Mental health and social support among public safety personnel

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Background	Social support may be a protective factor for the mental health of public safety personnel (PSP), who are frequently exposed to potentially psychologically traumatic events and report substantial post-traumatic stress disorder (PTSD) and major depressive disorder (MDD) symptoms. Research examining perceived social support and its association with PTSD and MDD in different PSP categories (e.g. firefighters, paramedics) is limited.
Aims	To examine differences in perceived social support across PSP and determine whether perceived social support is associated with differences in rates of MDD and PTSD.
Methods	We asked Canadian PSP, including correctional workers and officers, public safety communications officials, firefighters, paramedics, municipal and provincial police officers, and Royal Canadian Mounted Police (RCMP) officers, to complete an online anonymous survey that assessed socio-demographic information (e.g. occupation, sex, marital status, service years), social supports and symptoms of mental disorders, including PTSD and MDD. Analyses included ANOVA and logistic regression models.
Results	Perceived social support differed by PSP occupation. RCMP officers reported lower social support than all other PSP except paramedics. For most PSP categories, PSP who reported greater social support were less likely to screen positive for PTSD (adjusted odds ratios [AORs]: 0.90–0.93). Across all PSP categories, greater perceived social support was associated with a decreased likelihood of screening positive for MDD (AORs: 0.85–0.91).
Conclusions	Perceived social support differs across some PSP categories and predicts PTSD and MDD diagnostic status. Studies involving diagnostic clinical interviews, longitudinal designs and social support interventions are needed to replicate and extend our results.
Key words	Occupational health; post-traumatic stress disorder; public safety personnel; social support.

Introduction

Social support predicts positive mental health outcomes [1]. Social support includes the resources provided to an individual by his or her social network. Social support comes in different forms, including instrumental (e.g. providing transportation or money), informational (e.g. giving advice or guidance) and emotional (e.g. expressing empathy and reassurance) supports, all of which may come from different sources, such as friends, family and co-workers [2]. Meta-analytic results indicate that social support is negatively associated with symptoms of various mental disorders, including depression [3] and post-traumatic stress

disorder (PTSD) [4]. Furthermore, researchers have demonstrated that perceived social support, or the subjective feeling of being supported by others, is more closely associated with positive mental health outcomes than received (i.e. actual) social support [3,5]. Increased social support is associated with better mental health outcomes in both cross-sectional and longitudinal research, implicating high levels of social support as a potential protective factor for mental health [1]. Research demonstrating that perceived social support is an important protective factor for maintaining mental health highlights the potential role of social support as a target for interventions designed to promote mental health in at-risk populations.

Key learning points

What is already known about this subject:
- Public safety personnel report high rates of mental disorders.
- Greater perceived social support is associated with reduced rates of many mental disorders, including major depressive disorder and post-traumatic stress disorder.

What this study adds:
- This study was designed to evaluate associations between mental health and perceived social support among public safety personnel from different occupational groups.
- Higher perceived social support is associated with a decreased likelihood of screening positive for major depressive disorder and post-traumatic stress disorder across nearly all public safety occupational groups.

What impact this may have on practice or policy:
- Targeted interventions designed to promote social support should be developed and evaluated as these may help reduce the incidence of mental disorders among public safety personnel.

PTSD and major depressive disorder (MDD) can develop in response to trauma [6], and both are associated with persistent distress or impairment in daily functioning [7]. Researchers have proposed individual social network support access as critical for promoting individual resilience in response to trauma [8]. Indeed, the stress-buffering model proposes that the positive effects of social support on overall health are only observed in response to stress [9,10]. In the stress-buffering model, social support buffers the potential detrimental effects of stress on health by providing the individual with resources to help cope with stress. The stress-buffering model appears particularly relevant for populations or occupations exposed to more stress in their day-to-day lives than the general population. For example, researchers looking at military populations determined that increased post-deployment social support is inversely associated with PTSD and depressive symptom severity [11], and a lack of social support has been identified as a risk factor for persistent PTSD [12].

Public safety personnel (PSP) include, among others, public safety communications officials (PSCOs; e.g. dispatchers, 911 operators), correctional workers, firefighters, paramedics and police officers, all of whom are regularly exposed to potentially psychologically traumatic stressors as a function of their work [13]. Individuals in PSP occupations report high rates of symptoms of mental disorders, particularly MDD and PTSD [14], and report being most likely to turn to non-professionals when in need of mental health support (e.g. spouse, friend) [15]. Researchers have found that greater levels of perceived social support are associated with lower levels of depression and PTSD symptom severity in police officers [16] and firefighters [17]. Similarly, meta-analytic evidence indicates that both perceived and received social support is significantly associated with positive mental health outcomes in many PSP [1]. However, the meta-analysis examined mental health generally (i.e. not specific mental disorders) and only included a subset of PSP (i.e. police officers, firefighters, paramedics, rescue workers).

We found no published studies comparing associations between mental health outcomes and social support across diverse PSP categories. Furthermore, many studies have evaluated relationships between social support and mental disorder symptoms [11,17] but few have assessed whether social support is related to mental disorder diagnoses [12]. Our study was designed to determine whether perceived social support was associated with differences in rates of MDD and PTSD in a diverse sample of Canadian PSP. The goal of the study was to provide a more nuanced perspective of the relationships between perceived social support and common mental disorder diagnoses for individuals from different PSP occupational groups. We hypothesized that (i) different PSP categories report different levels of perceived social support; and (ii) increased perceived social support is associated with lower rates of positive screens for PTSD and MDD for all PSP categories.

Methods

Participants completed an anonymous, voluntary, web-based survey between 1 September 2016 and 31 January 2017. We used a variety of recruitment strategies, including e-mail invitations from advocacy organizations, provincial and municipal public safety organizations and the Public Safety Steering Committee of the Canadian Institute for Public Safety Research and Treatment (CIPSRT). More information about the sampling frame is available elsewhere [13,14]. The study was approved by the Institutional Research Ethics Board at the University of Regina. The survey asked about participants' socio-demographic variables, including which PSP category they felt best described their current occupation.

The Life Events Checklist for DSM-5 (LEC-5) [18] assesses lifetime history of potentially psychologically

traumatic events. The LEC-5 includes 16 events that can lead to distress or PTSD (e.g. physical assaults, sudden violent death) and allows participants to report other very stressful experiences. We adapted the wording for some items to avoid capturing events that are relatively common for PSP and less likely to be traumatic (e.g. we revised 'a transportation accident' to 'a serious transportation accident'). Participants respond to each potentially psychologically traumatic event by choosing one of the following: *happened to me*, *witnessed it*, *learned about it*, *part of my job*, *not sure* or *does not apply*. The publishers of the LEC-5 created the measure by modifying one item on the original LEC and adding the response category *part of my job* to reflect changes to the *DSM-5* diagnostic criteria for PTSD. Psychometric properties for the LEC-5 are not available. However, a psychometric analysis of the original LEC demonstrated its utility as a stand-alone assessment of traumatic exposure, stable test–retest reliability and acceptable convergence of 0.55 with similar, more in-depth assessments of trauma exposure [19]. We only used the LEC-5 to determine whether participants experienced at least one potentially psychologically traumatic event [7]. We considered participants who reported having experienced at least one event on the LEC-5 to have experienced a potentially traumatic event. Detailed information about the nature and frequency of potentially traumatic events reported by the PSP in our sample is available elsewhere [13].

The PTSD Checklist for DSM-5 (PCL-5) [20] is a self-report measure of past-month PTSD symptoms. Using a Likert scale from 0 (*not at all*) to 4 (*extremely*), participants rate 21 statements assessing how much they were bothered by various symptoms of PTSD. The PCL-5 has demonstrated good psychometric properties, including strong convergent and divergent validity and test–retest reliability [21].

The PCL-5 can be combined with the LEC-5 and used as a screening tool for PTSD [19]. The PCL-5 alone is not sufficient as a screening tool because it does not assess whether the individual experienced a traumatic event as per the *DSM-5* definition of a traumatic event (i.e. '… actual or threatened death, serious injury, or sexual violence'; p. 271) [7]. A PTSD diagnosis requires exposure to a potentially psychologically traumatic event. Each rating of 2 or greater is considered symptom endorsement. Participants are considered to have screened positive for PTSD if they report exposure to at least one potentially psychologically traumatic event on the LEC-5, obtain a total score greater than 32 on the PCL-5 and endorse at least one intrusion symptom, one avoidance symptom, two negative alterations in cognition or mood and two hyperarousal symptoms on the PCL-5.

The 9-item Patient Health Questionnaire (PHQ-9) [22] is a self-report measure of depressive symptoms. Participants indicate how often they are bothered by depressive symptoms in the past 2 weeks on a Likert scale from 0 (*not at all*) to 3 (*nearly every day*). The PHQ-9 has strong test–retest reliability [23] and demonstrates good sensitivity and specificity for detecting MDD. As per the established recommendations [22], we considered participants to have screened positive for MDD if they endorsed either item 1 (decreased interest or pleasure) or item 2 (depressed mood) and at least four other symptoms. We considered items 1–8 to be endorsed if participants rated them 2 or higher. We considered item 9, which relates to suicidal thoughts and self-harm, to be endorsed if participants rated it 1 or higher.

The 10-item Social Provisions Scale (SPS-10) [24] is a shortened version of the original Social Provisions Scale, a self-report measure of perceived social support. Respondents rate each item on a Likert scale from 1 (*strongly disagree*) to 4 (*strongly agree*) and items are summed to provide a total score. The SPS-10 has demonstrated good reliability and validity [24].

We conducted a one-way ANOVA to compare perceived social support across each PSP category. We used *post hoc* Bonferroni tests to clarify significant effects. Next, we stratified data by PSP occupational group and calculated two binomial logistic regression models for each PSP group: one model included PTSD screens as the dependent variable and a second model included MDD screens as the dependent variable. Perceived social support was the independent variable in all models and we adjusted all logistic regression models for sociodemographic covariates (i.e. sex, marital status, years of education and total years of service). We conducted all analyses using IBM SPSS Statistics Version 23.0 (SPSS, Chicago, IL, 2015).

Results

In total, 8520 PSP began the survey and answered at least the first question. We excluded 4282 (48%) participants from all analyses if they did not complete the measures described above. In line with prior research [13,14], we grouped the remaining 4238 PSP into PSCO (*n* = 213), correctional workers and officers (*n* = 592), firefighters (*n* = 650), paramedics (*n* = 590), municipal and provincial police officers (*n* = 1086) and Royal Canadian Mounted Police (RCMP) officers (the federal police force in Canada; *n* = 1107). We excluded participants who reported other PSP categories from our analyses due to the limited number of cases in each category. The sample was generally demographically representative of the Canadian population [14].

Internal consistency for all measures was acceptable (Cronbach's alpha of 0.80 or greater). Visual inspection of Q–Q plots and histograms of social support identified deviation from normality for all PSP occupational groups. However, univariate ANOVA is robust to deviations from normality for large sample sizes [25]. Levene's test

indicated there was homogeneity of variances (*P* NS). All continuous variables (i.e. perceived social support and total years of service) met the assumption of linearity with the logit transformation of the dependent variables based on the results of the Box–Tidwell procedure with a Bonferroni correction.

Descriptive statistics for socio-demographic variables, perceived social support levels and self-reported mental health disorder symptoms by PSP category are shown in Table 1. Additional details about proportions of positive screens for MDD and PTSD in each group are reported in a previous study of this sample [14]. The one-way ANOVA evaluating the effect of PSP category on perceived social support was significant, $F(5, 4232) = 11.10$, $P < 0.001$, with a small effect size ($\eta_p^2 = 0.013$). Results from the Bonferroni *post hoc* *t*-tests comparing perceived social support across each PSP category demonstrated that RCMP officers reported significantly lower levels of perceived social support compared to all other PSP occupations (*P*s < 0.01) except for paramedics (*P* NS). Paramedics reported lower perceived social support than municipal and provincial police officers (*P* NS), but paramedics did not differ significantly from the other PSP categories (*P*s NS).

The logistic regression model results depicting the associations between perceived social support and positive mental disorder screens across PSP categories are shown in Tables 2 and 3. The comparisons are presented as adjusted odds ratios (AORs), which measure the association between an exposure (social support) and an outcome (PTSD and MDD) after controlling for the effects of related predictors (i.e. sex, marital status, years of education, total years of service). For each PSP category except PSCO (AOR = 1.00), higher perceived social support was associated with lower odds of screening positive for PTSD (AORs ranged from 0.90 to 0.93). For all PSP categories, increased perceived social support was associated with significantly decreased odds of screening positive for MDD (AORs ranged from 0.85 to 0.91).

Discussion

PSP differed in their levels of perceived social support based on their occupational group, with RCMP reporting particularly low levels of perceived social support. Higher social support was associated with a decreased likelihood of screening positive for MDD and PTSD across nearly all PSP categories. For every one-point increase in perceived social support, correctional workers and officers, firefighters, paramedics, municipal and provincial police officers and RCMP officers were 7–10% less likely to screen positive for PTSD and 11–15% less likely to screen positive for MDD. PSCOs who reported greater perceived social support were also less likely to screen positive for MDD, but not PTSD.

We designed our study to evaluate whether higher perceptions of social support were associated with a lower likelihood of screening positive for PTSD and MDD in a diverse sample of Canadian PSP. The study has many strengths, such as the large and diverse PSP sample, measurement tools with strong psychometric support and robust analytic decisions. There are also several limitations that offer directions for future research. First, participants were Canadian PSP who self-selected for the study and a sizable portion of participants began the survey but did not finish. Our results may not therefore be representative of all PSP despite the demographic representativeness of the sample. Given the lack of data on the total number of potential participants, assessment of sample representativeness is necessarily limited. Second, the positive screens for MDD and PTSD we assigned are diagnostic approximations as we used self-reported screening measures. Moreover, the self-report tools assessed only current and not lifetime symptoms of MDD and PTSD. Third, we used a cross-sectional design, prohibiting discussions of temporal or causal relationships between mental health and social support. Thus, our results cannot inform the debate over whether increased perceived social support protects against PTSD and

Table 1. Mean (standard deviation) and frequencies (percentages) for socio-demographic variables and social support and mental disorder measures

PSP category	PSCOs	Corrections	Firefighters	Paramedics	Police	RCMP
Age in years, *M* (SD)	41.16 (9.77)	44.37 (9.03)	45.83 (9.44)	40.41 (10.47)	43.29 (8.08)	43.05 (8.95)
Years of service, *M* (SD)	13.88 (9.40)	15.98 (8.77)	20.35 (10.10)	16.52 (9.89)	18.37 (8.69)	17.75 (9.40)
Female, *n* (%)	166 (78%)	326 (55%)	45 (7%)	231 (39%)	295 (27%)	283 (26%)
University degree, *n* (%)	62 (29%)	302 (51%)	17 (28%)	125 (21%)	450 (41%)	423 (38%)
Married, *n* (%)	139 (65%)	455 (77%)	561 (86%)	424 (72%)	870 (80%)	890 (80%)
Social support, *M* (SD)	33.01 (5.32)	32.55 (5.46)	33.13 (5.38)	32.26 (5.77)	33.12 (5.53)	31.60 (5.42)
Major depressive disorder, *M* (SD)	7.23 (5.42)	7.70 (5.89)	5.42 (5.49)	7.38 (6.12)	5.85 (5.71)	7.53 (6.12)
Post-traumatic stress disorder, *M* (SD)	19.04 (17.30)	25.43 (18.72)	16.80 (16.14)	22.65 (18.69)	19.09 (18.66)	25.14 (20.03)

Corrections = correctional workers and officers; Police = municipal and provincial police officers; Years of service = number of years working in their occupation; Social support = Social Provisions Scale; Major depressive disorder = 9-item Patient Health Questionnaire; Post-traumatic stress disorder = PTSD Checklist for DSM-5.

Table 2. Logistic regressions predicting the likelihood of screening positive for PTSD based on social support

PSP category	B	SE	Wald	AOR	95% CI for AOR	
					Lower	Upper
PSCOs	−0.01	0.04	<0.01	1.00	0.93	1.07
Corrections	−0.10	0.02	31.04***	0.90	0.87	0.94
Firefighters	−0.07	0.02	14.19***	0.93	0.89	0.96
Paramedics	−0.10	0.02	29.44***	0.91	0.87	0.94
Police	−0.11	0.01	53.06***	0.90	0.88	0.93
RCMP	−0.10	0.01	57.09***	0.90	0.88	0.93

Corrections = correctional workers and officers; Police = municipal and provincial police officers. AOR adjusted for sex, marital status, education and number of years working in their occupation. $df = 1$.
***$P < 0.01$.

Table 3. Logistic regressions predicting the likelihood of screening positive for MDD based on social support

PSP Category	B	SE	Wald	AOR	95% CI for AOR	
					Lower	Upper
PSCOs	−0.10	0.05	4.56*	0.91	0.83	0.99
Corrections	−0.12	0.03	24.48***	0.89	0.84	0.93
Firefighters	−0.13	0.03	26.86***	0.88	0.84	0.92
Paramedics	−0.16	0.03	39.44***	0.85	0.81	0.90
Police	−0.15	0.02	56.84***	0.86	0.83	0.89
RCMP	−0.14	0.02	57.20***	0.87	0.84	0.91

Corrections = correctional workers and officers; Police = municipal and provincial police officers. AOR adjusted for sex, marital status, education, and number of years working in their occupation. $df = 1$.
*$P < 0.05$, ***$P < 0.01$.

MDD [26], or whether decreased perceived social support is a consequence of PTSD or MDD [27].

Our results provide important empirical evidence of differences in perceived social support and of robust associations between social support and positive screens for PTSD and MDD across a variety of Canadian PSP occupational groups. Our results are consistent with past research indicating an association between greater perceived social support and improved mental health outcomes [1]. Our results also extend previous evidence by using a large, diverse PSP sample. We believe our study is the first to directly compare social support across PSP occupational groups and to subsequently demonstrate that different PSP occupations are associated with different levels of social support. Specifically, paramedics reported lower social support relative to municipal and provincial police officers, and RCMP officers reported lower social support relative to all other PSP categories except paramedics. Differences in perceived social support may reflect unique challenges faced by RCMP officers and paramedics, possibly associated with the organizational structure of the institutions. For example, RCMP officers are more likely to be required to work in remote or rural areas and answer calls alone, which

may result in fewer social connections and less access to supports. Researchers have demonstrated that support from co-workers in the first few days following a potentially psychologically traumatic event may be a protective factor for the mental health of police officers [28]. In our study, RCMP officers reported the lowest social support of all PSP categories, which may increase their vulnerability to PTSD and MDD symptoms. Our results are consistent with the high rates of PTSD (30%) and MDD (32%) reported by RCMP officers in a prevalence survey [14]. However, further research is needed to empirically assess whether organizational differences that affect perceived social support mediate the relationship between PSP category and mental disorder symptoms.

Unlike the other PSP categories, PSCOs who reported higher levels of perceived social support were less likely to screen positive for MDD, but not for PTSD. The result may be explained by unique aspects of call centre work environment that might mitigate some of the potential benefits of increased social support for PTSD, but not for MDD. PSCOs are responsible for answering emergency calls, sending appropriate emergency services and assisting callers until these services arrive. PSCOs are regularly presented with many stressors in the course of their

work, such as speaking to distraught callers and pressure to make quick and potentially life-altering judgments based on incomplete information [29]. However, PSCOs are not physically present during potentially psychologically traumatic events. Contrasting the remaining PSP categories examined in the current study, PSCOs are never in direct physical danger and likely have less exposure to the most aversive elements of potentially psychologically traumatic events (e.g. witnessing an attack, looking at a dead body). Social support may be most effective at mitigating the development of PTSD when the individual is physically present during a potentially psychologically traumatic event, which is not the case for PSCOs. Social support may also offer some protective effects for PTSD symptom severity for PSCOs but may not be sufficient to mitigate PTSD. Indeed, a recent study of a small sample of emergency medical dispatchers found that social support was a significant negative predictor of PTSD symptom severity [30]. More work is needed to better understand the relationship between social support and PTSD for PSCOs.

Longitudinal studies of PSP from diverse occupational groups are needed to better understand our findings and determine the temporal relationship between reduced social support and increased odds of screening positive for PTSD and MDD. If increased social support mitigates the onset of clinically significant symptoms of mental disorders, efforts to bolster perceived social support may also help bolster resilience among PSP. Bolstered social support may involve development and evaluation of formal peer-support programmes, therapeutic interventions to increase perceptions of actual support, or facilitating linkages with family and friends. In the interim, further research using randomly selected stratified samples with diagnostic clinical interviews would help expand our understanding of the relationships between perceived social support and PSP mental health.

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Competing interests

None declared.

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