégorie de grade, et il était plus élevé de façon statistiquement significative parmi les militaires du rang (MR) comparativement aux grades d'officier pour la période de 2012 à 2021.

Des taux bruts de suicide consécutifs sur cinq ans ont été calculés pour évaluer si le taux a changé au fil du temps. Ces taux bruts de suicide sur 5 ans chez les hommes de la Force régulière variaient d'un minimum de 19,9 pour 100 000 de 1995 à 1999 et de 2000 à 2004 à un maximum de 24,5 pour 100 000 dans les périodes plus récentes, mais ces différences n'étaient pas statistiquement significatives. Le plus récent taux de suicide sur 5 ans (c.-à-d. de 2015 à 2019) chez les hommes de la Force régulière (24,5/100 000 [IC à 95 % : 19,2 à 31,2]) était semblable au taux brut de suicide sur 2 ans de 2020 à 2021 de 23,3 pour 100 000 (IC à 95 % : 15,2 à 34,2) et le taux sur 5 ans précédent pour la période de 2010 à 2014 (24,5/100 000 [IC à 95 % : 19,2 à 31,2]). De plus, les intervalles de confiance (IC) des taux de suicide pour toutes les périodes de cinq ans étudiées se chevauchaient dans une certaine mesure; ces différences dans le taux brut n'étaient pas statistiquement significatives. Les taux de suicide qui tombent dans la période de la pandémie de COVID-19, donc en 2020 et en 2021, continueront d'être surveillés à l'avenir, car les taux de suicide chez les hommes de la Force régulière pourraient éventuellement changer après la sortie de la période pandémique.

Femmes de la Force régulière :

Au cours des 10 années précédentes (de 2012 à 2021), il y a eu 13 suicides de femmes de la Force régulière des FAC avec un âge moyen de 31,5 ans (IC à 95 % : 27,0 à 36,1) et il y en a eu 5 au cours des 5 années précédentes (de 2017 à 2021) avec un âge moyen de 34,2 ans (IC à 95 % : 24,4 à 44,0). Ces âges étaient légèrement inférieurs à l'âge moyen de toutes les femmes de la Force régulière au cours de chacune de ces deux périodes, soit 35,6 ans (IC à 95 % : 35,6 à 35,7) et 35,5 (IC à 95 % : 35,4 à 35,6) pour les périodes de 2012 à 2021 et de 2017 à 2021, respectivement, mais les différences n'étaient pas statistiquement significatives. De plus, le taux de suicide avait tendance à être plus élevé chez les femmes célibataires de la Force régulière et chez celles des catégories de grade inférieur. Cependant, les intervalles de confiance se chevauchaient pour toutes les catégories de chaque caractéristique, ce qui indiquait que les différences n'étaient pas statistiquement significatives.

Des taux bruts de suicide consécutifs sur cinq ans ont été calculés pour évaluer si le taux a changé au fil du temps. Les taux sur 5 ans pour les femmes de la Force régulière variaient du taux le plus bas à 8,2 pour 100 000 au cours de la période plus récente de 2015 à 2019 à un taux le plus élevé à 15,5 pour 100 000 de 2010 à 2014, mais ces différences n'étaient pas statistiquement significatives. Le taux de suicide le plus récent sur 5 ans (c.-à-d. de 2015 à 2019) (8,2/100 000 [IC à 95 % : 2,2 à 20,9]) était inférieur au taux brut de

suicide sur 2 ans de 2020 à 2021 égal à 14,3 pour 100 000 (IC à 95 % : 2,9 à 41,6) et au taux brut sur 5 ans pour la période de 2010 à 2014 (15,5/100 000 [IC à 95 % : 6,2 à 32,0]), mais encore une fois, ces différences n'étaient pas statistiquement significatives. Comme pour les hommes de la Force régulière, les intervalles de confiance du taux de suicide chez les femmes pour toutes les périodes de cinq ans mesurées présentaient un certain degré de chevauchement, ce qui laisse entendre une faible probabilité de différences statistiquement significatives entre les taux bruts au fil du temps. Cependant, étant donné les petits nombres comparés, les comparaisons statistiques avaient une faible puissance pour détecter des différences relativement petites qui peuvent être réelles. Les taux de suicide qui tombent dans la période couverte par la pandémie de COVID-19, actuellement 2020 et 2021, continueront d'être surveillés à l'avenir, car les taux de suicide chez les femmes de la Force régulière pourraient éventuellement changer après la sortie de la période pandémique.

Comparaison entre le taux de suicide chez les hommes de la Force régulière des FAC et le taux de suicide dans la population canadienne au moyen des ratios standardisés de mortalité

Les ratios standardisés de mortalité (RSM) ont été calculés pour comparer le taux de suicide chez les membres de la Force régulière au taux dans la population canadienne après contrôle des différences d'âge dans les deux populations. Veuillez noter qu'un RSM supérieur à 100 % donne à penser que le taux de suicide est plus élevé dans la population de la Force régulière, alors qu'un RSM inférieur à 100 % donne à penser que le taux de suicide est plus faible dans la population de la Force régulière, et les intervalles de confiance à 95 % nous aident à déterminer si la différence est statistiquement significative. Les RSM sur 5 ans pour les hommes de la Force régulière n'étaient supérieurs à 100 % que pour les périodes les plus récentes de 2010 à 2014 (118 % [IC à 95 % : 92 à 151]) et de 2015 à 2019 (114 % [IC à 95 % : 89 à 145]), mais n'apparaissaient pas statistiquement significatifs, ce qui donne à penser que, pour les deux périodes, le nombre observé de suicides chez les hommes de la Force régulière était semblable à ce à quoi on aurait pu s'attendre dans la population masculine au Canada, après contrôle des différences d'âge de la population. Le RSM le plus récent que nous avons pu calculer concernait la seule année 2020 et, bien qu'il soit supérieur à 100 %, les larges intervalles de confiance qui incluaient 100 % indiquent qu'il n'était pas significatif d'un point de vue statistique.

En comparaison, nous avons calculé les RSM chez les femmes de la Force régulière, mais pour des périodes plus longues en raison du nombre inférieur de suicides comparés; ces RSM étaient tous supérieurs à 100 %. Pour la période de 10 ans s'étendant de 2005 à 2014, le RSM était de 215 % (IC à 95 % : 111 à 377) et il était statistiquement significatif. Le RSM de la période de 6 ans pour 2015 à 2020 était de 141 % (IC à 95 % : 52 à 307) et il n'était pas statistiquement significatif. Le RSM élevé et significatif de 2005 à 2014 indique que le nombre observé de suicides de femmes de la Force régulière pour cette période était supérieur à ce à quoi on aurait pu s'attendre dans la population féminine au Canada, après contrôle des différences d'âge de la population.

Répercussions des déploiements sur le taux de suicide chez les membres de la Force régulière des FAC

Les RSM ont également été calculés séparément pour les militaires qui avaient des antécédents de déploiement et pour ceux qui n'en avaient pas et ont comparé individuellement leur risque de suicide au risque dans la population masculine canadienne. Pour les deux premières périodes évaluées, de 1995 à 1999 et de 2000 à 2004, les RSM étaient très similaires entre ceux qui avaient des antécédents de déploiement et ceux qui n'en avaient pas, et comme chaque intervalle de confiance des RSM comprenait 100 %, les différences de risque de suicide

par rapport au risque dans la population masculine canadienne n'étaient pas statistiquement significatives. Les deux périodes de cinq années suivantes, de 2005 à 2009 et de 2010 à 2014, ont donné des RSM pour les militaires participant à un déploiement supérieurs à 100 % et plus par rapport à ceux qui n'ont pas participé à un déploiement, mais pour chaque période, les différences de risque de suicide par rapport à la population masculine canadienne n'étaient pas statistiquement significatives. La période de 2015 à 2019 a indiqué un léger renversement, car un RSM plus élevé a été observé chez les militaires qui avaient des antécédents de déploiement, mais encore une fois, les différences de risque de suicide par rapport à la population masculine canadienne n'étaient pas statistiquement significatives. De plus, les RSM les plus récents, qui n'ont été calculés qu'avec une seule année de données (c.-à-d. 2020), donnaient à penser qu'encore une fois, le RSM était plus élevé chez les militaires qui avaient des antécédents de déploiement, mais les différences de risque de suicide par rapport à la population masculine canadienne n'étaient pas statistiquement significatives.

En comparaison, parmi les femmes de la Force régulière décédées par suicide de 2003 à 2020, il n'y en avait pas beaucoup qui avaient des antécédents de déploiement, ce qui est une observation qui illustre un faible risque de suicide associé à une opération de déploiement chez les femmes. Les données pour l'ensemble de la période s'étendant de 2003 à 2020 ont indiqué que le taux de suicide des femmes de la Force régulière, par rapport à la population féminine canadienne et en tenant compte des différences d'âge, était élevé à la fois chez celles qui avaient des antécédents de déploiement et chez celles qui n'en avaient pas, mais ce n'était statistiquement significatif que parmi celles qui n'avaient pas d'antécédents de déploiement. Les résultats des RSM de la période de 10 ans s'étendant de 2005 à 2014 étaient similaires à ceux observés pour l'ensemble de la période de 2003 à 2020, où les RSM étaient supérieurs à 100 % à la fois pour les femmes ayant des antécédents de déploiement et pour celles qui n'en avaient pas, mais seulement statistiquement significatifs pour celles qui n'en avaient pas. De même, les RSM les plus récents de la période de 2015 à 2020 (c.-à-d. 6 ans) reflétaient quelque peu ce qui avait été constaté pour l'ensemble de la période s'étendant de 2003 à 2020, mais le nombre de suicides de femmes de la Force régulière ayant des antécédents de déploiement était de zéro pour cette période plus courte. De plus, ces résultats suivent en grande partie l'observation précédente selon laquelle, dans l'ensemble, les femmes de la Force régulière avaient un taux de suicide plus élevé par rapport à la population féminine canadienne pour la période de 2005 à 2014; cependant, le nombre de femmes de la Force régulière qui se sont suicidées et qui avaient des antécédents de déploiement était faible, et même si cela en soi laisse entendre un risque de suicide associé plus faible, le petit nombre limite la capacité de porter des jugements définitifs.

Répercussions du commandement d'armée sur les taux de suicide chez les membres de la Force régulière des FAC

Pour les hommes de la Force régulière, un ratio des taux de suicide ajustés selon l'âge a été calculé afin de comparer le commandement de la Force terrestre à d'autres commandements pour la période de 2002 à 2021. Ce ratio des taux n'était pas statistiquement significatif (1,13 [IC à 95 % : 0,87 à 1,47]), ce qui indique un taux de suicide équivalent chez les hommes de la Force régulière dans le commandement de la Force terrestre et dans d'autres commandements. Cette constatation était appuyée par les RSM calculés pour chaque commandement sur des périodes consécutives de cinq ans, où aucun des RSM n'était statistiquement significatif. Cependant, les RSM dépassaient légèrement les 100 %, mais n'étaient pas statistiquement significatifs, pour deux commandements, c'est-à-dire pour le commandement de la Force terrestre pendant les périodes de 2007 à 2011 et de 2012 à 2016 et pour le commandement aérien pendant la période abrégée de 2017 à 2020 (c.-à-d. 4 années). En comparaison, le ratio des taux de suicide ajustés selon l'âge chez les femmes de la Force régulière qui comparait les commandements de la Force terrestre aux autres pour la période de 2003 à 2021 n'était pas non plus statistiquement significatif (1,23 [IC à 95 % : 0,42 à 3,57]). Cela se reflète dans les RSM calculés pour

chaque commandement et chaque période évaluée dans laquelle, pour chaque période, les différents RSM de commandement étaient similaires. Cependant, le RSM du commandement de la Force terrestre, bien qu'il ne soit pas statistiquement significatif, était un peu élevé par rapport aux autres commandements pour la période de 2003 à 2012.

Les moyennes mobiles du taux de suicide, bien qu'il ne s'agisse pas d'un test statistique, fournissent une indication de la façon dont les taux de suicide fluctuent dans le temps pour le commandement de la Force terrestre et d'autres commandements. Ces taux moyens mobiles donnent à penser que si les commandements de la Force terrestre semblaient avoir eu un taux élevé de 2008 à 2014 chez les hommes et de 2011 à 2015 chez les femmes, la différence entre les taux de suicide dans l'Armée canadienne et dans d'autres commandements a changé à partir de 2015 ou 2016 environ. À peu près à ce moment-là, les taux sont devenus plus comparables entre le commandement de la Force terrestre et d'autres commandements pour les hommes, tandis que dans le commandement de la Force terrestre pour les femmes, le taux de suicide tombe à zéro à partir de 2017. Cependant, au cours des dernières années, le taux de suicide semble s'être légèrement inversé au point où il semble exister une tendance vers un taux de suicide un peu plus élevé au sein des autres commandements, en particulier chez les femmes de la Force régulière. Comme mentionné précédemment, cette évaluation moyenne mobile n'est pas un test statistique.

Les groupes professionnels des armes de combat de l'Armée de terre ont également été évalués pour leur influence sur les taux de suicide. Au cours de la période de 2002 à 2021, le taux brut de suicide chez les hommes de la Force régulière dans les groupes professionnels des armes de combat de l'Armée canadienne s'est avéré plus élevé que le taux global chez les hommes de la Force régulière dans d'autres groupes professionnels (c.-à-d. 32,1/100 000 [IC à 95 % : 26,0 à 39,8] pour les groupes professionnels des armes de combat de l'Armée de terre contre 19,1/100 000 [IC à 95 % : 16,3 à 22,5] pour les autres), et cette différence était statistiquement significative. En revanche, au cours de la période de 2003 à 2021, le taux brut de suicide chez les femmes de la Force régulière dans les groupes professionnels des armes de combat de l'Armée canadienne n'était pas statistiquement différent du taux global dans d'autres groupes professionnels (c.-à-d. 30,7/100 000 [IC à 95 % : 3,7 à 110,8] pour les groupes professionnels des armes de combat de l'Armée de terre contre 11,8/100 000 [IC à 95 % : 7,1 à 18,4] pour les autres). Cependant, puisque les intervalles de confiance de ces deux taux parmi les femmes de la Force régulière se chevauchent considérablement, il est impossible de dire que les taux de suicide sont statistiquement significatifs, étant donné que les chiffres comparés sont faibles et que cela influe sur la capacité de détecter des différences qui peuvent être réelles. De plus, il n'y a eu que deux suicides parmi les femmes du groupe professionnel des armes de combat de l'Armée canadienne et ceux-ci se sont produits au cours de la période de 2010 à 2014 et, avec zéro suicide dans ce groupe professionnel en dehors de cette période, cela laisse entendre un taux de suicide élevé dans ce groupe professionnel, mais seulement pendant la courte période de 2010 à 2014.

Conclusion

Les taux de suicide des hommes et des femmes de la Force régulière des FAC n'ont pas augmenté de façon statistiquement significative au cours de la période d'observation décrite; cependant, une fois standardisés selon l'âge, le taux de suicide des femmes de la Force régulière s'est avéré supérieur, et ce, de façon statistiquement significative, à celui de la population féminine du Canada au cours de la période s'étendant de 2005 à 2014, tandis que la différence entre le taux de suicide des hommes de la Force régulière et celui de la population masculine du Canada n'était pas statistiquement significative. De plus, malgré la présence de facteurs de stress associés à la pandémie de COVID-19, le taux de suicide et les caractéristiques associées de 2020 et 2021 étaient comparables aux observations des années précédentes. Cependant, la faible quantité

de données limite la capacité, ou le pouvoir, des évaluations statistiques à relever les différences statistiquement significatives lorsqu'elles sont réelles et non le fruit du hasard. Le risque accru chez les hommes de la Force régulière faisant partie de l'Armée canadienne, et particulièrement chez ceux appartenant aux groupes professionnels des armes de combat, et le taux de suicide plus élevé chez les femmes de la Force régulière que dans la population féminine du Canada, sont des constatations que les FAC continuent de surveiller, tandis qu'il a été conseillé à des équipes de programmes de prévention du suicide de tenir compte de ces renseignements dans leurs efforts de prévention.

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2022 Report on Suicide Mortality in the Canadian Armed Forces (1995 to 2021)

1. Introduction

Each death from suicide can have a tragic impact on families, friends, and colleagues. Suicide prevention is an important public health concern in Canada and is a top priority for the Canadian Armed Forces (CAF). The CAF Suicide Prevention Action Plan reflects the CAF's commitment to ensuring that everything that can be done is done to mitigate the risk of suicide. The investigation and analysis of deaths from suicide by CAF members provides valuable information that can assist in guiding and refining ongoing suicide prevention efforts. This annual report is one method used to ensure that clinical and prevention programmes are optimised.

There has been concern since the early 1990s about the rate of suicide in the CAF and its possible relationship to deployment. In response to these concerns, the CAF began a suicide mortality surveillance program to determine the rate of suicide among CAF personnel in comparison to the Canadian general population (CGP), as well as the rate of suicide in those personnel with a history of deployment compared to those without such a history.

Historically the reports have focused on the surveillance and epidemiology of suicide within the CAF. Since 2015, the report has expanded its scope to describe additional information related to suicide in the CAF including an in-depth analysis of the variation of suicide rates by environmental command. This report also provides information on the underlying risk factors that may have contributed to the Regular Force male suicides that took place in 2021, and Regular Force female suicides over 2017 – 2021, based on an assessment of the Medical Professional Technical Suicide Reviews (MPTSRs).

This report separately analyses Regular Force males and Regular Force females who have died by suicide. Additionally, this is the first annual report that attempts to describe the characteristics of Regular Force females who have died by suicide in greater detail. MPTSRs are completed for all CAF deaths from suicide, including Reserve members; however, data from those investigations among Reserve members as well as any available data on suicide attempts are not included in this analysis for the following reasons:

1) For Reserve Force data there are issues associated with completeness, in addition to concerns with possible identity and attribute disclosure.[1] Since many Reserve Force members receive their health care

[1] Statistics Canada defines *identity disclosure* as: "identifying an individual from a table, typically from small cell showing 1 or 2 persons with a characteristic. If no other information is released it is not necessarily a confidentiality breach but the perception of a breach is there. This translates into a "small cell" problem, where, for the purpose of vital statistics, "small" is defined as frequencies representing fewer than 5 births, deaths or stillbirths. "

Attribute disclosure is defined as: "disclosing attributes of individuals, even if they are not specifically identified. For example, a table row where all units share the same attribute because they are found in a single column. This translates into "zero cell" and "full cell" problems. Not all zero cells are problematic. Full cells, which occur when only one cell in a row or column is non-zero, are more likely to be."

Taken from: **Statistics Canada. Disclosure control strategy for Canadian Vital Statistics Birth and Death Databases. Ministry of Industry: Ottawa, 2016[1].**

in the provincial health care system, Reserve member reporting and their available records may be incomplete.

2) Since data on suicide attempts is often incomplete, due to differences in its definition and inconsistent reporting by members, and in keeping with other occupational health studies, this report evaluates only deaths from suicide, not attempts. Furthermore, the data used for this analysis include only those who have died of suicide while active in the Regular Forces, and do not include those who have died of suicide after retirement from the military. For more information on Veterans see the 2019 Veteran Suicide Mortality Study [2].

2. Data Sources and Methods

2.1 Data Sources

2.1.1 Medical Professional Technical Suicide Review

Data on suicide risk factors (mental health and psycho-social factors) are collated from the Medical Professional Technical Suicide Reviews (MPTSR). MPTSRs are requested by the Canadian Forces Health Services (CFHS) when a death is deemed to have been due to suicide and are conducted by military medical professionals. This team reviews all pertinent health records and conducts interviews with family members, health care providers, and colleagues who worked with the member and who may be knowledgeable about the circumstances of the death. MPTSRs began in 2010 as a Quality Assurance tool within the CFHS to provide the Surgeon General with observations and recommendations for optimising suicide prevention efforts within CFHS. All MPTSR information is collected and managed by the Directorate of Mental Health (DMH).

Six mental health factor categories and nine work and life stressor categories were enumerated. Each was identified as present if it was considered an active issue around the time of death. It should be noted that all members were exposed to stressors associated with the COVID-19 pandemic during 2020 and 2021. For some, this added stressor may have increased the risk of suicide, either directly or indirectly through its influence on other stressors; however, the contribution of the pandemic to suicide deaths was not captured in the MPTSR investigations and as such, no valid conclusion can be drawn about its influence. The mental health factor categories included:

1) depressive disorders: i) disruptive mood dysregulation disorder; ii) major depressive disorder, single and recurrent episodes; iii) persistent depressive disorder (dysthymia); iv) premenstrual dysphoric disorder; v) substance/medication-induced depressive disorder; vi) depressive disorder due to another medical condition; vii) other specified depressive disorder; and viii) unspecified depressive disorder.

2) trauma and stressor-related disorders: i) reactive attachment disorder; ii) disinhibited social engagement disorder; iii) posttraumatic stress disorder; iv) acute stress disorder; v) adjustment disorders; vi) other specified trauma- and stressor-related disorder; and vii) unspecified trauma- and stressor-related disorder.

3) anxiety disorders: i) separation anxiety disorder; ii) selective mutism; iii) specific phobia; iv) social anxiety disorder (social phobia); v) panic disorder; vi) panic attack; vii) agoraphobia; viii) generalized

anxiety disorder; ix) substance/medication-induced anxiety disorder; x) anxiety disorder due to another medical condition; xi) other specified anxiety disorder; and xii) unspecified anxiety disorder.

4) addictions or substance-use disorders;

5) traumatic brain injury: considered to be an active issue if it occurred at any time in an individual's past; and

6) personality disorders: considered an active issue if it was identified at any time in an individual's past

The work and life stressor categories included:

1) failed or failing spousal or intimate partner relationship;

2) failed or failing other relationship (e.g., family, friends);

3) spousal, family, or friend death by suicide (considered to be an active issue if it had occurred at any time in an individual's past);

4) family or friend death (other than suicide);

5) physical health problem;

6) chronic illness in spouse or family member;

7) excessive debt, bankruptcy or financial strain;

8) job, supervisor, or work performance problem; and

9) legal problems (e.g., child custody dispute, litigation).

2.1.2 Epidemiological Surveillance

Information on the number of suicides and demographic information was obtained from the Directorate of Casualty Support Management (DCSM) up to 2012. As of September 2012, suicides were tracked, and data provided by DMH. DMH cross-references their results with those collected by the Administrative Investigation Support Centre (AISC), which is part of the Directorate Special Examinations and Injuries (DSEI).

Information on deployment history and CAF population data (i.e., age, sex, marital status, rank, unit, command, Military Occupational Structure ID/Military Occupation code (MOSID/MOC) and deployment history) for active members, as of July 1st of a given year, originated from the Directorate of Human Resources Information Management (DHRIM). History of deployment was based on data obtained from DHRIM and deployments were defined to include all international assignments with a location outside of Canada and the U.S. and, when determinable, excluded training, exercises, and meetings with international partners. It should be noted that the number of active personnel who were serving in a given year and those with a history of deployment occasionally changes from previous reports due to the continual updating of DHRIM records. Additionally,

command was categorized into one of four environmental command groupings (Army, Air, Navy, or other command) based on individuals' last specified command or in some cases, unit information. Moreover, the 2003 to 2021 population data that were used in various rate calculations were updated with data obtained in 2022. As such, rates for periods that include these years may have changed relative to previous year reports.

Canadian suicide counts by age and sex were obtained from Statistics Canada. Data were available up to 2020 at the time of preparation of this report. Canadian suicide rates are derived from death certificate data collected by the provinces and territories and collated by Statistics Canada. Codes utilized for this report were ICD-9 E950-E959 (suicide and self-inflicted injury) in the Shelf Tables produced by Statistics Canada from 1995 to 1999. For 2000 to 2019 the number of suicide deaths was based on ICD-10 codes X60-X84 and Y87.0 utilizing Table 13-10-0392-01 'Deaths and age-specific mortality rates, by selected grouped causes' from Statistics Canada. During Statistics Canada's production of each year's death statistics, data from previous years may have been revised to reflect any updates or changes that had been received from the provincial and territorial vital statistics registrars. Open verdict cases (ICD-9: E980-E989; ICD-10: Y10-Y34, Y87.2) are excluded by Statistics Canada[2], although they are routinely included in suicide statistics reported elsewhere (e.g., UK – both in civilian and military contexts). To ensure valid comparisons, the Statistics Canada exclusions were followed for these analyses. CGP denominators up to 2000 were taken from Statistics Canada CANSIM Table 051-0001; from 2000 onwards, they were taken from Table 17-10-0005-01 'Population estimates on July 1st, by age and sex'. Denominator numbers, up to and including 2015, were final inter-censal estimates; however, while the denominator numbers were final post-censal estimates for 2016 to 2019, for 2020 the estimates were updated post-censal ones.

For the CAF members who died from suicide, information on date of birth, sex, last reported marital status, rank, component, environmental command, MOSID/MOC, deployment history and last known unit were obtained through a request to the Directorate of Human Resources Information Management (DHRIM) and for each year from 2003 to 2021, these numbers were updated with data obtained in 2022. In the current report, the environmental command designation for all CAF Regular Force suicides for the years from 2003 to 2021 were determined using DHRIM data that was requested in 2022. In most cases, environmental command was explicitly stated in the DHRIM data and in the remainder, the last specified unit was used to assign command grouping. This method was also used to assign command for the CAF population that was used in calculating rates.

For Regular Force male suicide deaths prior to 2003, command was ascertained by one of three possible methods:

1) When information as to which CAF command an individual belonged was not available in the MPTSR or the DCSM/AISC database, individuals were assigned into Army or non-Army command categories based on their home unit information.

2) In some cases, MOSID and rank were also used to classify individuals if the home unit information was not clear. This subjective method may have led to misclassification of some suicides into an incorrect command, affecting the validity of the results.

MOSID information for the analysis involving the Army combat arms occupations was obtained directly from DHRIM. Individuals were considered to be employed in an Army combat arms occupation if they had the

[2] Statistics Canada causes of death mapping between ICD-9 and ICD-10, intent of injury not known maps from ICD-9: E980-E989 to ICD-10: Y10-Y34, Y87.2, as per https://www150.statcan.gc.ca/n1/pub/82-003-x/2013007/article/11852/tbl/appb-eng.htm.

following MOSIDs: 00005 (CRMN), 00008 (ARTYMN-FD), 00009 (ARTYMN-AD), 00010 (INFMN), 000178 (ARMD), 000179 (ARTY), 000180 (INF), 000181 (ENGR), 00339 (CBT ENGR) and 00368 (ARTYMN) (since 2012).[3]

2.2 Methods

Crude CAF Regular Force male suicide rates were calculated for various periods over 1995 to 2021 and similarly, crude CAF Regular Force female suicide rates were calculated for various periods over 2003 to 2021. For a single year, a crude rate is the total number of events, or count, in that year divided by the mid-year total population and multiplied by 100,000, although a different constant that is a multiple of 10 can be used. As a result, the crude rates within this report are defined as the number per 100,000 population per year but may be calculated over a single year or multiple years, such as a single year rate, a 5-year rate or a10-year rate. Within this report, the rates are largely reported as a number per 100,000 but it this short for a number per 100,000 population per year. Additionally, the periods for which rates were calculated tended to be broader for Regular force females (i.e., predominantly 10-year periods) relative to Regular Force males (i.e., predominantly five-year periods) to produce more stable estimates; less stable estimates are ones that can change substantially with the addition or subtraction of a single case, and which result in confidence intervals that are excessively broad. Suicide rates prior to 1995 have not been calculated as the historical method of ascertainment of suicides within the CAF was not well defined.

To separately compare CAF Regular Force male and female suicide rates with the CGP rates, the indirect method of standardization by age was used to provide Standardized Mortality Ratios (SMRs) for suicides up to 2020. This method controls for the difference in age distribution when comparing between the CAF Regular Force and general Canadian populations, separately for males and females. An SMR is the observed number of cases divided by the number of cases that would be expected in the population at risk based on the age and sex-specific rates of a standard population (the CGP in this case) expressed as a percentage. Therefore, an SMR less than 100% indicates that the population in question has a lower rate than the CGP, while an SMR greater than 100% indicates a higher rate.

SMRs were calculated separately for male and female Regular Force members with and those without a history of deployment, as well as for those in the four environmental command groupings (i.e., Army, Air, and Navy or 'Other').

The calculation of confidence intervals (CIs) for statistics from population data are provided in this report for those who may want to generalize or compare the results between years or to other defined populations. Confidence intervals were calculated for the CAF Regular Force suicide rates and SMRs and these were generated as Poisson distribution 95% confidence limits that used the exact method described by Breslow and Day [3].

Confidence intervals are typically used as a measure of uncertainty around a statistical estimate (e.g., a sample mean or mortality rate) when working with samples from a defined population. However, when statistics such as suicide rates are computed from a completely enumerated population, questions of statistical stability are less

[3] Details on the different MOSIDs, including the general duties associated with them, are available at: http://www.forces.gc.ca/en/about-policies-standards-medical-occupations/cf-mosid-task-statements.page.

relevant to these calculated rates, as everybody in the population is counted. Errors associated with the process of data collection, the coding of cause of death, or in the estimation of the population denominators are usually of greater concern. In such situations, the calculated suicide rate and its confidence intervals simply represent a characterisation of the rate's population distribution, and this assumes that it is distributed according to a known theoretical distribution (e.g., Poisson distribution) around the calculated rate (i.e., some individuals who did not die had a non-zero probability of death from suicide). This permits a comparison of one population's rates, and distribution, to those of another population (e.g., populations characterized by year); confidence intervals provide some guidance as to whether the two population estimates are comparable (i.e., when confidence intervals overlap) or different (i.e., when confidence intervals do not overlap) with a certain level of statistical probability. The p=0.05 level is used to determine whether two population distributions are different with statistical significance.

Direct standardization, standardized to the age structure of the total male or female Regular Force population, was also used for two comparisons. To further compare suicide risk between Regular force males or females with a history of deployment versus those without such a history and between members in the Army command versus those in non-Army commands, standardized rate ratios with 95% confidence intervals were computed as outlined in Rothman and Greenland [4].

Because the annual suicide numbers for the Canadian Armed Forces are small, they are influenced by random annual variability. Moving averages, which take an average of the year of interest as well as the previous and following year[4], have been used by others in a similar military suicide context [5]. This method attempts to control the aforementioned annual variability caused by small numbers and provides a snapshot of potential temporal trends in the data.

3. Results

3.1 Results from the Medical Professional Technical Suicide Review Reports, Regular Force Males and Females, 2021 Updates

3.1.1 Mental Health Factors

Males

MPTSRs were completed for all 14 of the 2021 CAF Regular Force male suicides and for 64 of the 67 male suicides over 2017 – 2021. Table 1 provides a summary of the representation of mental health factors among the 14 Regular Force male suicides in 2021 and the 64 over 2017 – 2021 that had a completed MPTSR; however, the description that follows will focus on the data for 2021. Among these 14 male CAF member suicides in 2021, 10 (71.4%) had at least one of the mental health factors in Table 1 identified as an active issue. The mental

[4] For example, the moving average value for 2006 would be an average of 2005, 2006 and 2007. For 2002 where there is no prior year, the moving average was based on two years' worth of data (e.g., 2002 = average of 2002 and 2003). For 2021, where there is no subsequent year, the data point is suppressed, as it is not a true moving average.

health factor category of addictions or a substance use disorder was the most frequent factor, identified in seven (50.0%) individuals, and this was followed by the depressive disorders factor, identified in six (42.9%) individuals. The other mental health factors had a lower representation. A trauma and stress-related disorder was identified as an active issue at the time of death in three (21.4%) individuals, one (7.1%) individual had PTSD and two (14.3%) had other disorders in this category. Two (14.3%) individuals had an anxiety disorder identified as an active issue, two (14.3%) individuals had a traumatic brain injury in the past and one (7.1%) individual had been identified with a personality disorder. Overall, seven (50.0%) individuals had at least two of the mental health factors listed in Table 1 at the time of death. The representation of mental health factors was similar between 2021 and the five-year 2017 – 2021 period for Regular Force male suicides.

Additionally, there was documented evidence of prior suicidal ideation and/or prior suicide attempts for seven (50.0%) of the Regular Force male suicides in 2021 and this was similar for the 2017 – 2021 period, where 29 (45.3%) individuals had this documented evidence.

The MPTSR does not provide an indication as to whether these mental health concerns were related to operational stress[5]; however, it does attempt to provide an indication as to whether the suicide was related to a deployment and for this query, 'no' or 'unknown' was recorded for all 14 individuals in 2021.

Table 1: Mental Health Factors (Regular Force Males and Females).

Mental health factor		2017-2021 (# (%))[a]		2021 (# (%))[a]	
		Females (Total = 5)	Males (Total = 64)	Females[c] (Total = 1)	Males (Total = 14)
i)	Depressive disorders	2 (40.0%)	24 (37.5%)	-	6 (42.9%)
ii)	Trauma and stress-related disorders:	1 (20.0%)	20 (31.3%)	-	3 (21.4%)
	PTSD	0 (0%)	11 (17.2%)	-	1 (7.1%)
	Other	1 (20.0%)	9 (14.1%)	-	2 (14.3%)
iii)	Anxiety disorders	2 (40.0%)	11 (17.2%)	-	2 (14.3%)
iv)	Addictions or a substance-use disorder	1 (20.0%)	30 (46.9%)	-	7 (50.0%)
v)	Traumatic brain injury (ever)[b]	0 (0%)	11 (17.2%)	-	2 (14.3%)

[5] As defined in the Surgeon General's Mental Health Strategy, "*... the term "Operational Stress Injury" (OSI) is not a diagnosis; rather it is a grouping of diagnoses that are related to injuries that occur as a result of operations. The most common OSIs are PTSD, major depression and generalized anxiety. This term has helped break down several barriers to care and reduce the stigma surrounding mental illness.*"

vi) Personality disorders (ever identified) [b]	1 (20.0%)	5 (7.8%)	-	1 (7.1%)

[a] The total does not equal 100% as not all individuals were diagnosed with a mental health factor at time of death, and some individuals had more than one of the mental health factors listed.

[b] Determined to be an active concern if it occurred during an individual's life history.

[c] The total number of individuals were too few to describe.

Females

MPTSRs were completed for all five of the CAF Regular Force female suicides over 2017 – 2021. Table 1 provides a summary of the representation of mental health factors among the five Regular Force female suicides during 2017 – 2021. Among these five female CAF member suicides in 2017 – 2021, four (80.0%) had at least one of the mental health factors in Table 1 identified as an active issue. The mental health factor categories of depressive disorders and anxiety disorders were the most frequent factors, each were identified in two (40.0%) individuals. The other mental health factors had a lower representation. Trauma and stress-related disorders and addictions or a substance use disorder were each identified as an active issue in one (20.0%) individual while a personality disorder was identified in the past for one (20.0%) individual. Overall, three (60.0%) individuals had at least two of the mental health factors listed in Table 1 at the time of death.

Additionally, there was documented evidence of prior suicidal ideation and/or prior suicide attempts for two (40.0%) of the Regular Force female suicides during 2017 – 2021.

The MPTSRs also indicated that the suicides had no or an unknown relationship to a deployment for all five female suicides over 2017 – 2021 that had a completed MPTSR.

3.1.2 Work and Life Stressors

Males

Work and life stressors identified for the Regular Force male suicide deaths in 2021, and the period of 2017 – 2021, are listed in Table 2. In 2021, 13 (92.9%) individuals had at least one reported stressor and eight (57.1%) individuals had two or more. The most prevalent stressor was a job, supervisor, or work performance problem, identified in seven (50.0%) individuals, and this was closely followed by both a failed or failing spousal or intimate partner relationship and a physical health problem, each similarly being identified in six (42.9%) individuals. Additionally, all Regular Force males were exposed to the COVID-19 pandemic and as such, this was a common potential stressor in this population but there was no evidence that it contributed to suicide risk. Moreover, during the COVID-19 pandemic the characteristics of those who died by suicide in 2020 and 2021 were comparable to observations from previous years. The representation of work and life stressors was similar between 2021 and the 2017 – 2021 period for Regular Force male suicides. Over 2017 – 2021, the most prominent stressor was a failed or failing spousal or intimate partner relationship (57.8%), followed by a job, supervisor, or work performance problem (43.8%) and a physical health problem (39.1%) but the other stressors had moderately high representations as well, ranging from 14.1% to 31.3%.

In addition to these stressors in 2021, six (42.9%) individuals had a documented history of being a victim of physical, sexual and/or emotional abuse or assault during their lifetime. There were seven (50.0%) individuals who had been experiencing legal, disciplinary or 'other' proceedings prior to their death. There were two (14.3%) individuals who were in the process of being released from the CAF and both were voluntary releases.

Table 2: Prevalence of Documented Work and Life Stressors Prior to Suicide (Regular Force Males and Females).

Work and life stressors	2017-2021 (# (%))[a]		2021 (# (%))[a]	
	Females (Total = 5)	Males (Total = 64)	Females[c] (Total = 1)	Males (Total = 14)
Failed or failing spousal or intimate partner relationship	5 (100%)	37 (57.8%)	-	6 (42.9%)
Failed or failing other relationship (e.g., family, friends)	1 (20.0%)	14 (21.9%)	-	2 (14.3%)
Spousal, family, or friend death by suicide (ever)[b]	1 (20.0%)	18 (28.1%)	-	4 (28.6%)
Family or friend death (other than suicide)	0 (0%)	19 (29.7%)	-	0 (0%)
Physical health problem	2 (40.0%)	25 (39.1%)	-	6 (42.9%)
Chronic illness in spouse or family member	3 (60.0%)	9 (14.1%)	-	0 (0%)
Excessive debt, bankruptcy, or financial strain	2 (40.0%)	20 (31.3%)	-	2 (14.3%)
Job, supervisor, or work performance problem	4 (80.0%)	28 (43.8%)	-	7 (50.0%)
Legal problems (e.g., child custody dispute, litigation)	0 (0%)	10 (15.6%)	-	0 (0%)

[a] The total does not equal 100% as some individuals had no indication of the measured stressors and others had more than one.
[b] Determined to be an active concern if it occurred during an individual's life history.
[c] The total number of individuals were too few to describe.

Females

Work and life stressors identified for the Regular Force female suicide deaths during 2017 – 2021 are listed in Table 2. Over 2017 – 2021, five (100%) individuals had at least one reported stressor and all had two or more. The most prevalent stressor was a failed or failing spousal or intimate partner relationship, identified in all five (100%) individuals, and this was followed by a job, supervisor, or work performance problem, identified in four

(80.0%) individuals, and a chronic illness in spouse or family member, identified in three (60.0%) individuals. Additionally, all Regular Force females were exposed to the COVID-19 pandemic and as such, this was a potential stressor in this population but there was no evidence that it contributed to suicide risk. Moreover, during the COVID-19 pandemic the characteristics of those who died by suicide in 2020 and 2021 were comparable to observations from previous years.

In addition to these stressors over the 2017 – 2021 period, two (40.0%) individuals had a documented history of being a victim of physical, sexual and/or emotional abuse or assault during their lifetime. Over the 2017 – 2021 period, there were no individuals who had been experiencing legal, disciplinary, or 'other' proceedings prior to their death and there were no individuals who were in the process of being released from the CAF.

3.2 Epidemiology of Suicide in Regular Force Members

3.2.1 Overview

Males

Over the prior 10 years (2012 – 2021), there were 130 CAF Regular Force male suicide deaths and 67 in the prior five years (2017 – 2021). The characteristics of these suicide deaths are provided in Table 3 along with the suicide rate for each characteristic. Note that the suicide rates account for the relative distribution of the characteristic in the Regular Force male population. For instance, if a rate is higher for one characteristic relative to an opposing characteristic (e.g., one age group versus another) then it suggests that the characteristic with the higher rate is more common among the suicide deaths but if the difference is small, this could be due to chance alone and the underlying suicide risk may be the same for both characteristics. Statistical tests and confidence intervals help guide this judgement and these tests are limited in their ability to identify differences that are real when numbers are low.

The mean age among the male suicide deaths was 33.9 years (95% CI: 32.3, 35.4) for the 2012 – 2021 period and 34.3 years (95% CI: 32.3, 36.3) for the 2017 – 2021 period. These mean ages were similar, and the differences were not statistically different, to the mean age among all Regular Force males in each of these two periods, 34.9 (95% CI: 34.9, 34.9) and 34.7 (95% CI: 34.7, 34.8) years for the 2012 – 2021 and 2017 – 2021 periods, respectively. Although the suicide rate was higher among ages less than 45 years, the confidence intervals overlapped for all age groups which indicate that there were no statistically significant differences in suicide rate by age group. The suicide rate did differ with statistical significance by marital status. For both the prior five years and 10 years, the suicide rate was higher with statistical significance among Regular Force males who were separated, divorced, or widowed when compared to other marital status categories. Additionally, the suicide rate tended to vary by rank category, highest among the junior non-commissioned (JNCM) ranks; however, the suicide rate among JNCM ranks was only higher with statistical significance relative to the rate among officer ranks for the 2012 – 2021 period. Moreover, the suicide rate did not differ substantially, and the differences were not statistically significant, by environmental command or by deployment history for the prior 10- or five-year periods. However, the rate of suicide was higher with statistical

significance among males who were in the Army combat arms occupations but only during the 10-year, 2012 – 2021, period.

Table 3: Number and Rate of Suicide by various Regular Force Male Characteristics over the prior 10- and 5-Year Periods, 2012 – 2021 and 2017 – 2021.

	2012 – 2021 (prior 10 yrs)		2017 – 2021 (prior 5 yrs)	
	# (%)	Rate per 10^5 (95% CI)	# (%)	Rate per 10^5 (95% CI)
Age				
15-29	49 (37.7%)	25.3 (18.7, 33.5)	22 (32.8%)	22.5 (14.1, 34.0)
30-44	65 (50.0%)	25.2 (19.6, 32.4)	38 (56.7%)	28.5 (20.2, 39.1)
45-59	16 (12.3%)	14.8 (8.5, 24.0)	7 (10.4%)	13.7 (5.5, 28.3)
Mean age (95% CI)	33.9 (32.3, 35.4)		34.3 (32.3, 36.3)	
Median age	33.5		34.0	
Marital Status				
Married/CL	58 (44.6%)	17.6 (13.5, 23.0)	31 (46.3%)	19.3 (13.1, 27.5)
Single	54 (41.5%)	26.8 (20.2, 35.2)	25 (37.3%)	23.2 (15.0, 34.3)
Separated/ Divorced/ Widowed	18 (13.8%)	64.2 (38.0, 101.4)	11 (16.4%)	82.7 (41.3, 148.1)
Rank				
JNCM	88 (67.7%)	28.8 (23.3, 35.8)	45 (67.2%)	29.2 (21.3, 39.1)
SNCM	27 (20.8%)	20.5 (13.5, 30.0)	15 (22.4%	23.0 (12.9, 38.0)
Officer	15 (11.5%)	12.2 (6.8, 20.2)	7 (10.4%)	11.2 (4.5, 23.1)
Command				
Army	52 (40.0%)	24.5 (18.3, 32.2)	24 (35.8%)	22.6 (14.5, 33.5)
Air	26 (20.0%)	22.2 (14.5, 32.6)	17 (25.4%)	28.8 (16.8, 46.1)
Navy	14 (10.8%)	19.4 (10.6, 32.6)	7 (10.4%)	19.2 (7.7, 39.6)
Other	38 (29.2%)	24.1 (17.1, 33.1)	19 (28.4%)	23.6 (14.2, 36.8)
Army combat arms				
Yes	53 (40.8%)	36.5 (27.4, 48.0)	20 (29.9%)	27.2 (16.6, 41.9)
No	77 (59.2%)	18.6 (14.8, 23.4)	47 (70.1%)	22.6 (16.6, 30.0)
History of deployment				
Yes	73 (56.2%)	24.9 (19.6, 31.5)	37 (55.2%)	26.0 (18.3, 35.8)
No	57 (43.8%)	21.4 (16.3, 28.0)	30 (44.8%)	21.5 (14.5, 30.8)

Females

Over the prior 10 years (2012 – 2021), there were 13 CAF Regular Force female suicide deaths and five in the prior five years (2017 – 2021). The characteristics of these suicides deaths are provided in Table 4 along with the suicide rate for each characteristic. As mentioned earlier, the suicide rates account for the relative distribution of the characteristic in the Regular Force female population, identifying situations where a characteristic with a higher rate may be more common among the suicide deaths than would be expected by

chance alone; however, statistical tests and confidence intervals help guide this judgement and these tests are limited when numbers are low.

The mean age of the female suicide deaths was 31.5 years (95% CI: 27.0, 36.1) for the 2012 – 2021 period and 34.2 years (95% CI: 24.4, 44.0) for the 2017 – 2021 period. These were a little lower, but the differences were not statistically different than the mean age among all Regular Force females in each of these two periods, 35.6 (95% CI: 35.6, 35.7) and 35.5 (95% CI: 35.4, 35.6) years for the 2012 – 2021 and 2017 – 2021 periods, respectively. Although the suicide rate varied among age groups, tending to be higher among those who were younger than 45 years over the prior 10-year period, the confidence intervals overlapped for all age groups which indicates that there were no statistically significant differences in suicide rate by age group. Additionally, although the suicide rate tended to be higher among Regular Force females who were single, lower in rank, in Army combat arms occupations and those who did not have a history of deployment, the confidence intervals overlapped for all categories of each characteristic, indicating that these differences were not statistically significant. Similarly, there was no discernable pattern in the suicide rate by environmental command and no indication that the suicide rate was higher with statistical significance in one command or another.

Table 4: Number and Rate of Suicide by various Regular Force Female Characteristics over the prior 10- and 5-Year Periods, 2012 – 2021 and 2017 – 2021.

	2012 – 2021 (prior 10 yrs)		2017 – 2021 (prior 5 yrs)	
	# (%)	Rate per 10^5 (95% CI)	# (%)	Rate per 10^5 (95% CI)
Age				
15-29	5 (38.5%)	17.6 (5.7, 41.0)	2 (40.0%)	13.0 (1.6, 46.9)
30-44	6 (46.2%)	12.0 (4.4, 26.1)	1 (20.0%)	3.8 (0.1, 21.3)
45-59	2 (15.4%)	10.6 (1.3, 38.3)	2 (40.0%)	20.6 (2.5, 74.3)
Mean age (95% CI)	31.5 (27.0, 36.1)		34.2 (24.4, 44.0)	
Median age	30.0		38.0	
Marital Status				
Married/CL	4 (30.8%)	7.2 (2.0, 18.4)	2 (40.0%)	6.9 (0.8, 24.8)
Single	8 (61.5%)	25.0 (10.8, 49.2)	3 (60.0%)	17.2 (3.5, 50.3)
Separated/ Divorced/ Widowed	1 (7.7%)	10.5 (0.3. 58.2)	0 (0%)	0.0
Rank				
JNCM	8 (61.5%)	16.6 (7.1, 32.6)	2 (40.0%)	8.0 (1.0, 28.9)
SNCM	3 (23.1%)	13.5 (2.8, 39.3)	3 (60.0%)	25.4 (5.2, 74.1)
Officer	2 (15.4%)	7.5 (0.9, 27.0)	0 (0%)	0.0
Command				
Army	3 (23.1%)	13.2 (2.7, 38.5)	0 (0%)	0.0
Air	2 (15.4%)	10.8 (1.3, 38.8)	2 (40%	20.7 (2.5, 74.5)
Navy	0 (0%)	0.0	0 (0%)	0.0
Other	8 (61.5%)	17.7 (7.6, 34.8)	3 (60%)	12.5 (2.6, 36.5)
Army combat arms				
Yes	2 (15.4%)	49.4 (6.0, 178.4)	0 (0%)	0.0

No	11 (84.6%)	11.8 (5.9, 21.1)	5 (100%)	10.2 (3.3, 23.8)
History of deployment				
Yes	3 (23.1%)	7.8 (1.6, 22.8)	1 (20.0%)	5.2 (0.1, 28.9)
No	10 (76.9%)	17.0 (8.1, 31.2)	4 (80.0%)	12.5 (3.4, 32.1)

3.2.2 Rate Comparisons

Males

The annual number of male Regular Force suicide deaths between 1995 and 2021, inclusive, are captured in Table 5, as are the corresponding 5-year crude rates. The differences among the consecutive 5-year crude CAF Regular Force male suicide rates over 1995 to 2021 were not statistically significant but they did range from a low of 19.9 per 100,000 population for both the 1995 – 1999 and 2000 – 2004 periods to a high of 24.5 per 100,000 in the more recent 2010 – 2014 and 2015 – 2019 periods. The two-year crude rate for 2020 – 2021, the most recent period, was 23.3 per 100,000 population (95% CI: 15.2, 34.2) and it was not a statistically significant change from any of the prior 5-year rates. Moreover, the confidence intervals for all 5-year time, and the recent two-year, periods do have substantial overlap, and this suggests that the period differences were not statistically significant.

Table 5: CAF Regular Force Male Multiyear Suicide Rates (1995 – 2021) [a]

Year	Number of CAF Regular Force Male Person-Years[6]	Number of CAF Regular Force Male Suicides	CAF Regular Force Male Suicide Rate per 10^5 (95% CI)
1995	62 255	12	
1996	57 323	8	
1997	54 982	13	
1998	54 284	13	
1999	52 689	10	
1995 – 1999	**281 533**	**56**	**19.9 (15.1, 26.0)**
2000	51 537	12	
2001	51 029	10	
2002	52 458	9	
2003	48 431	9	
2004	48 189	10	
2000 – 2004	**251 644**	**50**	**19.9 (14.7, 26.2)**

[6] Person time is defined as "*a measurement combining person and time as the denominator in incidence and mortality rates when, for varying periods, individual subjects are at risk of developing disease or dying. It is the sum of the periods of time at risk for each of the subjects.* ***The most widely used measure is person-years,***" (emphasis added) [6].

Year	Number of CAF Regular Force Male Person-Years[6]	Number of CAF Regular Force Male Suicides	CAF Regular Force Male Suicide Rate per 10^5 (95% CI)
2005	48 491	10	
2006	49 425	7	
2007	51 101	9	
2008	51 861	13	
2009	53 575	12	
2005 – 2009	**254 453**	**51**	**20.0 (14.9, 26.4)**
2010	55 724	12	
2011	55 665	21	
2012	55 535	10	
2013	55 570	9	
2014	55 168	16	
2010 – 2014	**277 662**	**68**	**24.5 (19.2, 31.2)**
2015	55 230	14	
2016	55 887	14	
2017	56 281	13	
2018	56 815	13	
2019	57 021	15	
2015 – 2019	**281 234**	**69**	**24.5 (19.2, 31.2)**
2020	57 174	12	
2021	54 602	14	
2020 – 2021	**111 776**	**26**	**23.3 (15.2, 34.2)**

[a] Some estimates may have changed slightly compared to previous reports due to updates back to 2003 for CAF data.

An SMR comparison of suicide rates among Regular Force males relative to their civilian counterparts is presented in Figure 1 and Table 6 for consecutive 5-year periods over 1995 to 2020. The SMRs for the periods of 1995 – 1999, 2000 – 2004 and 2005 – 2009 show the Regular Force male population as having a lower suicide rate relative to the male Canadian general population (CGP), after adjusting for population age differences; however, the difference was only statistically significant for the 1995 – 1999 period. The 1995 – 1999 period SMR of 72% indicates that the Regular Force male population had a suicide rate that was 28% lower relative to the CGP rate as the confidence interval did not include 100%. For the periods assessed after 2005 – 2009, there has been a consistent tendency for the SMRs to be above 100%, even though these were all not statistically significant as the confidence intervals each of these SMRs included 100%. The most recent SMR was only able to be computed with a single year of data (i.e., 2020) and although elevated, it was also not statistically significant. This increasing SMR tendency will be monitored.

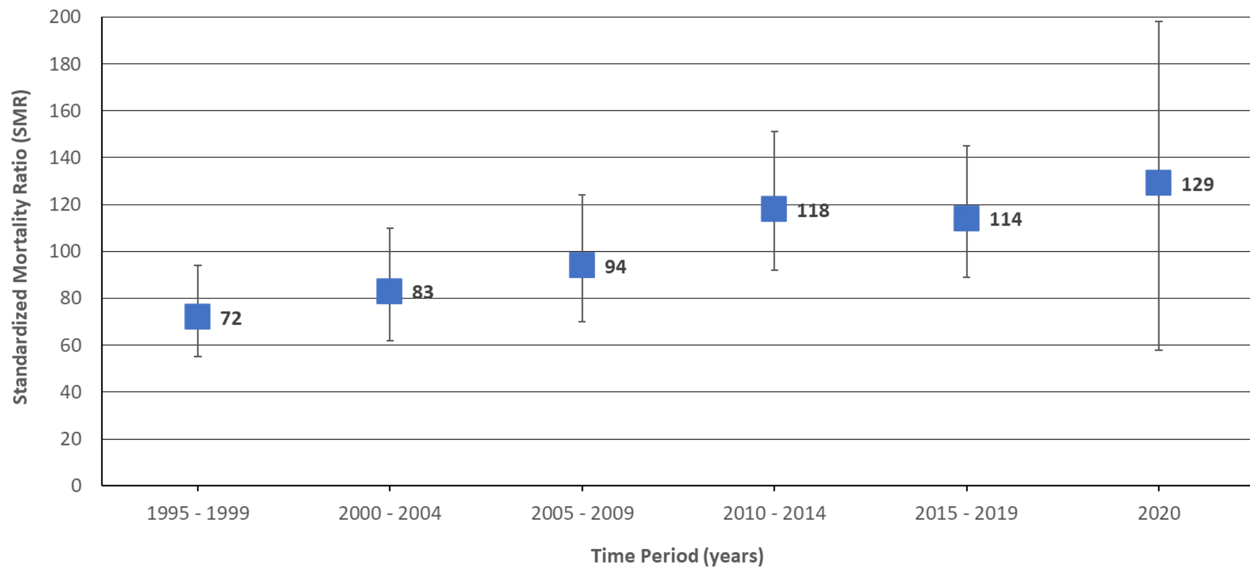

Figure 1: Comparison of CAF Regular Force Male Suicide Rates to Canadian Male Rates Using Standardized Mortality Ratios (SMRs) and 95% Confidence Intervals for Consecutive 5-year Periods over 1995 – 2020.

Table 6: Comparison of CAF Regular Force Male Suicide Rates to Canadian Male Rates Using Standardized Mortality Ratios (SMRs) (1995 – 2020) [a]

Year	SMR for Suicide (95% Confidence Intervals)
1995 – 1999	72% (55, 94)†
2000 – 2004	83% (62, 110)
2005 – 2009	94% (70, 124)
2010 – 2014	118% (92, 151)
2015 – 2019	114% (89, 145)
2020	129% (58, 198)

[a] Some estimates may have changed slightly compared to previous reports due to updates implemented for CAF data (2003 onwards) and Statistics Canada's reported vital statistics and Canadian male population estimates (2000 onwards).

† Statistically significant.

An additional analysis was implemented to compare SMRs computed separately for members with a history of deployment and those without a history of deployment, individually comparing their suicide risk to the risk in the Canadian male population, and this is presented in Table 7. For the initial two periods assessed, 1995 – 1999 and 2000 – 2004, the SMRs were very similar between those with a history of deployment and those without this experience and as each SMR confidence interval included 100%, suicide risk differences relative to the risk in Canadian male population were not statistically significant. The following two 5-year periods, 2005 – 2009 and 2010 – 2014, resulted in SMRs for those with deployments that were above 100% and higher relative to those without deployments but for each period, the suicide risk differences relative to the Canadian male population were not statistically significant. The 2015 – 2019 period indicated a bit of a reversal, as the higher SMR was observed in those without a deployment history but again, the suicide risk differences relative to the Canadian male population were not statistically significant. Additionally, the most recent SMRs, which were only computed with a single year of data (i.e., 2020), suggested that, once again, the SMR was higher among individuals with a history of deployments, but the suicide risk differences relative to the Canadian male population were not statistically significant.

Table 7: Standardized Mortality Ratios for Suicide in the CAF Regular Force Male Population by History of Deployment (1995 – 2020) [a]

Year	SMR (95% CI) for those With a History of Deployment	SMR (95% CI) for those Without a History of Deployment
1995 – 1999	68% (42, 105)	74% (52, 103)
2000 – 2004	86% (55, 127)	81% (53, 120)
2005 – 2009	105% (70, 151)	82% (52, 124)
2010 – 2014	125% (89, 169)	109% (72, 160)
2015 – 2019	102% (70, 143)	128% (90, 177)
2020	164% (75, 312)	58% (12, 170)

[a] Some estimates may have changed slightly compared to previous reports due to updates implemented for CAF data (2003 onwards) and Statistics Canada’s reported vital statistics and Canadian male population estimates (2000 onwards).

† Statistically significant.

An analysis comparing the same groups but using a statistically different method (i.e., direct standardization), a method which also adjusts for age distribution differences between groups, is presented in Table 8 and it also failed to identify a statistically significant relationship between those with a history of deployment versus those without such a history. However, the observations for the two-year 2020 – 2021 period suggested a possibly

elevated risk of suicide among Regular Force males who had past deployments when compared to those without this history, a difference that was not statistically significant. Although not statistically significant, this apparent change was attributed to a decrease in the suicide rate among those without a history of deployment relative to the rate observed in the prior 2015 – 2019 period, a change that caused the rate among those with a deployment history to appear elevated in comparison. It is important to note that this observation was for only two years of data and age-adjusted comparisons to the Canadian population were not yet possible. A comparison of the 10-year directly standardized rates by deployment history for the 1995 – 2004 and 2005 – 2014 periods, as well as the 8-year 2015 – 2021 period rate, all appeared to be statistically non-significant, with age-standardized suicide rate ratios of 1.03 (95% CI: 0.70, 1.54), 1.44 (95% CI: 0.97, 2.15) and 0.93 (95% CI: 0.60, 1.45), respectively. However, the rate ratio for the 2005 – 2014 period, which indicated a higher rate among those with a history of deployment, was close to being statistically significant.

Table 8: Comparison of CAF Regular Force Male 5-Year Suicide Rates by Deployment History Using Direct Standardization (1995 – 2021)[a]

Year	History of Deployment (Rate per 10^5)	No History of Deployment (Rate per 10^5)	Suicide Rate Ratio (95% CI)
1995 – 1999	19.83	19.90	1.00 (0.57, 1.75)
2000 – 2004	19.97	18.33	1.09 (0.61, 1.93)
2005 – 2009	26.53	17.85	1.49 (0.80, 2.76)
2010 – 2014	26.29	18.45	1.43 (0.84, 2.41)
2015 – 2019	22.28	27.46	0.81 (0.48, 1.37)
2020 – 2021*	24.47	17.79	1.38 (0.57, 3.32)

[a] Some estimates may have changed slightly compared to previous reports due to updates implemented for CAF data (2003 onwards).

[*] Based on two years of observation

Females

The annual number of female Regular Force suicide deaths between 2003 and 2021, inclusive, are captured in Table 9, as are the corresponding 5-year crude rates. Note that there were no suicide deaths reported among Regular Force females from 1995 to 2002. The differences among the consecutive 5-year crude CAF Regular Force female suicide rates over 2003 to 2021 were not statistically significant but they did vary from a low of 8.2 per 100,000 population (95% CI: 2.2, 20.9) in the 2015 – 2019 period to a high of 15.5 per 100,000 (95% CI: 6.2, 32.0) in the 2010 – 2014 period. The two-year crude rate for 2020 – 2021, the most recent period, was 14.3 per 100,000 population (95% CI: 2.9, 41.6) and it was not a statistically significant change from any of the prior 5-year rates. Moreover, all 5-year, and the recent two-year, rates were similar except for the dip over 2015 – 2019 and their confidence intervals for all periods have substantial overlap, suggesting that the period

differences were not statistically significant. However, the confidence intervals were all broad and this occurs when suicide numbers are low for a given period (i.e., a small change in suicides for a period can change the rate, and relative rate, substantially and the associated power to detect real differences is reduced), which warrants some caution in definitively stating whether a difference is not statistically significant. As a result, some of the reported statistics that follow will be reported for 10-year periods.

Table 9: CAF Regular Force Female Multiyear Suicide Rates (2003 – 2021)*

Year*	Number of CAF Regular Force Female Person-	Number of CAF Regular Force Female Suicides	CAF Regular Force Female Suicide Rate per 10^5 (95% CI)
2003	6676	2	
2004	6799	0	
2003 – 2004	**13 475**	**2**	**14.8 (1.8, 53.6)**
2005	7026	0	
2006	7378	1	
2007	7864	1	
2008	8168	1	
2009	8578	2	
2005 – 2009	**39 014**	**5**	**12.8 (4.2, 29.9)**
2010	8886	0	
2011	8859	1	
2012	8924	3	
2013	9187	1	
2014	9209	2	
2010 – 2014	**45 065**	**7**	**15.5 (6.2, 32.0)**
2015	9297	1	
2016	9454	1	
2017	9706	0	
2018	10 103	0	
2019	10 394	2	
2015 – 2019	**48 954**	**4**	**8.2 (2.2, 20.9)**
2020	10 649	2	
2021	10 388	1	
2020 – 2021	**21 037**	**3**	**14.3 (2.9, 41.6)**

*There were no reported suicides among Regular Force females from 1995 to 2002.

[7] Person time is defined as "*a measurement combining person and time as the denominator in incidence and mortality rates when, for varying periods, individual subjects are at risk of developing disease or dying. It is the sum of the periods of time at risk for each of the subjects.* ***The most widely used measure is person-years,***" (emphasis added) [6].

An SMR comparison of suicide rates among Regular Force females to their civilian counterparts is presented in Figure 2 and Table 10 for consecutive periods over 2003 to 2020. The data for the full 2003 – 2020 period (SMR: 186%; [95% CI: 114, 287]) indicated that the CAF Regular Force female population had a suicide rate that was 86% higher relative to the Canadian female population, after adjusting for age differences, and this SMR was statistically significant as the confidence interval did not include 100%. Shorter periods within the 2003 – 2021 timeframe were assessed, and this provides an indication whether there was some fluctuation in the SMR over time. The 10-year period SMR for 2005 – 2014 was 215% and it was statistically significant, indicating that the suicide risk among Regular Force females was higher than the risk in the Canadian female population for that time frame. For the more recent 2015 – 2020 period (six years), the SMR was 141% and although it suggests that the Regular Force female suicide rate was still elevated relative to the female Canadian general population, it was not a statistically significant difference.

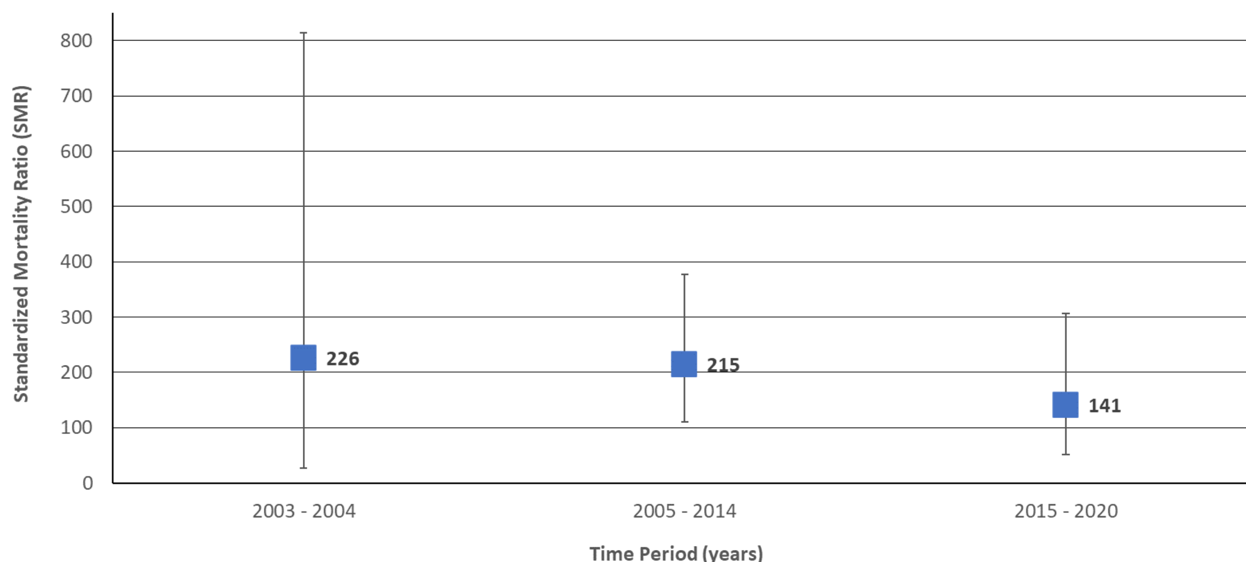

Figure 2: Comparison of CAF Regular Force Female Suicide Rates to Canadian Female Rates Using Standardized Mortality Ratios (SMRs) and 95% Confidence Intervals for Consecutive Periods over 2003 – 2020.

Table 10: Comparison of CAF Regular Force Female Suicide Rates to Canadian Female Rates Using Standardized Mortality Ratios (SMRs) (2003 – 2020)

Year	SMR for Suicide (95% Confidence Intervals)
2003 – 2004*	226% (27, 815)
2005 – 2014	215% (111, 377)†
2015 – 2020*	141% (52, 307)

* Based on less than 10 years of observations (10-year intervals were preferred)

† Statistically significant.

Among the Regular Force female suicides there weren't many with a history of deployment; six individuals over the 2003 – 2021 period had this experience (crude rate: 9.7/100,000; [95% CI: 3.6, 21.1]) compared with 15 who did not (crude rate: 14.2/ 100,000 [95% CI: 7.9, 23.4]) and their confidence intervals overlapped substantially, which indicates that the differenced were not statistically significant. SMRs were computed separately for members with a history of deployment as well as those without a history of deployment, individually comparing their suicide risk to the risk in the Canadian female population, and these are presented in Table 11. The data for the full 2003 – 2020 period indicated that the Regular Force female suicide rate, relative to the Canadian female population and adjusting for age differences, was elevated in both those with a deployment history and those without this experience but it was only statistically significant among those without a deployment history. The 2003 – 2020 SMR was 122% (95%CI: 39, 284) among those with a history of deployment, compared with 226% (95%CI: 127, 373) among those without a history of deployment. The results of the 10-year 2005 – 2014 period SMRs were similar to what was observe for the full 2003 – 2020 period, where the SMRs were above 100% both for those with and for those without a history of deployment but only statistically significant for those without this experience. Similarly, the more recent 2015 – 2020 period SMRs (i.e., 6 years) were somewhat reflective of what was found for the full 2003 – 2020 period but the number of Regular Force female suicides with a deployment history was zero for this shorter timeframe. Moreover, these findings largely follow the earlier observation that overall, Regular Force females had a higher suicide rate relative to the Canadian female population for the 2005 – 2014 period (see Figure 2 and Table 10) and suggests no difference in suicide rate between those with and those without a deployment history; however, the number of Regular Force female suicides with a history of deployment was low, and while this in itself suggests a lower associated suicide risk, the small numbers limit the ability to make definitive judgements.

Table 11: Standardized Mortality Ratios for Suicide in the CAF Regular Force Female Population by History of Deployment (2003 – 2020)

Year	SMR (95% CI) for those With a History of Deployment	SMR (95% CI) for those Without a History of Deployment
2003 – 2004*	368% (9, 2047)	163% (4, 907)
2005 – 2014	187% (51, 479)	233% (100, 459) †
2015 – 2020*	0%	231% (85, 504)

* Based on less than 10 years of observations (10-year intervals were preferred)

† Statistically significant.

An analysis comparing the same groups but using a statistically different method (i.e., direct standardization), a method which also adjusts for age distribution differences between the groups, is presented in Table 12 and it also failed to identify a statistically significant relationship between those with a history of deployment versus those without such a history for any of the periods identified in the table. Moreover, the two-year period of 2003 – 2004 suggests an elevated rate among those with a history of deployment but the numbers are too low to validly compare statistically. Overall, the 2003 – 2021 period directly standardized rates were 9.25 and 12.36 for those with and those without a history of deployment, respectively, and the age-standardized suicide rate ratio was 0.75 (95% CI: 0.28, 1.99), which was not statistically significant. Additionally, the directly standardized rates for the 10-year 2003 – 2012 period and the 9-year 2013 – 2021 period were both also not statistically significant, with age-standardized suicide rate ratios of 1.33 (95% CI: 0.38, 4.62) and 0.29 (95% CI: 0.06, 1.37), respectively.

Table 12: Comparison of CAF Regular Force Female 10-Year Suicide Rates by Deployment History Using Direct Standardization (2003 – 2021)

Year	History of Deployment (Rate per 10^5)	No History of Deployment (Rate per 10^5)	Suicide Rate Ratio (95% CI)
2003 – 2004*	29.53	8.16	3.62 (0.23, 57.85)
2005 – 2014	11.28	12.64	0.89 (0.27, 2.98)
2015 – 2021*	2.48	13.63	0.18 (0.02, 1.53)

* Based on less than 10 years of observations (10-year intervals were preferred)

3.3 Epidemiology of Suicide in Regular Force Members, by Environmental Command

Males

Over the past 20 years (2002 – 2021), there were 102 deaths by suicide among the Regular Force males within the Army command and 140 within the other commands combined (Navy, Air Force and Other). The crude Army suicide rate was 24.8 per 100,000 population (95% CI: 20.3, 30.2) compared to 21.1 per 100,000 population (95% CI: 17.8, 25.0) for the non-Army rate. The confidence intervals for these two command rates (i.e., Army and non-Army) did overlap, indicating that there was not a statistically significant difference between the two groups. The age-adjusted, directly standardized, rates (Army: 24.8/ 100,000 [95% CI: 19.4, 29.1]; non-Army: 21.4/ 100,000 [95% CI: 17.8, 25.0]) were very similar to the crude rates. Additionally, the age-standardized suicide rate ratio was not statistically significant (1.13 [95% CI: 0.87, 1.47]), indicating that the age-standardized suicide rate among Regular force males in the Army could not be considered different with statistical significance from the rate in the non-Army commands.

SMRs (i.e., comparisons with the CGP) were calculated for each command grouping and 5-year period over the 2002 to 2020 timeframe (Table 13). The SMRs for the Army command in the periods from 2007 onwards were all above 100% but none were statistically significant. In the more recent (4-year) period of 2017 – 2020, the SMR for the Air Force command group was elevated above 100%, which was unexpected as it was below 100% for the prior three periods; however, this most recent SMR was not statistically significant. All other SMRs were not statistically significant, indicating that the suicide rate for each command and period could not be considered different to the suicide rate in the Canadian male population after adjusting for age differences.

Table 13: Standardized Mortality Ratios for Suicide in CAF Regular Force Males by Environmental Command (2002 – 2020) [a]

Environmental Command	SMR for Suicide (95% Confidence Intervals), 2002 – 2006	SMR for Suicide (95% Confidence Intervals), 2007 – 2011	SMR for Suicide (95% Confidence Intervals), 2012 – 2016	SMR for Suicide (95% Confidence Intervals), 2017-2020[*]
Army	98% (60, 151)	141% (95, 202)	133% (88, 193)	112% (68, 172)
Air Force	68% (31, 129)	79% (38, 145)	74% (34, 140)	138% (75, 231)
Navy/Other	72% (41, 117)	121% (80, 177)	109% (71, 160)	94% (56, 146)
All Commands	81% (59, 108)	117% (91, 150)	86% (63, 113)	110% (82, 144)

[a] Some estimates may have changed slightly compared to previous reports due to updates implemented for CAF data (2003 onwards) and Statistics Canada's reported vital statistics and Canadian male population estimates (2000 onwards).

[†] Statistically significant.

[*] Based on four years of observations

The suicide rate in Army combat arms occupations in the Regular Force male population was also calculated. Between 2002 and 2021, there were a total of 90 suicides among Regular Force males who had an Army combat arms MOSID relative to 152 suicides among those with other MOSID designations. The suicide rate in the Regular Force male population who were in an Army combat arms occupation appeared to be higher than the overall suicide rate among Regular Force males who were in other occupational groups. The crude suicide rates for the 2002 – 2021 period were 32.1 per 100,000 population (95% CI: 26.0, 39.8) in the Army combat arms occupation versus 19.1 per 100,000 population (95% CI: 16.3, 22.5) for those in other occupations (Figure 3). As the confidence intervals between the two rates did not overlap, the difference appears to be statistically significant, indicating an increased risk of suicide in Regular Force males in the Army combat arms relative to those in other occupations.

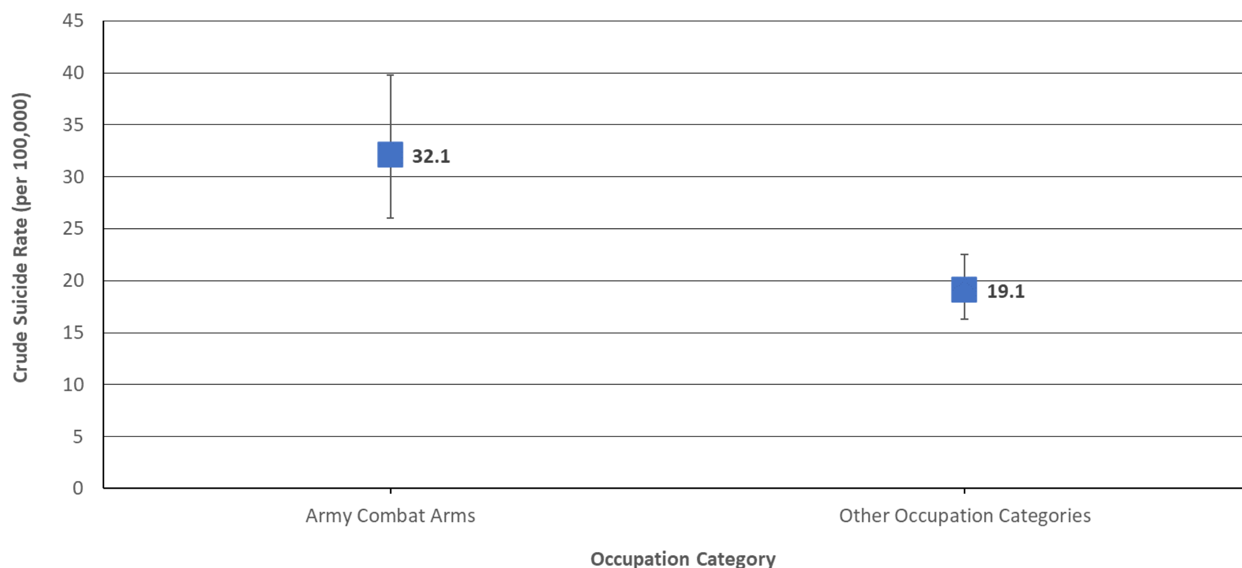

Figure 3: Crude suicide rates and 95% Confidence Intervals for Regular Force Males by Occupational Category (Army Combat Arms and Other Categories), 2002 – 2021.

Figure 4 presents the three-year suicide rate moving average trend (i.e., suicide rates computed for consecutive three-year periods that are incremented one year at a time) line for Army command only (represented by the diamond markers) and for the non-Army commands (represented by the square markers). These moving average lines are not statistical tests, but they provide some indication of how suicide rates, and possibly suicide risks, have fluctuated some over time for the different commands. Note that the three-year moving average rates are reported against the middle year (e.g., the rates for 2019, 2020, and 2021 are incorporated into the moving average reported against 2020). This figure illustrates that the suicide rate among the Army command had been slightly higher than the rate among all other commands combined for the period up until 2007; however, in a period that appears to have begun in 2008, the suicide rate moving average exhibited a pronounced increase among the Army command, becoming elevated relative to the other commands. The magnitude of this elevated Army suicide rate appears to have shifted post-2012, slowly becoming more comparable with the suicide rate moving average among the non-Army commands. In comparison, between 2010 and 2013 the non-Army suicide rate moving average appeared to be decreasing, but subsequently returned to pre-2010 levels and appears to have stabilized a little above those pre-2010 levels. Since 2012, the differential in suicide rate moving averages between the Army and non-Army commands had been declining and in recent years (i.e., 2015 onwards), they have become more comparable; however, the moving average is now a little elevated among non-Army commands. Although the exact attribution for this decline is unknown, the CAF has a comprehensive suicide prevention strategy, programs that aim to reduce the stigma of seeking mental health care and increase both mental health education and resilience, and improved chain of command awareness of suicide risk and mental health. These initiatives may have contributed to this declining trend.

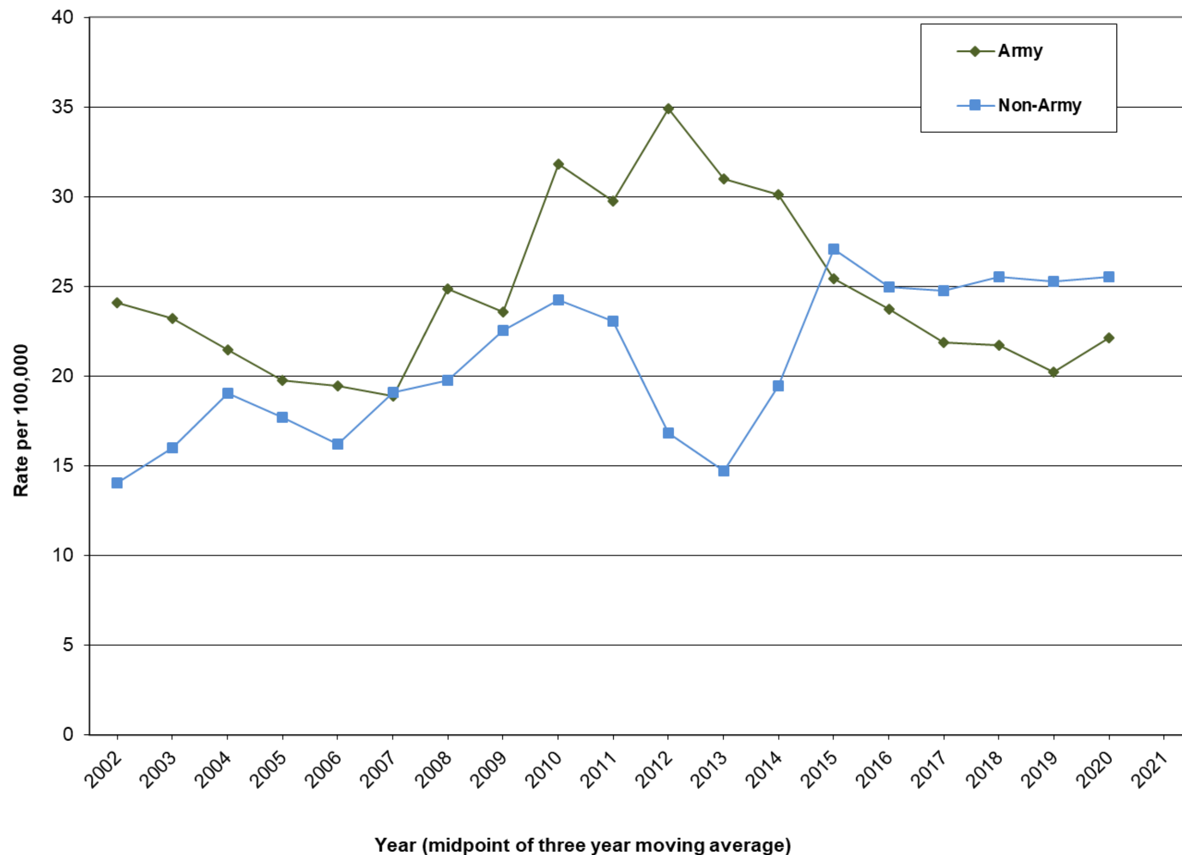

Figure 4: Three Year-Moving Averages for Regular Force Males by Command, Canadian Armed Forces, 2002 – 2021.

Females

Over the past 19 years (2003 – 2021), there were 5 deaths by suicide among the Regular Force females within the Army command and 16 within the other commands combined (Navy, Air Force and Other). The crude Army suicide rate was 12.9 per 100,000 population (95% CI: 4.2, 30.0) compared to 12.4 per 100,000 population (95% CI: 7.1, 20.1) for the non-Army rate. The confidence intervals for these two command rates (i.e., Army and non-Army) overlap, indicating that there was not a statistically significant difference between the two groups. The age-adjusted, directly standardized, rates (Army: 15.4/ 100,000 [95% CI: 0.8, 30.0]; non-Army: 12.5/ 100,000 [95% CI: 6.4, 18.7]) were very similar to the crude rates and exhibited overlapping confidence intervals. Additionally, the age-standardized suicide rate ratio was not statistically significant (1.23 [95% CI: 0.42, 3.57]), indicating that the age-standardized suicide rate among Regular force females in the Army could not be considered different with statistical significance from the rate in the non-Army commands.

SMRs were calculated for each command grouping and 10-year period over the 2003 to 2020 timeframe, including the full 2003 – 2020 period (Table 14). All SMRs were above 100% and within each period, the SMRs were

moderately comparable. Only the SMRs for the grouped 'all commands' category over the 2003 – 2012 period, and the aggregated 2003 – 2020 period, were statistically significant. However, the suicide numbers were low when divided among each period and command combination, which provides low power to detect differences that may be present. Additionally, the statistically significant 'all commands' category is the exact same SMR comparison between Regular Force females and the Canadian female population that was already identified as statistically significant (i.e., see Figure 2 and Table 10). Thus, it suggests little difference in suicide rate among the commands but an elevated suicide rate in Regular Force females relative to the Canadian female population when adjusting for age differences.

Table 14: Standardized Mortality Ratios for Suicide in CAF Regular Force Females by Environmental Command (2003 – 2020) [a]

Environmental Command	SMR for Suicide (95% Confidence Intervals), 2003 – 2012	SMR for Suicide (95% Confidence Intervals), 2013 – 2020*	SMR for Suicide (95% Confidence Intervals), 2003 – 2020
Army	255% (53, 746)	156% (19, 562)	204% (66, 475)
Air Force	172% (21, 619)	189% (23, 683)	181% (49, 462)
Navy/Other	212% (78, 463)	155% (50, 360)	181% (91, 325)
All Commands	213% (106, 381) †	161% (74, 307)	186% (114, 287) †

† Statistically significant.

* Based on eight years of observations

The suicide rate in Army combat arms occupations in the Regular Force female population was calculated. Between 2003 and 2021, there were two suicides in Regular Force females with an Army combat arms MOSID relative to 19 suicides among Regular Force females with other MOSID designations. The crude suicide rate in the Regular Force female population who were in an Army combat arms occupation over the 2003 – 2021 period was 30.7 per 100,000 population (95% CI: 3.7, 110.8), which is higher than the rate of 11.8 per 100,000 population (95% CI: 7.1, 18.4) for those in other occupations but this difference was not statistically significant (Figure 5). As the confidence intervals between the two rates overlap substantially, it is not possible to say that the suicide rates are statistically significant; however, the numbers being compared are low and this influences the power to detect differences that may be real. The two suicides from the Army combat arms occupation group occurred during the 2010 – 2014 period and, with zero suicides in this occupation group outside this period, it suggests that the suicide rate was elevated in this occupation group but only during this 2010 – 2014 period; however, the statistical comparisons cannot provide a definitive judgement because of the low numbers being compared.

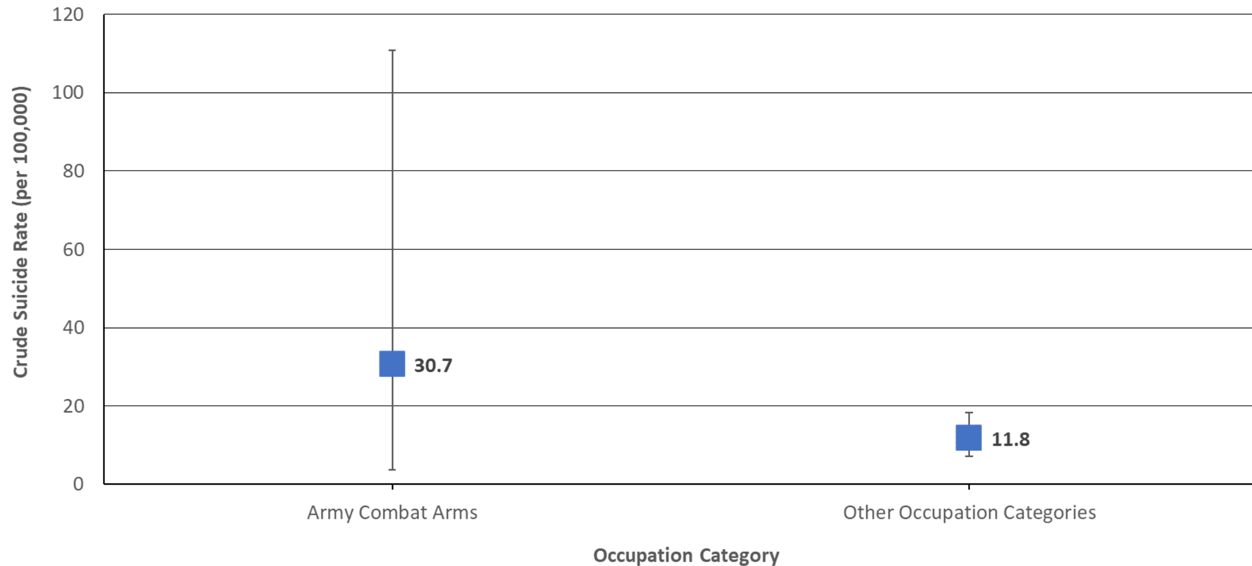

Figure 5: Crude suicide rates and 95% Confidence Intervals for Regular Force Females by Occupational Category (Army Combat Arms and Other Categories), 2003 – 2021.

Figure 6 presents the five-year suicide rate moving average trend lines for Army command only (represented by the diamond markers) and for the non-Army commands (represented by the square markers). As mentioned earlier, these moving average lines are not statistical tests, but they provide some indication of how suicide rates, and possibly suicide risks, have fluctuated some over time for the different commands. Also, note that the five-year moving average rates are reported against the middle year (e.g., the rates for 2017, 2018, 2019, 2020, and 2021 are incorporated into the moving average reported against 2019). Over the 2003 – 2021 period, there were five Regular Force female suicides among the Army command compared with 16 among the non-Army commands. The five Army command suicides occurred between 2003 and 2014 and three of these were during the 2010 – 2014 period, as illustrated by a peak in the trend line for this period. The figure suggests that the suicide rate moving average among females in the Army command had been elevated relative to the non-Army commands for two periods (i.e., approximately, 2003 – 2005 and 2011 – 2015) and non-existent afterwards. Notably, the 2011 – 2015 elevated rate among females roughly reflects the elevated rate among males in the Army command for the same period (see Figure 4). In comparison, the suicide rate moving average among the non-Army commands appeared to rise after 2006, declining in 2015 and 2016, after which there was a steady rise up to the most recent period. This steady rise in the suicide rate moving average among the Regular Force females of the non-Army command is something that will need to be monitored. Moreover, the recent zero suicide rate trend among Regular Force females in the Army command is welcomed but its attribution is unknown; however, CAF initiatives may have contributed to this declining trend.

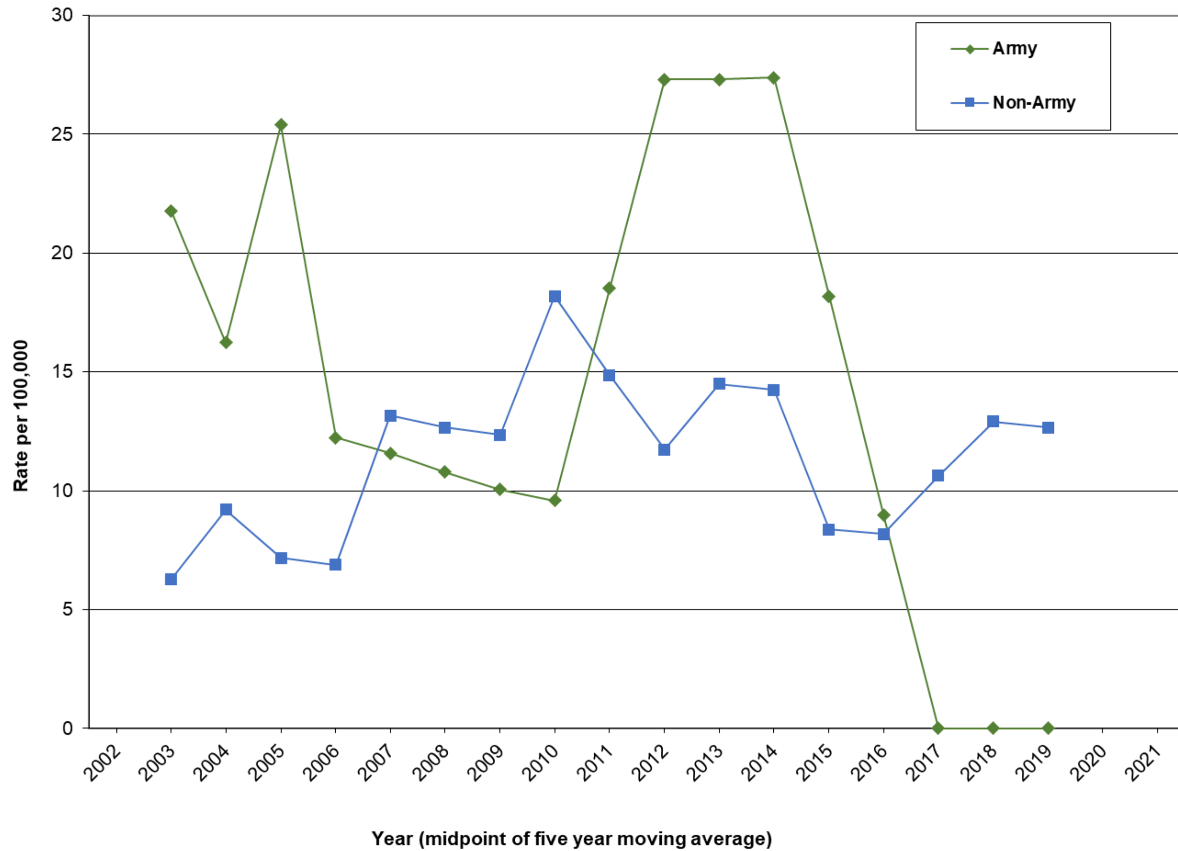

Figure 6: Five Year-Moving Averages for Regular Force Females by Command, Canadian Armed Forces, 2003 – 2021.

4. Data Limitations

1) The numbers on which these analyses were based are small and vary from year-to-year; consequently, these findings must be interpreted with caution.

2) Female suicide numbers were low (range between zero and two events per year) and as such, definitive conclusions often can't be fully drawn when conducting comparative and trend analyses.

3) Since an individual's last known unit/base was used to categorize environmental command, this did not consider that the individual may have just recently been posted to that environmental command and therefore, not have functioned under that environmental command for an appreciable amount of time. This is something that will be better captured by the MPTSR moving forward.

4) The denominator data for this study were taken from the DHRIM system which receives periodic updates and data cleaning. Consequently, denominator data may vary, depending on when data were extracted by DHRIM.

5) The lack of DHRIM data prior to 2002 makes it impossible to ascertain whether the pre-Afghanistan suicide experience for Army command relative to non-Army command was any different to what is described here.

6) Finally, the wide confidence intervals for many of the rates reported here indicate that in some cases, the analyses may not have a high enough power to detect differences that were present.

5. Conclusions

The following conclusions of the 2022 analysis of CAF Regular Force deaths due to suicide are consistent with those of past years and should be considered together with the limitations discussed above.

1) Over 1995 to 2021 there has been no statistically significant change in the 5-year suicide rate for CAF Regular Force males. Similarly, over 2003 to 2021 the 5-year suicide rate for CAF Regular Force females has fluctuated but there has been no statistically significant change. Additionally, despite the added stressors associated with the COVID-19 pandemic, the suicide rate and its related characteristics in 2020 and 2021 were comparable to observations from previous years.

2) The rate of suicide among CAF Regular Force males, when standardized for age, was not significantly different from that of the Canadian male population; however, the rate of suicide among CAF Regular Force females, when standardized for age, was found to be elevated relative to the rate in the Canadian female population and statistically significant over the 2005 – 2014 period. This elevated rate among Regular Force females was determined to be statistically significant only for the 2005 – 2014 period; however, although it was not statistically significant, the rate remained elevated relative to the Canadian female population in the period after 2014.

3) The assessment of the MPTSRs continues to support a multifactorial causal pathway for suicide rather than a direct link with a single risk factor. Among the Regular Force male suicides in 2021, there was a high prevalence of mental health factors (71.4% having one active disorder and 50.0% having at least two) work or life stressor, including job, supervisor or work performance problems (50.0%), failing spousal/intimate relationships (42.9%), physical health problems (42.9%), a past spousal, family or friend suicide (28.6%), a failed or failing family (non-spousal) or friend relationship (14.3%) and excessive debt (14.3%). Similarly, among Regular Force female suicides over 2017 – 2021 there was a high prevalence of mental health factors (80.0% having one active disorder and 60.0% having at least two) work or life stressor, including failing spousal/intimate relationships (100%), job, supervisor or work performance problems (80.0%), chronic illness in a spouse or family member (60%), physical health problems (40.0%), excessive debt (40.0%) a past spousal, family or friend suicide (20.0%) and a failed or failing family (non-spousal) or friend relationship (20.0%).

4) Among Regular Force males, the analyses suggest that since 2007 and up to and including 2016, being employed within the Canadian Army was associated with a higher risk of suicide relative to those who were part of the other Environmental Commands, but the difference was not statistically significant. Similarly, the rate comparisons suggest that the suicide risk among Regular Force females employed the Canadian Army was a little elevated relative to other environmental commands for the 2003 – 2012 period but again, the difference was not statistically significant. However, graphical trend analyses

suggest that while Regular Force members in the Canadian Army appear to have had an elevated rate over 2008 to 2014 among males and 2011 to 2015 among females relative to other environmental commands, the difference in suicide rate between Army and non-Army commands changed from 2015 or 2016 onwards. At approximately this time point, the rates became more comparable among Regular Force male Army and non-Army commands and among Regular Force female Army commands, the suicide rate dropped to zero from 2017 onwards. However, in more recent years the suicide rate appears to have reversed a little to the point where it is a little more elevated among non-Army commands, particularly among Regular Force females.

5) Additionally, there was a statistically significant difference in the Regular Force male crude suicide rate among the Army combat arms trades relative to those in other trades. In comparison, although the Regular Force female crude suicide rate was much higher in the Army combat arms trades relative to those in other trades, this difference was not statistically significant, but this non-significance was possibly influenced by low numbers.

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12. ABSTRACT (Brief and factual summary of the document.)

Introduction: Each death from suicide is tragic. Suicide prevention is an important public health concern and is a top priority for the Canadian Armed Forces (CAF). In order to better understand suicide in the CAF and refine ongoing suicide prevention efforts, the Canadian Forces Health Services annually examine suicide rates and the relationship between suicide, deployment and other potential suicide risk factors. This analysis, conducted by the Directorate of Mental Health (DMH), is an update covering the period from 1995 to 2021.

Methods: This report assesses suicide data for Regular Force males over the 1995 to 2021 period and Regular Force females over the 2003 to 2021 period, interpreting crude suicide rates by various characteristics, differences in rates between the Canadian population and the CAF using Standardized Mortality Ratios (SMRs), and differences suicide rates by deployment history using SMRs and direct standardization. It also examines variation in suicide rates by environmental command and uses data from Medical Professional Technical Suicide Reviews (MPTSR) to examine the prevalence of other suicide risk factors for suicide deaths that occurred in 2021 and during the prior five years, 2017-2021. This is the first annual report with a more detailed review of Regular Force female suicides.

Results: There were no statistically significant increases in the overall suicide rates for either Regular Force males or females when comparing each 5-year incremental time segment over 1995 to 2021; however, the 5-year rates for males varied from a low of 19.9 per 100,000 population during 1995-1999 and 2000-2004 to a high of 24.5 per 100,000 in the more recent 2010-2014 and 2015-2019 periods while for females, the rates varied from 8.2 per 100,000 population in the more recent 2015-2019 period to a high of 15.5 per 100,000 in 2010-2014. The number of Regular Force males that died by suicide was not statistically higher than that expected based on male suicide rates in the Canadian male population for each period that was evaluated. In contrast, the number of Regular Force female suicides were higher with statistical significance than the number expected based on the suicide rate in the Canadian female population over the 10-year period from 2005-2014 and although also elevated for other assessed periods, these were not statistically significant.

Rate ratios that separately compared Regular Force males and females with a history of deployment to those without this history did not establish a statistically significant link between deployment and increased suicide risk. Among males with a history of deployment, the suicide rate tended to be elevated relative to those without this experience for almost all periods assessed but none were determined to be statistically significant. However, the rate ratio for the 2005-2014 period (age-standardized suicide rate ratio: 1.44 [95% CI: 0.97, 2.15]), which indicated a higher rate among those with a history of deployment, was close to being statistically significant. In contrast, the suicide rate among females with a history of deployments tended to be lower relative to those without this experience for almost all periods assessed and again, none were statistically significant. Moreover, the number of Regular Force females that died by suicide who had a history of deployment was low; this exemplifies the low suicide risk associated with deployment experience among females and it's associated with a limited power to conduct a statistical comparison.

These rate ratios also highlighted that, over 2002-2021 for males and 2003-2021 for females, being part of the Army command was associated with a slightly higher risk of suicide relative to those who were part of the other environmental commands but in both Regular Force males and females the difference was not statistically significant. The 3-year suicide rate moving averages provided an indication of the trend in rates over time. These suggested that while Army commands appear to have had an elevated rate over 2008 to 2014 among males and 2012 to 2014 among females, the Army and non-Army command suicide rate differences appear to have changed from around 2015 onwards. At approximately this time point, the rates became more comparable among male Army and non-Army commands and among female Army commands, the suicide rate drops to zero from 2016 onwards. However, in more recent years the suicide rates have reversed a little to the point where it appears to be a little more elevated among non-Army commands, particularly among Regular Force females.

For the 2002-2021 period, Regular Force males in the Army combat arms occupations had a statistically significant higher suicide rate (32.1/100,000 [95% CI: 26.0, 39.8]) compared to Regular Force males in other occupations (19.1/100,000 [95% CI: 16.3, 22.5]). Similarly, over the 2003-2021 period Regular Force females in the Army combat arms occupations had an elevated suicide rate (30.7/100,000 [95% CI: 3.7, 110.8]) relative to Regular Force females in other occupations (11.8/100,000 [95% CI: 7.1, 18.4]) but this difference was not statistically significant; however, the low numbers being compared limited the power of the assessment of these differences.

Results from the 2017-2021 MPTSRs for both males and females continue to support a multifactorial causal pathway (this includes biological, psychological, interpersonal, and socio-economic factors) for suicide rather than a direct link

between single risk factors (such as Post-Traumatic Stress Disorder (PTSD) or deployment) and suicide. This was consistent with MPTSR findings from previous years. While all CAF members experienced the COVID-19 pandemic, its contribution to stressors and suicide risk were not able to be assessed.

Conclusions: Suicide rates among Regular Force males and females in the CAF did not increase with any statistical significance over the period of observation described in these findings; however, after age standardization, the Regular Force female suicide rate was identified to be higher with statistical significance relative to the rate in the Canadian female population while for Regular force males, the difference relative to the Canadian male population was not statistically significant. Despite the added stressors associated with the COVID-19 pandemic, the suicide rate and its related characteristics in 2020 and 2021 were comparable to observations from previous years. However, small numbers do limit the ability, or power, of statistical assessments to detect differences with statistical significance when they are real and not chance occurrences. The elevated risk in Regular Force males under Army command, particularly those in combat arms occupations, and the increased suicide rate in Regular Force females relative to the Canadian female population are findings that continue to be under observation by the CAF.

Introduction: Chaque décès par suicide constitue une tragédie. La prévention du suicide est un aspect important de la santé publique et une priorité des Forces armées canadiennes (FAC). Afin de mieux comprendre le suicide au sein des FAC et de parfaire les efforts continus en matière de prévention, les Services de santé des Forces canadiennes effectuent chaque année des analyses pour examiner les taux de suicide et la relation entre le suicide, le déploiement et d'autres facteurs de risque potentiels de suicide. La présente analyse, réalisée par le Directeur – Santé mentale (DSM), représente une mise à jour pour la période s'échelonnant de 1995 à 2021.

Méthodes: Le présent rapport évalue les données sur le suicide des hommes de la Force régulière de 1995 à 2021 et des femmes de la Force régulière de 2003 à 2021. Il interprète les taux bruts de suicide selon diverses caractéristiques, les différences de taux entre la population canadienne et les FAC au moyen des ratios standardisés de mortalité (RSM) et les taux de suicide chez les personnes ayant des antécédents de déploiement au moyen des RSM et de la standardisation directe. Il examine également la variation du taux de suicide selon le commandement d'armée et, au moyen de données tirées des examens techniques des suicides par des professionnels de la santé (ETSPS), la prévalence d'autres facteurs de risque en ce qui concerne les suicides survenus en 2021 et au cours des cinq années précédentes, soit de 2017 à 2021. Il s'agit du premier rapport annuel contenant un examen plus détaillé des suicides chez les femmes de la Force régulière.

Résultats: De 2012 à 2021, on compte 130 décès par suicide d'hommes de la Force régulière des FAC avec un âge moyen de 33,9 ans et, de 2017 à 2021, 67 décès par suicide avec un âge moyen de 34,3 ans. Ces âges moyens n'étaient pas statistiquement différents de l'âge moyen de l'ensemble des hommes de la Force régulière au cours de chacune de ces deux périodes. Les taux bruts de suicide calculés au cours de chacune des deux périodes étaient plus élevés, avec une augmentation statistiquement significative chez les hommes de la Force régulière qui étaient séparés, divorcés ou veufs par rapport aux autres catégories d'état civil. De plus, le taux de suicide avait tendance à varier selon la catégorie de grade, et il était plus élevé de façon statistiquement significative parmi les militaires du rang (MR) comparativement aux grades d'officier pour la période de 2012 à 2021.

En comparaison, les observations générales chez les femmes de la Force régulière des FAC étaient similaires à celles chez les hommes de la Force régulière, mais les nombres absolus étaient inférieurs. De 2012 à 2021, on compte 13 décès par suicide de femmes de la Force régulière des FAC avec un âge moyen de 31,5 ans et, de 2017 à 2021, 5 décès par suicide avec un âge moyen de 34,2 ans. Ces âges moyens n'étaient pas statistiquement différents de l'âge moyen de l'ensemble des femmes de la Force régulière au cours de chacune de ces deux périodes. De plus, le taux brut de suicide avait tendance à être plus élevé chez les femmes célibataires de la Force régulière et chez celles des catégories de grade inférieur. Cependant, les intervalles de confiance se chevauchaient pour toutes les catégories de chaque caractéristique, ce qui indiquait que les différences n'étaient pas statistiquement significatives.

Les taux bruts de suicide ont été examinés au fil du temps pour évaluer les différences liées au risque de suicide dans le temps. Chez les femmes comme chez les hommes de la Force régulière, les taux de suicide globaux n'ont pas connu d'augmentation statistiquement significative si l'on compare à chaque segment de temps supplémentaire de cinq ans de 1995 à 2021. Les taux sur cinq ans pour les hommes variaient d'un minimum de 19,9 pour 100 000 personnes

de 1995 à 1999 et de 2000 à 2004 à un maximum de 24,5 pour 100 000 personnes dans les périodes plus récentes de 2010 à 2014 et de 2015 à 2019, et cette différence n'était pas statistiquement significative. De même, chez les femmes de la Force régulière, les taux variaient de 8,2 pour 100 000 personnes au cours de la période plus récente de 2015 à 2019 à un sommet de 15,5 pour 100 000 personnes de 2010 à 2014, et, encore une fois, cette différence n'était pas statistiquement significative. Le nombre d'hommes de la Force régulière décédés par suicide n'était pas statistiquement plus élevé que le taux anticipé en fonction des taux de suicide observés au sein de la population masculine du Canada pour chaque période évaluée. En revanche, le nombre de suicides chez les femmes de la Force régulière était plus élevé, et ce, de façon statistiquement significative, que le nombre attendu d'après le taux de suicide au sein de la population féminine du Canada au cours de la période de 10 ans allant de 2005 à 2014. Bien qu'également élevés pour d'autres périodes évaluées, les chiffres n'étaient pas statistiquement significatifs.

Les ratios des taux de suicide comparant séparément les hommes et les femmes ayant participé à un déploiement n'établissent pas un risque accru de suicide comparativement à ceux qui n'ont jamais participé à un déploiement. Cela dit, l'écart observé n'est pas statistiquement significatif. Chez les hommes ayant participé à un déploiement, le taux de suicide avait tendance à être élevé par rapport à ceux sans cette expérience pour presque toutes les périodes évaluées, mais aucune n'a été jugée statistiquement significative. Cependant, le ratio des taux pour la période de 2005 à 2014 (ratio des taux de suicide ajusté selon l'âge : 1,44; intervalle de confiance [IC] à 95 % : 0,97 à 2,15]), qui indiquait un taux plus élevé chez les personnes ayant des antécédents de déploiement, était près d'être statistiquement significatif. En revanche, le taux de suicide chez les femmes ayant des antécédents de déploiement avait tendance à être plus faible par rapport à celles sans cette expérience pour presque toutes les périodes évaluées, et encore une fois, aucun n'était statistiquement significatif. Par ailleurs, le nombre de femmes de la Force régulière décédées par suicide qui avaient des antécédents de déploiement était faible; cela illustre le faible risque de suicide associé à l'expérience de déploiement chez les femmes et est associé à la possibilité limitée d'effectuer une comparaison statistique.

Ces ratios de taux montrent également que, de 2002 à 2021 pour les hommes et de 2003 à 2021 pour les femmes, le fait qu'un militaire fasse partie du commandement de la Force terrestre était associé à un taux de suicide légèrement plus élevé par rapport à un militaire relevant d'autres commandements. Cependant, tant chez les hommes que les femmes de la Force régulière, la différence n'était pas statistiquement significative. Bien qu'il ne s'agisse pas d'un test statistique, les moyennes mobiles des taux de suicide sur trois ans et cinq ans fournissent une indication de la façon dont les taux de suicide fluctuent dans le temps. Elles donnent à penser que si les commandements de la Force terrestre semblent avoir eu un taux élevé de 2008 à 2014 chez les hommes et de 2011 à 2015 chez les femmes, la différence entre les taux de suicide du commandement de la Force terrestre et d'autres commandements semble avoir changé à partir de 2015 ou 2016 environ. À peu près à ce moment-là, les taux sont devenus plus comparables entre le commandement de la Force terrestre et d'autres commandements pour les hommes, tandis que dans le commandement de la Force terrestre pour les femmes, le taux de suicide tombe à zéro à partir de 2017. Cependant, au cours des dernières années, le taux de suicide semble s'être légèrement inversé au point où il semble exister une tendance vers un taux de suicide un peu plus élevé au sein des autres commandements, en particulier chez les femmes de la Force régulière.

Pour la période de 2002 à 2021, les hommes de la Force régulière appartenant aux groupes professionnels des armes de combat de l'Armée canadienne affichaient un taux de suicide statistiquement plus élevé (32,1/100 000; IC à 95 % : 26,0 à 39,8) que les hommes de la Force régulière d'autres groupes professionnels (19,1/100 000; IC à 95 % : 16,3 à 22,5). De même, au cours de la période allant de 2003 à 2021, les femmes de la Force régulière appartenant aux groupes professionnels des armes de combat de l'Armée canadiennes affichaient un taux de suicide élevé (30,7/100 000; IC à 95 % : 3,7 à 110,8) par rapport aux femmes de la Force régulière d'autres groupes professionnels (11,8/100 000; IC à 95 % : 7,1 à 18,4), mais cette différence n'était pas statistiquement significative; cependant, le faible nombre de données comparées a limité la puissance de l'évaluation de ces différences.

Les résultats des ETSPS de 2017 à 2021 tant pour les hommes que pour les femmes continuent d'appuyer la théorie d'un enchaînement de causalité multifactoriel (qui comprend des facteurs biologiques, psychologiques, interpersonnels et socio-économiques) plutôt qu'un lien direct entre des facteurs de risque individuels (p. ex. l'état de stress post-traumatique [ESPT] ou le déploiement) et le suicide. Ces résultats concordent avec ceux des ETSPS des années précédentes. Par ailleurs, tous les membres des FAC ont été exposés à la pandémie de COVID-19, et il n'y a

aucune preuve que cela a contribué au risque de suicide. De plus, pendant la pandémie de COVID-19, le taux de suicide et ses caractéristiques connexes en 2020 et 2021 étaient comparables aux observations des années précédentes.

Conclusions: Les taux de suicide des hommes et des femmes de la Force régulière des FAC n'ont pas augmenté de façon statistiquement significative au cours de la période d'observation décrite; cependant, une fois les taux standardisés selon l'âge, le taux de suicide des femmes de la Force régulière s'est avéré être supérieur, et ce, de façon statistiquement significative, à celui de la population féminine du Canada pour la période de 2005 à 2014, tandis que la différence entre le taux de suicide des hommes de la Force régulière et celui de la population masculine du Canada n'était pas statistiquement significative, quelle que soit la période visée. Malgré la présence de facteurs de stress supplémentaires que les militaires ont pu vivre en conséquence de la pandémie de COVID-19, le taux de suicide et les caractéristiques associées en 2020 et 2021 étaient comparables aux observations des années précédentes. Cependant, la faible quantité de données limite la capacité, ou le pouvoir, des évaluations statistiques à relever les différences statistiquement significatives lorsqu'elles sont réelles et non le fruit du hasard. Le risque accru de suicide chez les hommes de la Force régulière faisant partie de l'Armée canadienne, et particulièrement chez ceux appartenant aux groupes professionnels des armes de combat, et le taux de suicide plus élevé chez les femmes de la Force régulière que dans la population féminine du Canada au cours de la période de 2005 à 2014, sont des constatations que les FAC continuent de surveiller.

13. KEYWORDS, DESCRIPTORS or IDENTIFIERS (Technically meaningful terms or short phrases that characterize a document and could be helpful in cataloguing the document. Use semi-colons as delimiters.)

Age-adjusted rate; Canadian Armed Forces; Canadian population; deployment; rate ratio; rates; standardized mortality ratio; suicide

Taux ajusté selon l'âge; Forces armées canadiennes; population canadienne; déploiement; ratio de taux; taux; ratio standardisé de mortalité; suicide

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