

OPEN

Mental Health Disorders and Suicidal Behaviors Among Provincial Correctional Workers

Rosemary Ricciardelli, PhD, Laura McKendy, PhD, Laleh Jamshidi, PhD, and R. Nicholas Carleton, PhD

Objective: We examined the prevalence of mental health disorders and suicidal behaviors (ideation, planning, and attempts) among a sample of provincial correctional workers in Manitoba. **Methods:** Self-reported mental health data from a survey on correctional worker mental health and well-being were analyzed for 491 correctional workers. **Results:** Over half (57%) of respondents screened positive for mental health disorder, most commonly major depressive disorder, and over one-third of respondents (37%) screened positive for more than one disorder. Positive mental health screens for all mental health disorders were associated with statistically significantly increased odds of lifetime suicidal ideation, and positive screens for most disorders were associated with past year suicidal ideation. **Conclusions:** Relative to other public safety personnel and the general public, correctional workers appear have a higher prevalence of mental health disorders and suicidal behaviors. The association between positive screens for mental health disorders and suicidal behaviors highlights the vulnerability of correctional workers in regards to mental well-being.

Keywords: correctional worker mental health, mental health disorders, public safety personnel, suicidal behaviors

Rates of mental health disorders (eg, posttraumatic stress disorder [PTSD], major depressive disorder [MDD], generalized anxiety disorder [GAD], panic disorder [PD], alcohol use disorder [AUD]), are considerably higher among public safety personnel (PSP; eg, border services personnel, correctional workers, firefighters, operational and intelligence personnel, paramedics, police, public safety communicators, search and rescue personnel) relative to the general Canadian population.¹⁻³ Higher rates of mental health disorders among PSP appear due to potentially psychologically traumatic event exposures in the context of their work⁴ and other occupational stressors.⁵ Correctional workers are PSP who appear at heightened risk for mental disorders, even relative to other PSP.⁶ Existing research also suggests correctional workers are at a higher risk of suicide for suicidal behaviors (ie, ideation, planning,

attempts) relative to the general public and other PSP.^{7,8} The current study draws on self-reported mental health survey data from provincial correctional workers in the province of Manitoba to explore associations between mental health disorders and suicidal behaviors. We situate our current results within emerging scholarship examining mental health and well-being among PSP generally, and correctional workers more specifically.

Mental Well-Being and Suicide Risk Among Correctional Workers

Correctional workers report a high prevalence of adverse mental health and well-being outcomes, including mental health disorders, burnout, and work life conflict.^{1,6,8-12} Research indicates that PSP are also at a higher risk of suicide. A systemic review by Stanley et al¹³ examined international research on suicidal ideation, attempts, and fatalities among some PSP (ie, firefighters, police, paramedics). The review found that approximately 47% of PSP reported lifetime suicidal ideation, with estimates of prior suicide attempts ranging from 0.7% to 55%. Estimates of death by suicide among PSP also varied across studies, ranging from 11.7 to 32.9/100,000 per year. Notwithstanding the variability, findings suggest suicide risk is higher for PSP relative to the general population. Correctional workers were not included in the 2016 review, but results remain relevant in light of related duties and experiences.

A multitude of factors, some operational, some organizational, and others personal underpin death by suicide and suicidality.¹⁴⁻¹⁶ Higher risk of suicide among PSP has been attributed to several factors, including reduced fear of death relative to the general population,¹⁷ compromised social supports,¹⁷ irregular sleep patterns,^{18,19} access to and familiarity of lethal means,¹³ and history of adverse childhood events.²⁰ Suicide risk also is linked to the presence of a mental health disorder among PSP.¹³

Studies in the United States have indicated that the prevalence of death by suicide among correctional workers may be double that of police officers.^{7,21} Results from the United States National Occupational Mortality Surveillance database suggest correctional workers are at a significantly higher age-adjusted risk for death by suicide, with even higher risk for women correctional workers.²² Research also suggests the death by suicide rates for correctional workers appear as high as 105 per 100,000, which is more than seven times higher than the US national rate for the general populations (ie, 14 per 100,000).²³

Recent scholarship with a national sample of Canadian correctional workers placed lifetime suicide ideation at 35.2%, planning at 20.1%, and attempts at 8.1%. Regarding past year ideation, correctional workers screened positive for ideation at a prevalence of 11%, planning with 4.8%, and 0.4% had past year attempts.²⁴ More recently, a study conducted looking at suicidality among correctional workers in Ontario provincial correctional services found prevalence of life time ideation at 26.6%, 11.9% planning, and 5.2% attempts, with past year prevalence of 7.0% for ideation and 2.6% for planning (past year attempts were noted reported due to low numbers).²⁵

The current study builds on previous research²⁵ by assessing lifetime and past-year suicidal behaviors (ie, thoughts, planning,

From the Memorial University of Newfoundland and Labrador, St. John's, Newfoundland (Dr Ricciardelli, Dr McKendy); University of Regina, Regina, Saskatchewan (Dr Jamshidi, Dr Carleton), Canada.

Funding: Canadian Institute for Health Research, Grant No. 16234.

Conflict of Interest: The authors declare that they have no competing interests.

Ethical Considerations: The research project received ethical clearance by research ethics board at Memorial University of Newfoundland (No. 20201330-EX) and University of Regina (No. 2017-098).

Clinical significance: Drawing on self-reported mental health survey data among provincial correctional workers, we found over half of respondents screened positive for a mental health disorders, most often Major Depressive Disorder. We found an association between positive mental health screens and lifetime and past year suicidal behaviors.

Address correspondence to: Rosemary Ricciardelli, Ph.D., Department of Sociology, Memorial University of Newfoundland, 230 Elizabeth Ave, St. John's, NL A1C 5S7, Canada (r Ricciardell@mun.ca).

Copyright © 2022 The Author(s). Published by Wolters Kluwer Health, Inc. on behalf of the American College of Occupational and Environmental Medicine. This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

DOI: 10.1097/JOM.0000000000002488

attempts) among a sample of correctional workers in Manitoba. The study assesses for differences between correctional workers in Manitoba relative to other provincial correctional workers and federal correctional workers. The study also assesses relationships between suicidal behaviors, mental disorders, and demographic variables. It was expected that respondents would report rates comparable to other provincial correctional workers.

METHODS

Data and Sample

Provincial correctional staff in Manitoba staff were invited to participate in an online survey on mental health and well-being in 2019. The research project received ethical clearance by research ethics boards at the University of Regina and Memorial University of Newfoundland and Labrador. Emails were sent by a representative of the provincial correctional ministry and/or union representatives inviting participation in the study. Participation was voluntary and there were no incentives for participation. Staff were provided with the option of completing the survey during paid work hours. Upon accessing the survey, respondents were provided with a unique login access code. This code enabled respondents to close and reopen the survey from any computer, allowing for the survey to be completed over more than one sitting if desired. Survey responses were hosted on a secure server through Qualtrics.

Upon accessing the survey, respondents were required to read an Informed Consent section that detailed the purpose of the survey, the potential benefits and risks, and the estimated time required for completion. Measures were taken to offset risks to participation including sensitive word choice, warnings prior to sensitive questions, and the identification of support resources available to respondents. Within the survey, we asked respondents to contact their Employee Assistance Program, family doctor, or another qualified mental health professional for help if respondents were experiencing suicidal/self-harming thoughts. Respondents were also provided with a source for immediate support and directed to call emergency services for immediate assistance as necessary.

In total, 772 participants commenced the survey. Responses were filtered for accuracy using a statement at the end of the survey: "I believe I have answered throughout such that I would allow my responses to be part of a dataset that will inform health care and policy for someone I care about." Data were excluded if the respondent specified "false" or did not provide an answer to the question. In total, 491 respondents completed the survey and responded "true" to this statement and were thus included in the analyses.

MEASURES

The survey included established screening measures for several mental health disorders, as well as questions pertaining to demographics, history of potentially psychologically traumatic event exposure, corrections-specific event exposure, and other items tied to work experiences and well-being. Questions included a mixture of both structured and open-ended items. For the current analyses, close-ended responses for mental health screening measures and questions pertaining to demographics and suicidal experiences were examined.

Positive screens for mental health disorders were based on self-reported symptoms in reference to established measures and associated cut-off scores: PTSD was assessed using the PTSD Check List 5²⁶⁻³⁰; MDD was assessed using the nine-item Patient Health Questionnaire³¹⁻³⁴; GAD was assessed using the seven-item GAD-7^{32,35,36}; PD was assessed using the PD Symptoms Severity scale-Self-Report (PDSS-SR)³⁷⁻³⁹; and AUD was assessed using the AUDs Identification Test (AUDIT).^{40,41} Respondents were also asked about their own history of formal mental health disorder diagnoses to better inform prevalence rates.

Suicidal ideation, planning, and attempts were assessed through a series of yes/no questions that have been used in prior PSP research.²⁴ For suicidal ideation, questions included: "have you ever contemplated suicide?" and, if a response of yes was indicated, "has this happened in the past 12 months?" For suicidal planning, questions included: "have you ever made a serious plan to attempt suicide?" and, if yes, "has this happened in the past 12 months?" For suicidal attempts, questions included: "have you ever attempted suicide?" and, if yes, "did this happen in the past 12 months?"

Socio-demographic variables included sex (male, female; the category of other was excluded due to low numbers), age (19 to 29, 30 to 39, 40 to 49, 50 to 59, 60+), marital status (single, partnered, separated/divorced/widowed), education (high school or less, some post-secondary, completed degree), and years of service (1 to 5 years, 6 to 10 years, 11 to under 15 years, 16 to 20 years, more than 20 years). Occupational groups were originally categorized as: Correctional Officers, Institutional Management, Institutional Healthcare, Institutional other (eg, program, training, religious/spiritual, and administrative staff), Probation Officers, and Community other (eg, managers, program staff, administrative staff). Due to asymmetries in counts within occupational groups, only two categories are used in written analysis (namely Correctional Officers and all other occupational groups).

Statistical Analysis

Descriptive statistics were computed to examine the prevalence of mental health disorders, lifetime and past-year suicidal behaviors (ideation, planning, and attempt), and sociodemographic covariates. Respondents were grouped into categories based on positive screens for mental health disorders, namely respondents who screened positive for PTSD, MDD, GAD, PD, and AUD. We computed logistic regression models to examine the association between mental health disorders and each of lifetime and past-year suicidal behaviors. Results at $P < 0.05$ were considered statistically significant.

RESULTS

Sociodemographic Variables

Sample demographics are presented in Table 1. Approximately 60% of the 491 respondents self-identified as men and 40% identified as women. The average age was 41.77 (median = 42), with 8% between 19 and 29, 33% between 30 and 39, 37% between 40 and 49, 17% between 50 and 59, and 3% 60 or older. Most reported being married or in a common law relationship (74%), with the remaining identifying as single (13%), or divorced/separated/widowed (12%). Regarding educational achievement, 37% reported completing a 4-year university/college program or more, 41% reported completing some post-secondary education (but less than a 4-year degree), and 19% reported a high school diploma or less. Respondents reported an average of 11.40 (median = 10.00) years of service. Correctional Officers represented the largest occupational group (73%). Other institutional groups included Institutional Managers (7%), Institutional Healthcare Staff (<1%), and other types of institutional staff (eg, program, administrative, and spiritual staff; 8%). Community correctional workers included Probation Officers (7%) as well as other types of community staff (eg, program and administrative staff; 3%).

Mental Health Disorder Screens

Based on self-reported measures, a majority of respondents (57%) screened positive for at least one mental health disorder (see Table 2). By occupational group, the percentage of respondents who screened positive for at least one mental health disorder was 59% for Correctional Officers (the percentage was 64% for female Correctional Officers and 57% for male Correctional Officers) and 51% for

TABLE 1. Sociodemographic Information (n = 491)

| Sociodemographic Information | % (n) |
|-------------------------------------|------------|
| Sex | |
| Female | 39.7 (195) |
| Male | 59.7 (293) |
| Age | |
| 19–29 | 8.1 (40) |
| 30–39 | 33.4 (164) |
| 40–49 | 36.9 (181) |
| 50–59 | 17.1 (84) |
| 60 and older | 2.9 (14) |
| Marital status | |
| Single | 12.6 (62) |
| Married/Common-law | 74.3 (365) |
| Separated/Divorced/Widowed | 11.8 (58) |
| Education level | |
| High school graduate or less | 19.1 (94) |
| Some post-secondary school | 41.1 (202) |
| University/college degree or higher | 36.5 (179) |
| Years of service | |
| 1 to 5 years | 17.3 (85) |
| 6 to 10 years | 36.9 (181) |
| 11 to under 15 years | 15.7 (77) |
| 16 to 20 years | 16.7 (82) |
| More than 20 years | 10.8 (53) |
| Occupational group | |
| Correctional Officer | 73.1 (359) |
| Institutional Management | 7.3 (36) |
| Institutional Healthcare | 0.2 (10) |
| Institutional other* | 7.5 (37) |
| Probation Officer | 6.7 (33) |
| Community other† | 2.9 (14) |

*Examples include program/vocational staff, training staff, spiritual services staff, and administrative staff.
 †Examples include managers, supervisors, healthcare staff, program staff, and administrative staff.

other all other occupational groups. Respondents reporting a high school education or less were slightly more likely to screen positive than those with more education (ie, 65% vs 55%). Non-partnered respondents who reported being single or divorced/separated/widowed more likely to screen positive than those who reported being married or in a common law relationship (ie, 69% vs 52%). Many respondents (37%) screened positive for more than one disorder, including several (ie, 26%) who screened positive for three or more disorders. In the case of Correctional Officers, 42% screened positive for more than one disorder (42% for women and 41% for men).

TABLE 2. Prevalence of Mental Health Disorders (n = 491)

| Disorder | % (n) |
|---|------------|
| PTSD (PCL-5) | 29.9 (147) |
| MDD (PHQ-9) | 42.0 (206) |
| GAD (GAD-7) | 29.5 (145) |
| PD (PDSS-SR) | 20.6 (101) |
| AUD (AUDIT) | 9.2 (45) |
| Any other self-reported mood disorder | 3.1 (15) |
| Any positive screen for any mental disorder | 56.8 (279) |

AUD, alcohol use disorder; GAD, generalized anxiety disorder; MDD, major depressive disorder; PD, panic disorder; PTSD, posttraumatic stress disorder.

Positive screens were most common for MDD (ie, 42% overall; 47% for Correctional Officers; 30% for other all other occupational groups). Positive screens for PTSD (30%) and GAD (30%) were the second most common. By occupational category, positive screening for PTSD was 33% for Correctional Officers and 23% for other all other occupational groups; for GAD, 33% for Correctional Officers and 19% for other all other occupational groups; for PD, 21% for all occupational groups; and for AUD, 10% for Correctional Officers and 8% for other all other occupational groups.

Suicidal Behaviors

Just over one-third of respondents (ie, 35%) reported having lifetime suicidal ideation (36% for men and 33% for women), with similar percentages for Correctional Officers compared with other occupational groups (ie, 35% and 34% respectively). Suicidal ideation within the past year period was reported by 15% of respondents (16% for men and 13% for women), with a somewhat higher percentage for Correctional Officers relative to other occupational groups (ie, 17% vs 9%). Gender differences within the Correctional Officer group category were minimal; lifetime suicidal ideation was 36% for men, and 35% for women, and past year suicidal ideation was 17% for men and 16% for women (see Table 3).

In regards to prior suicide planning, 20% of respondents reported lifetime planning; the percentage was 22% for men and 17% for women and was the same for Correctional Officers compared with other occupational groups (ie, 20%). Suicide planning in the past year period was reported by 8% of respondents, with similar prevalence for Correctional Officers compared with other occupational groups (ie, 8% and 7% respectively) and for men and women (9% and 6% respectively). Regarding suicide attempts, 10% of respondents reported a prior lifetime attempt; the percentage was 8% for men and 11% for women, and 8% for Correctional Officers compared with 13% for other occupational groups. In 2% of cases, respondents reported a suicide attempt in the past year (the percentage was the same for men and women and for Correctional Officers and other occupational groups). Across items, higher levels of educational and being married or in a common law relationship were inversely associated with lifetime and past-year suicidal behaviors, which is consistent with prior research.²⁴

Association Between Mental Health Disorders and Suicidal Behaviors

The associations between mental health disorders and lifetime and past-year suicidal behaviors are provided in Table 4. Respondents who screened positive for a mental health disorder, particularly those screening positive for more than one disorder, were more likely to endorse suicidal behaviors. Differences were noted for prior lifetime suicidal ideation (ie, 16% for those who did not screen positive, 37% for those who screened positive for one

TABLE 3. Prevalence of Suicidal Behaviors (n = 491)

| Suicidal Behavior | % (n) |
|-------------------|------------|
| Suicidal ideation | |
| Life time | 34.8 (171) |
| Past-year | 15.1 (74) |
| Suicide plan | |
| Life time | 20.2 (99) |
| Past-year | 7.7 (38) |
| Suicide attempt | |
| Life time | 9.6 (47) |
| Past-year | 2.0 (10) |

TABLE 4. Associations Between Past-Year and Lifetime Suicidal Behaviors and Mental Disorders (*n* = 491)

| Suicidal Behavior | PTSD | MDD | GAD | PD | AUD |
|-------------------|-----------------------|-----------------------|------------------------|----------------------|----------------------|
| Lifetime | | | | | |
| Ideation | | | | | |
| OR (95% CI) | 3.61 (2.40, 5.43)*** | 4.66 (3.12, 6.96)*** | 3.64 (2.42, 5.47)*** | 2.98 (1.89, 4.69)*** | 2.72 (1.45, 5.10)** |
| AOR (95% CI) | 3.49 (2.22, 5.50)*** | 4.87 (3.10, 7.65)*** | 3.65 (2.28, 5.85) | 2.76 (1.65, 4.62)*** | 3.02 (1.53, 5.96)*** |
| Plan | | | | | |
| OR (95% CI) | 1.51 (0.81, 2.80) | 2.23 (1.16, 4.29)* | 1.42 (0.77, 2.62) | 1.04 (0.53, 2.04) | 0.74 (0.31, 1.77) |
| AOR (95% CI) | 1.69 (0.81, 3.53) | 2.76 (1.28, 5.96)** | 2.08 (0.96, 4.51) | 1.68 (0.71, 3.99) | 0.74 (0.28, 1.95) |
| Attempt | | | | | |
| OR (95% CI) | 1.86 (0.94, 3.70) | 1.92 (0.89, 4.15) | – | 2.60 (1.27, 5.32)** | – |
| AOR (95% CI) | 3.02 (1.17, 7.83)* | 3.88 (1.32, 11.41)* | – | 3.74 (1.37, 10.23)** | – |
| Past-Year | | | | | |
| Ideation | | | | | |
| OR (95% CI) | 4.95 (2.55, 9.59)*** | 5.91 (2.70, 12.90)*** | 6.96 (3.51, 13.79)*** | 3.25 (1.63, 6.48)*** | 0.79 (0.33, 1.91) |
| AOR (95% CI) | 4.51 (2.01, 10.13)*** | 5.52 (2.18, 14.02)*** | 11.30 (4.24, 30.09)*** | 4.00 (1.60, 10.03)** | 1.47 (0.50, 4.33) |

AOR, adjusted odds for socioeconomic status (sex, age, marital status, education, years of service, and correctional categories); AUD, alcohol use disorder; CI, confidence interval; GAD, generalized anxiety disorder; MDD, major depressive disorder; OR, odds ratios; PD, panic disorder; PTSD, posttraumatic stress disorder.

– Not presented due to insufficient sample size (ie, *n* < 5) to run the analysis.

Statistically significant:

**P* < 0.05.

***P* < 0.01.

****P* < 0.001.

disorder, and 56% for those who screened positive for more than one disorder), lifetime suicidal planning (6%, 22%, 36%), and lifetime suicide attempts (3%, 8%, 18%).

Positive mental health screens for all mental health disorders were associated with statistically significantly increased odds of lifetime suicidal ideation (see Table 4). Most positive screens for mental health disorder (ie, all except AUD) were also associated with increased odds of past-year suicidal ideation (see Table 4). There were insufficient cell counts to compute lifetime suicide attempts for the GAD and AUD groups. Due to low cell counts, we were unable to examine the association between mental health disorders and past-year suicide planning and attempts.

DISCUSSION

The current results highlight key themes tied to mental health and suicidality among correctional staff. Consistent with prior research, a considerable high percentage (57%) of correctional workers screened positive for at least one mental health disorder, most commonly MDD, followed by PTSD and GAD. The current prevalence rates appear much higher than the diagnostic rates of mental health disorders among the general public in Canada (ie, 10%), but similar to positive screening rates (ie, 55%) from federal correctional workers.¹ Many respondents (37%) screened positive for more than one disorder, including several (ie, 26%) who screened positive for three or more disorders. The current results suggest that mental health profiles among correctional workers are complex and impacted by exposures to diverse stressors.

Many respondents in the current sample reported having lifetime experiences of contemplating suicide (35%), planning to attempt suicide (20%), or attempting suicide (10%). By comparison, prevalence among Canadian PSP more generally is 28% for ideation, 13% for planning, and 5% for attempts.²⁴ As such, the current results appear comparable to previous research, suggesting correctional workers are at high risk for suicidal behaviors, even relative to other PSP. The past-year and life time prevalence among Manitoba correctional workers is higher than reports from provincial correctional workers in Ontario (ie, 27%, 12%, and 5% for lifetime ideation, planning, and attempts respectively²⁵), which may indicate the need for specific additional research.

Positive screens for mental health disorders were associated with increased likelihood of reporting lifetime and past-year suicidal behaviors. The associations were particularly pronounced for respondents who screened positive for more than one mental health disorder. All five mental health disorders examined (ie, MDD, PTSD, GAD, PD, AUD) were associated with statistically significantly increased odds of lifetime suicidal ideation and most were associated with past-year suicidal ideation, except for AUD. The associations further clarify vulnerabilities for correctional workers with respect to suicidal behaviors, and underscore the need for proactive and ongoing mental health supports for correctional workers.

Limitations

The current study has several limitations that offer important directions for future research. Respondents self-selected to participate after being invited through multiple listservs; as such, we do not have a well-defined sampling frame. Self-selection also prohibits a definitive understanding of the actual response rate, which caveats data interpretations and generalizability. The study results necessarily exclude individuals who have died by suicide, which suggests the current results may represent an underestimation of suicidal behaviors and relationships with mental health disorders in the population of correctional workers. The current study was designed using questions from the Statistics Canada’s 2013 Canadian Community Health Survey and previous PSP research^{1,24}; nevertheless, comparisons between the current results and previous results may be inhibited by methodological differences. Not all respondents proceeded far enough in the survey to answer the questions on suicidal behaviors. We do not have information about why respondents did not complete the full survey, but survey length may have been a factor. Responses may have also been impacted by lingering stigma surrounding mental disorders and suicidal behaviors^{42–44}; however, the anonymous survey format may have offset challenges with stigma by reducing concerns about possible social repercussions.⁴⁵ The current results were still based on self-report, rather than clinical interviews, which may also limit generalizability.⁴⁶ Respondents may under (or over) report symptoms, even when anonymous, which could impact results.^{47,48} Finally, we were unable to identify causal associations between correctional work

and the development of mental health disorders or suicidal behaviors; however, previous research does imply a link between conditions of work and adverse mental health outcomes among correctional workers.^{49,50}

CONCLUSION

The current study unpacks the associations between prevalence of mental health disorders and suicidal behaviors among provincial correctional workers in Manitoba. Our results contribute to an emerging body of literature examining the well-being of PSP and, consistent with prior results,²⁵ highlights the vulnerability of correctional workers regarding mental well-being. In light of the association between positive screens for mental health disorders and suicidal behaviors, the results lend weight to the basis for current advocacy, policy, and academic efforts to enhance the mental health supports available to correctional staff, and point to the need for tailored multimodal mental health programs and services focused on mitigating suicidal behaviors.

REFERENCES

- Carleton RN, Afifi TO, Turner S, et al. Mental disorder symptoms among public safety personnel in Canada. *Can J Psychiatry*. 2018;63:54–64.
- Oliphant R. Healthy minds, safe communities: supporting our public safety officers through a national strategy for operational stress injuries. Standing committee on public safety and national security 2016. Available at: <http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=8457704&Language=E>. Accessed August 12, 2021.
- Richardson JD, Darte K, Grenier S, English A, Sharpe J. Operational stress injury social support: a Canadian innovation in professional peer support. *Can Mil J*. 2008;9:57–64.
- Carleton RN, Afifi TO, Taillieu T, et al. Exposures to potentially traumatic events among public safety personnel in Canada. *Can J Behav Sci*. 2019;51:37.
- Carleton RN, Afifi TO, Taillieu T, et al. Assessing the relative impact of diverse stressors among public safety personnel. *Int J Environ Res Public Health*. 2020;17:1234.
- Carleton RN, Ricciardelli R, Taillieu T, Mitchell MM, Andres E, Afifi TO. Provincial correctional service workers: the prevalence of mental disorders. *Int J Environ Res Public Health*. 2020;17:2203.
- Stack SJ, Tsoudis O. Suicide risk among correctional officers: a logistic regression analysis. *Arch Suicide Res*. 1997;3:183–186.
- Ricciardelli R, Taillieu T, Carleton RN, et al. Correctional work, wellbeing and mental health disorders. *Adv Correct J*. 2019;8:53–69.
- Brower J. Correctional officer wellness and safety literature review. U.S. Department of Justice Office of Justice Programs Diagnostic Center; 2013. Available at: <https://nicic.gov/correctional-officer-wellness-and-safety-literature-review>. Accessed January 15, 2022.
- Denhof MD, Spinaris CG. Prevalence of trauma-related health conditions in correctional officers: a profile of Michigan Corrections Organization members. In: *Desert Waters Correctional Outreach*. 2016. Available at: http://www.corrections.com/system/assets/0000/1266/MCO_Paper_FINAL.pdf. Accessed January 15, 2022.
- Jaegers LA, Mathieu MM, Vaughn MG, Werth P, Katz IM, Ahmad SO. Posttraumatic stress disorder and job burnout among jail officers. *J Occup Environ Med*. 2019;61:505–510.
- Regehr C, Carey M, Wagner S, et al. Prevalence of PTSD, depression and anxiety disorders in correctional officers: a systematic review. *Corrections*. 2021;6:229–241.
- Stanley IH, Horn MA, Joiner TE. A systematic review of suicidal thoughts and behaviors among police officers, firefighters, EMTs, and paramedics. *Clin Psychol Rev*. 2016;44:25–44.
- Nock MK, Borges G, Bromet EJ, et al. Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *Br J Psychiatry*. 2008;192:98–105.
- Sareen J, Afifi TO, Taillieu T, et al. Trends in suicidal behaviour and use of mental health services in Canadian military and civilian populations. *CMAJ*. 2016;188:E261–E267.
- Sareen J, Isaak C, Katz LY, Bolton J, Enns MW, Stein MB. Promising strategies for advancement in knowledge of suicide risk factors and prevention. *Am J Prev Med*. 2014;47:S257–S263.
- Van Orden KA, Witte TK, Cukrowicz KC, Braithwaite SR, Selby EA, Joiner TE. The interpersonal theory of suicide. *Psychol Rev*. 2010;117:575–600.
- Bernert RA, Kim JS, Iwata NG, Perlis ML. Sleep disturbances as an evidence-based suicide risk factor. *Curr Psychiatry Rep*. 2015;17:554.
- Vallieres A, Azaiez A, Moreau V, LeBlanc M, Morin CM. Insomnia in shift work. *Sleep Med*. 2014;15:1440–1448.
- Turner S, Taillieu T, Carleton RN, Sareen J, Afifi TO. Association between a history of child abuse and suicidal ideation, plans and attempts among Canadian public safety personnel: a cross-sectional survey. *CMAJ Open*. 2018;6:E463–E470.
- Peittaro M. Suicide among corrections officers: it's time for an open discussion. *Public Safety* 2015. Available at: <https://www.corrections1.com/corrections/articles/suicide-amongcorrections-officers-its-time-for-an-open-discussion-19X5ZhquGBzyMiOo/>. Accessed July 18, 2021.
- Violanti JM. Suicide behind the wall: a national analysis of corrections officer suicide. *Suicidol Online*. 2017;8:58–64.
- Frost N. Understanding the Impacts of Corrections Officer Suicide. Washington DC: National Institute of Justice; 2020.
- Carleton RN, Afifi TO, Turner S, et al. Suicidal ideation, plans, and attempts among public safety personnel in Canada. *Can Psychol*. 2018;59:220–231.
- Carleton RN, Ricciardelli R, Taillieu T, Stelnicki AM, Groll D, Afifi TO. Provincial correctional workers: suicidal ideation, plans, and attempts. *Can Psychol* 2021. Available at: <https://doi.org/10.1037/cap0000292>. Accessed December 21, 2021.
- Ashbaugh AR, Houle-Johnson S, Herbert C, El-Hage W, Brunet A. Psychometric validation of the English and French versions of the Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5). *PLoS ONE*. 2016;11:e0161645.
- Blevins CA, Weathers FW, Davis MT, Witte TK, Domino JL. The posttraumatic stress disorder checklist for DSM-5 (PCL-5): development and initial psychometric evaluation. *J Trauma Stress*. 2015;28:489–498.
- Bovin MJ, Marx BP, Weathers FW, et al. Psychometric properties of the PTSD checklist for diagnostic and statistical manual of mental disorders fifth edition (PCL-5) in veterans. *Psychol Assess*. 2016;28:1379–1391.
- MacIntosh HB, Séguin G, Abdul-Ramen I, Randy M. Première traduction française PCL-5-LEC. In: *Civilian Checklist for PTSD, DSM5*. Montreal, Canada: McGill; 2015.
- Weathers FW, Litz BT, Keane TM, Palmieri PA, Marx BP, Schnurr PP. The PTSD Checklist for DSM-5 (pcl-5) Scale. *National Center for PTSD* 2013. Available at: www.pptsd.va.gov. Accessed August 12, 2021.
- Beard C, Hsu KJ, Rifkin LS, Busch AB, Björgvinsson T. Validation of the PHQ-9 in a psychiatric sample. *J Affect Disord*. 2015;193:267–273.
- Kroenke K, Spitzer RL, Williams JB, Löwe B. The patient health questionnaire somatic, anxiety, and depressive symptom scales: a systematic review. *Gen Hosp Psychiatry*. 2010;32:345–359.
- Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med*. 2001;16:606–613.
- Löwe B, Kroenke K, Herzog W, Gräfe K. Measuring depression outcome with a brief self-report instrument: Sensitivity to change of the Patient Health Questionnaire (PHQ-9). *J Affect Disord*. 2004;81:61–66.
- Beard C, Björgvinsson T. Beyond generalized anxiety disorder: psychometric properties of the GAD-7 in a heterogeneous psychiatric sample. *J Anxiety Disord*. 2014;28:547–552.
- Spitzer RL, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med*. 2006;166:1092–1097.
- Furukawa TA, Katherine Shear M, Barlow DH, et al. Evidence-based guidelines for interpretation of the Panic Disorder Severity Scale. *Depress Anxiety*. 2009;26:922–929.
- Shear MK, Brown TA, Barlow DH, et al. Multicenter collaborative panic disorder severity scale. *Am J Psychiatry*. 1997;154:1571–1575.
- Shear MK, Rucci P, Williams J, et al. Reliability and validity of the Panic Disorder Severity Scale: replication and extension. *J Psychiatr Res*. 2001;35:293–296.
- Gache P, Michaud P, Landry U, et al. The Alcohol Use Disorders Identification Test (AUDIT) as a screening tool for excessive drinking in primary care: reliability and validity of a French version. *Alcohol Clin Exp Res*. 2005;29:2001–2007.
- Saunders JB, Aasland OG, Babor TF, De la Fuente JR, Grant M. Development of the alcohol use disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption-II. *Addiction*. 1993;88:791–804.
- Halpern J, Gurevich M, Schwartz B, Brazeau P. What makes an incident critical for ambulance workers? Emotional outcomes and implications for intervention. *Work Stress*. 2009;23:173–189.

43. Henderson SN, Van Hasselt VB, LeDuc TJ, Couwels J. Firefighter suicide: understanding cultural challenges for mental health professionals. *Prof Psychol*. 2016;47:224.
44. Karaffa KM, Koch JM. Stigma, pluralistic ignorance, and attitudes toward seeking mental health services among police officers. *Crim Just Behav*. 2016;43:759–777.
45. Ashbaugh AR, Herbert CF, Butler LD, Brunet A. A new frontier: trauma research on the internet. In: Brunet A, Ashbaugh AR, Herbert CF, editors. *Internet Use in the Aftermath of Trauma*. Amsterdam: IOS Press BV; 2010: 99–120. Available at: <https://doi.org/10.3233/978-1-60750-626-3-99>.
46. Bethlehem J. Selection bias in web surveys. *Int Stat Rev*. 2010;78:161–188.
47. Berger JL, Addis ME, Reilly ED, Syzdek MR, Green JD. Effects of gender, diagnostic labels, and causal theories on willingness to report symptoms of depression. *J Soc Clin Psychol*. 2012;31:439–457.
48. Hunt M, Auriemma J, Cashaw ACA. Self-report bias and underreporting of depression on the BDI-II. *J Pers Assess*. 2003;80:26–30.
49. Goulette N, Denney AS, Crow MS. “Anything can happen at any time”: perceived causes of correctional officer injuries. *Crim Just Rev* 2020; 0734016820952521. Available at: <https://doi.org/10.1177/0734016820952521>. Accessed December 12, 2021.
50. James L, Todak N. Prison employment and post-traumatic stress disorder: risk and protective factors. *Am J Ind Med*. 2018;61:725–732.