

MENTAL HEALTH CARE SEEKING IN THE CANADIAN ARMED FORCES
POST-AFGHANISTAN: CAN SOCIAL SUPPORT AND PARAPROFESSIONAL
INITIATIVES HELP INCREASE ACCESS TO CARE?

A Thesis

Submitted to the Faculty of Graduate Studies and Research

In Partial Fulfillment of the Requirements

For the Degree of

Doctor of Philosophy

in

Clinical Psychology

University of Regina

By

Sophie Duranceau

Regina, Saskatchewan

July 2017

Copyright 2017: S. Duranceau

UNIVERSITY OF REGINA
FACULTY OF GRADUATE STUDIES AND RESEARCH
SUPERVISORY AND EXAMINING COMMITTEE

Sophie Duranceau, candidate for the degree of Doctor of Philosophy in Clinical Psychology, has presented a thesis titled, ***Mental Health Care Seeking in the Canadian Armed Forces Post-Afghanistan: Can Social Support and Paraprofessional Initiatives Help Increase Access to Care?***, in an oral examination held on June 21, 2017. The following committee members have found the thesis acceptable in form and content, and that the candidate demonstrated satisfactory knowledge of the subject material.

External Examiner: Dr. Donald McCreary, Brock University (via SKYPE)

Supervisor: Dr. R. Nicholas Carleton, Department of Psychology

Committee Member: Dr. Kristi Wright, Department of Psychology

Committee Member: Dr. Gordon Asmundson, Department of Psychology

Committee Member: Dr. Ronald Martin, Faculty of Education

Chair of Defense: Dr. H. Monty Montgomery, Faculty of Social Work

*Not present at defense

Abstract

Recent research shows an increase in the mental health needs of Canadian Armed Forces (CAF) personnel (Fikretoglu, Liu, Zamorski, & Jetly, 2016). Research also indicates that a portion of CAF personnel with a mental health need do not seek professional mental health care or fail to initiate treatment in a timely fashion (e.g., Fikretoglu, Liu, Pedlar, & Brunet, 2010; Zamorski & Boulos, 2014). Andersen's (1995; 2008) Behavioral Model of Health Services Use suggests predisposing factors (e.g., age), enabling/impeding factors (e.g., income), and need-related factors (e.g., mental health diagnosis) can help explain professional mental health care seeking behaviors. Several studies conducted with military samples have investigated factors that can impede the care seeking process (i.e., barriers; e.g., Sareen, Cox, et al., 2007); however, relatively less is known about factors that may facilitate access to mental health care. The current studies explored recent patterns of professional and paraprofessional mental health service use in CAF personnel. The studies were designed to identify different means by which access to mental health care may be increased in this population. Specifically, Study 1 assessed the propensity of CAF personnel to seek help from their social network (e.g., family, coworkers), as well as the impact of seeking such help on professional mental health service use and perceived need for care. Study 2 examined individual predictors of using a paraprofessional peer support program available to CAF personnel, veterans, and their families (i.e., Operational Stress Injury Social Support [OSISS]). Study 3 identified the frequency of Internet use for mental health related activities among CAF personnel and individual predictors of use. Participants in all three studies included Regular Members from a recent nationally representative Canadian military sample ($n \approx 6,700$; Canadian Forces Mental Health Survey; Statistics Canada, 2014).

Weighting and bootstrapping estimation procedures were used to account for the complex survey design. Prevalence estimates were computed for all three studies and multivariate logistic regression analyses served to identify predictors of professional mental health service use, perceived need for care, OSISS use, and Internet use for mental health related activities. The results indicate that: 1) seeking support from various social groups is positively related to professional mental health service use and perceived need for care; 2) meeting criteria for posttraumatic stress disorder has the strongest association with OSISS use, but only a small number of CAF personnel seek help from OSISS; and 3) the Internet is more readily accessed than other forms of paraprofessional mental health care (e.g., OSISS) and few individual barriers exist to Internet use for mental health related activities among CAF personnel. The results suggest that developing psychoeducational programs and resources readily available to the social networks of military personnel (e.g., family members) may help facilitate access to professional mental health care. The results also suggest mental health resources may be best delivered to military personnel and their social networks through in-person professional mental health services or Internet-based technologies. Comprehensive results, methodological considerations, implications, and future research are discussed.

Acknowledgements

First and foremost, I would like to thank my supervisor, Dr. R. Nicholas Carleton, for his unconditional commitment and guidance over the past five years. He is an invaluable source of support and I never could have come this far without his encouragements. Second, I would like to thank Dr. Mark A. Zamorski for his immeasurable input and expertise. He has exponentially increased my knowledge and understanding of the Canadian Armed Forces and shows exemplary dedication to the men and women who serve us. Third, I would like to thank my external examiner, Dr. Don McCreary, and my research committee, Dr. Gordon J. G. Asmundson, Drs. Kristi Wright, and Dr. Ronald Martin, for their valuable feedback and mentorship.

I am grateful for Dr. Ruben Mercado who has made this research possible at the Saskatchewan Research Data Centre. I am also grateful for the funding provided to me through a Vanier Canada Graduate Scholarship (347-406), a Bourse de maîtrise en recherche B2 from the Fonds de Recherche du Québec – Société et Culture (181214), and scholarships from the Senior Women Academic Administrators of Canada and the Faculty of Graduate Studies and Research.

Special thank you to Daniel LeBouthillier for the endless hours he spent by me throughout this process. I would like to also thank my friends and family for their unwavering support through my schooling endeavours. I could never have made it this far without you. Last but not least, I wish to emphatically thank my fiancé, Simon Pelletier Tanguay. He has been with me every day of my graduate school journey and without a doubt deserves an honorary doctoral degree in Clinical Psychology. I look forward to the next chapter of our lives together... it is all about baby steps!

Dedication

To Uncle Phillip, who started teaching me about the intricacies of veterans and military personnel long before I realized I wanted to work with them.

- Kiddo

Table of Contents

Abstract	i
Acknowledgements	iii
Dedication	iv
Table of Contents	v
List of Tables	viii
List of Figures	xi
CHAPTER 1: Literature Review	1
1.1. General Introduction	2
1.1.1. Andersen’s Behavioral Model of Health Services Use	9
1.2. Current Studies	17
CHAPTER 2: Study 1	20
2.1. Introduction	20
2.2. Method	24
2.2.1. Participants and Procedures	24
2.2.2. Measures	25
2.2.3. Analyses	32
2.3. Results	33
2.3.1. Descriptive Statistics	33
2.3.2. Logistic Regressions	41
2.4. Discussion	59
2.4.1. Past 12-Month Social Support	59

2.4.2. Association Between Social Support, Professional Mental Health Service Use, and Perceived Need for Care	61
2.4.3. Association Between Predisposing, Enabling/Impeding, and Need Factors and Professional Mental Health Service Use and Perceived Need for Care	64
2.4.4. Limitations	66
2.4.5. Conclusion.....	67
CHAPTER 3: Study 2	69
3.1. Introduction	69
3.2. Method	73
3.2.1. Participants and Procedures	74
3.2.2. Measures	74
3.2.3. Analyses	76
3.3. Results.....	77
3.3.1. Descriptive Statistics.....	77
3.3.2. Logistic Regressions	80
3.4. Discussion	80
3.4.1. Past 12-Month OSISS Use.....	86
3.4.2. Association Between Predisposing, Enabling/Impeding, and Need Factors and OSISS Use.....	88
3.4.3. Limitations	91
3.4.4. Conclusion.....	92
CHAPTER 4: Study 3	95
4.1. Introduction	95

4.2. Method	99
4.2.1. Participants and Procedures	99
4.2.2. Measures	99
4.2.3. Analyses	102
4.3. Results	103
4.3.1. Descriptive Statistics	103
4.3.2. Logistic Regressions	108
4.4. Discussion	121
4.4.1. Past 12-Month Internet Use	121
4.4.2. Association Between Internet Use, Professional Mental Health Service Use, and Perceived Need for Care	124
4.4.3. Association Between Predisposing, Enabling/Impeding, and Need Factors and Internet Use	125
4.4.4. Limitations	127
4.4.5. Conclusion	128
CHAPTER 5: General Discussion and Implications	131
5.1. General limitations	133
5.2. Conclusion	136
References	138
Appendix A. Canadian Forces Mental Health Survey (CFMHS)	181

List of Tables

Table 1a. Predisposing (i.e., Socio-demographic, Military) and Enabling/Impeding Variable Estimates Within the Overall Sample.....	34
Table 1b. Predisposing (i.e., Psychological) and Past 12-Month Mental Health Needs Variable Estimates Within the Overall Sample.....	35
Table 1c. Estimates for Past 12-Month Professional Mental Health Service Use by Provider and Past 12-Month Perceived Need for Care by Type Within the Overall Sample	37
Table 2a. Estimates for Past 12-Month Help Seeking by Type of Social Support Within the Overall Sample.....	39
Table 2b. Estimates of Perceived Helpfulness of Social Support by Source of Social Support.....	40
Table 3. Overall Sample Estimates and Unadjusted and Adjusted Associations Between Predisposing, Enabling/Impeding, Need, and Social Support Variables and Past 12-Month Professional Mental Health Service Use	42
Table 4a. Overall Sample Estimates and Unadjusted and Adjusted Associations Between Predisposing, Enabling/Impeding, Need, and Social Support Variables and Past 12-Month Perceived Need for Information	46
Table 4b. Overall Sample Estimates and Unadjusted and Adjusted Associations Between Predisposing, Enabling/Impeding, Need, and Social Support Variables and Past 12-Month Perceived Need for Medication	51

Table 4c. Overall Sample Estimates and Unadjusted and Adjusted Associations Between Predisposing, Enabling/Impeding, Need, and Social Support Variables and Past 12-Month Perceived Need for Counseling	55
Table 5a. Predisposing (i.e., Socio-demographic, Military) and Enabling/Impeding Variable Estimates Within the OSISS Users Subsample.....	78
Table 5b. Predisposing (i.e., Psychological) and Past 12-Month Mental Health Needs Variable Estimates Within the OSISS Users Subsample.....	79
Table 5c. Estimates for Past 12-Month Professional Mental Health Service Use by Provider and Past 12-Month Perceived Need for Care by Type Within the OSISS Users Subsample	81
Table 5d. OSISS Frequency of Use Estimates	82
Table 6. Overall Sample Estimates and Unadjusted and Adjusted Associations Between Predisposing, Enabling/Impeding, and Need Variables and Past 12-Month OSISS Use	83
Table 7a. Predisposing (i.e., Socio-demographic, Military) and Enabling/Impeding Variable Estimates Within the Subsample of Internet Users for Problems with Emotions, Mental Health, or Use of Alcohol or Drugs.....	104
Table 7b. Predisposing (i.e., Psychological) and Past 12-Month Mental Health Needs Variable Estimates Within the Subsample of Internet Users for Problems with Emotions, Mental Health, or Use of Alcohol or Drugs.....	105
Table 7c. Estimates for Past 12-Month Professional Mental Health Service Use by Provider and Past 12-Month Perceived Need for Care by Type Within the Subsample of Internet Users for Problems with Emotions, Mental health, or Use of Alcohol or Drugs.....	107

Table 8a. Overall Sample Estimates and Association Between Past 12-Month Internet Use for Problems with Emotions, Mental Health, or Use of Alcohol or Drugs and Past 12-Month Professional Mental Health Service Use.....	109
Table 8b. Overall Sample Estimates and Association Between Past 12-Month Internet Use for Problems with Emotions, Mental Health, or Use of Alcohol or Drugs and Past 12-Month Perceived Need for Care by Type	110
Table 8c. Past 12-Month Internet Users Subsample Estimates and Association Between Reasons for Internet Use and Past 12-Month Professional Mental Health Service Use.....	112
Table 8d. Past 12-Month Internet Users Subsample Estimates and Association Between Reasons for Internet Use and Past 12-Month Perceived Need for Care by Type	113
Table 9. Overall Sample Estimates and Unadjusted and Adjusted Associations Between Predisposing, Enabling/Impeding, and Need Variables and Past 12-Month Internet Use for Problems with Emotions, Mental Health, or Use of Alcohol or Drugs	114
Table 10. Predisposing, Enabling/Impeding, and Need Variables Estimates by Reason for Internet Use Within the Past 12-Month Internet Users Subsample.....	118

List of Figures

Figure 1. Individual Determinants of Healthcare Utilization in Andersen's (1995; 2008)

Behavioral Model of Health Services Use..... 11

CHAPTER 1: Literature Review

Wars begin when you will but they do not end when you please.

Niccolò Machiavelli, 1532

In 2013, the Canadian Armed Forces (CAF) were comprised of approximately 68,000 Regular Force and 27,000 Primary Reserve Force personnel, over 43,000 of whom were deployed in support of the Afghanistan mission (Zamorski & Boulos, 2014). Subsequent to Canadian involvement in Afghanistan, efforts have been made to evaluate the costs of the mission, including its psychological costs. Increased interest has been given to the mental health of military personnel, as well as the availability and use of professional mental health services in hopes of identifying future needs. A significant fraction of personnel who deploy to areas of conflict will experience service-related mental health disorders (Boulos & Zamorski, 2013; Boulos & Zamorski, 2016a); however, not all personnel will seek care in a timely fashion (Fikretoglu, Liu, Pedlar, & Brunet, 2010) despite significant improvements in access to professional mental health treatments and services (Department of National Defense [DND], 2013; Fikretoglu, Liu, Zamorski, & Jetly, 2016; Sareen et al., 2016). Failure to seek professional mental health care can occur as a consequence of a broad range of incompletely understood perceptual, attitudinal, and structural barriers to care, as well as due to the lack of care facilitators. Using the 2013 Canadian Forces Mental Health Survey (CFMHS; Statistics Canada, 2014), the current studies were designed to further examine the mental health care seeking patterns of CAF personnel and to explore different means by which access to mental health services may be facilitated.

First, a general introduction to the current studies is presented as follows: 1) the prevalence of mental health disorders and professional service use in the CAF are

discussed, 2) an overview of Andersen's (1995; 2008) Behavioural Model of Health Services Use is provided and explored within the context of military mental health, and 3) a discussion is focused on means of facilitating access to care in CAF personnel. The review presents a broad overview of the research context for the current studies and demonstrates that theoretical models of health care service use and past empirical results support the current studies, including methods and analyses. Second, details for each of the current studies are provided. Background information, method, results, and a discussion of results are presented for each study. Specifically, use of social support is explored as a facilitator for perceived need for care and utilization of professional mental health care services (Study 1). Use of adjuncts to professional care is also explored, including a Canadian military peer-support program (Study 2) and the recent emergence of technologically based approaches to mental health care (Study 3). Third, a general discussion of results from the current studies as well as their implications for future research and military mental health care are presented.

1.1. General Introduction

The CAF has been involved in international military operations and deploying its members to zones of conflict since 1884 (MacLaren, 1978). Psychological difficulties have been reliably documented in CAF personnel since World War I (Canadian Museum of History, 2015); however, interest in the mental health status of CAF members considerably increased in the 1990s (Veterans Affairs Canada, 2008). Mental health problems were assessed for the first time in a large cohort of CAF members as part of the Health Study of the Canadian Forces Personnel Involved in the 1990-1991 Conflict in the Persian Gulf (Goss Gilroy, Inc., 1998). CAF personnel who deployed in support of

the Persian Gulf Conflict and a matched non-deployed control group were assessed. Within the deployed group, 2.1-2.5% met criteria for posttraumatic stress disorder (PTSD), 14.9-18.9% for major depression, and 13.7-14.5% for alcohol abuse. Specifically, Gulf War deployment was associated with significantly higher rates of depression but not PTSD or alcohol abuse.

Incremental efforts were made to assess and respond to the mental health needs of CAF personnel in the late 1990s (e.g., 1999 Veterans Affairs Canada Canadian Forces Survey; e.g., Fetzner, Abrams, & Asmundson, 2013), including the creation of five Operational Trauma and Stress Support Centres; however, the DND and Veterans Affairs Canada proposed a specific plan to strengthen their mental health program for the first time in 2002 (Veterans Affairs Canada, 2008) and created an official mental health strategy in 2013 (DND, 2013). As part of the original mental health plan, the first Canadian Operational Stress Injury clinic opened in 2001 and the Canadian Forces Supplement to the Canadian Community Health Survey Cycle 1.2 – Mental Health and Well-being (CCHS-CF; Statistics Canada, 2004) was conducted in 2002. The CCHS-CF was the first systematic prevalence survey designed to assess mental health needs of active CAF personnel. A total of 8,400 Regular and Reserve Forces personnel were assessed following Canada's combat involvement overseas in the mid-1990s, but prior to Canadian deployments to Afghanistan. Approximately 14.9% of active CAF personnel endorsed symptoms consistent with a mental health diagnosis (Sareen, Cox, et al., 2007). For Regular Force members specifically, the 12-month prevalence of PTSD appeared similar to numbers documented following the Persian Gulf conflict (i.e., 2.8%); in contrast, rates of major depression and alcohol related disorders (i.e., 7.6% and 4.0%

respectively) were lower. In addition, the results stemming from analyses based on the CCHS-CF suggest a 12-month prevalence of 2.5% for suicide attempts, 1.8% for generalized anxiety disorder, and 2.2% for panic disorder in Regular Force members (Sareen et al., 2016; Zamorski, Uppal, Boddam, & Gendron, 2006, as cited in Zamorski & Boulos, 2014).

Expanding on the Persian Gulf survey results, one study using the CCHS-CF data identified that only a minority of mental health problems can be attributed to combat alone or peacekeeping alone. Exposure to both combat and peacekeeping operations appeared most strongly associated with PTSD (Sareen et al., 2008). In contrast, other studies using the CCHS-CF found that combat exposure or exposure to atrocities, but not deployment to peacekeeping operations without exposure to atrocities, were associated with increased risk of mental health problems, including suicide attempts (Belik, Stein, Asmundson, & Sareen, 2009; Sareen, Cox, et al., 2007). More recently, studies using the CCHS-CF have indicated that, after controlling for deployment-related traumatic experiences, being a woman appears associated with increased risk of past 12-month PTSD (Mota et al., 2012) and adverse childhood experiences appear associated with increased risk of past 12-month major depression and anxiety disorders (Sareen et al., 2013).

Several surveys have assessed the 12-month prevalence of mental health problems in CAF Regular Force members since the CCHS-CF was released and the beginning of Canadian involvement in Afghanistan. Researchers have provided important information on the prevalence rates for PTSD (3.4-8.1%), major depression (3.5-7.4%), high-risk drinking (13-20%), and suicidal ideation (3.2%; DND, 2004, 2010;

Garber, Zamorski, & Jetly, 2012; Zamorski, 2011), with combat exposure implicated as a significant predictor of mental health problems (Garber et al., 2012; Zamorski, 2011). Results stemming from analyses of the more recent 2013 CFMHS survey (Statistics Canada, 2014) suggest 12-month prevalence rates comparable to rates found in prior research for PTSD (5.3%), depression (8.0%), alcohol abuse or dependence (4.5%), generalized anxiety disorder (4.7%), panic disorder (3.4%), and suicide attempts (3.0%) for CAF Regular Force members. Based on the CFMHS, deployment to Afghanistan and exposure to childhood adversity are associated with increased rates of mental health disorders and suicidal behaviours (Afifi et al., 2016; Boulos & Zamorski, 2016a; Watkins, Sudom, & Zamorski, 2016). Women are twice as likely to report symptoms of PTSD, whereas men are twice as likely to report an alcohol-related disorder. Rates of major depression appear to have remained stable over the past ten years; however, the 12-month prevalence of suicide attempts for men, and anxiety and PTSD for both sexes, has significantly increased since the 2002 CCHS-CF (Pearson, Zamorski, & Janz, 2014; Sareen et al., 2016). Increased prevalence of suicide attempts, anxiety, and PTSD, might be explained by a larger number of members being exposed to combat arms in the Middle East between 2006-2014 (Boulos & Zamorski, 2013; Sareen et al., 2016). Alternatively, improved access to mental health services may facilitate diagnosis and/or self-awareness of mental health problems and perceived need for care (Daigle, 2012; Fikretoglu et al., 2016).

Data obtained prior to the Afghanistan missions suggests that, at that time, an important proportion of CAF personnel did not seek professional care for their psychological symptoms. For example, based on a subsample of the 2002 CCHS-CF,

only 42.6% of respondents who met criteria for a psychological disorder (i.e., PTSD, major depression, social phobia, generalized anxiety disorder, panic disorder, alcohol-related disorder) in the past 12 months perceived a need for professional mental health services during that year (Fikretoglu, Guay, Pedlar, & Brunet, 2008). For respondents reporting having perceived a need for help, 25% received information on mental health/treatments, 25% were given medication, and 32% were involved in counseling/therapy, none of which were mutually exclusive. Approximately 85% of respondents who did not receive any services denied having had an unmet need for professional care in the past 12 months (Fikretoglu et al., 2008). Similar results were obtained in a follow-up study where only 11% of active duty members surveyed in 2002 had met with a medical or mental health professional for psychological difficulties in the past 12 months, with that percentage rising to 39% in a subsample of members meeting criteria for at least one disorder (Fikretoglu, Elhai, Liu, Richardson, & Pedlar, 2009). Results based on a survey completed by approximately 2,400 CAF members deployed to Kandahar, Afghanistan in 2009-2010 also indicate that only 27% of members who self-reported PTSD, major depressive disorder, or generalized anxiety disorder sought psychological care during deployment (Sudom, Zamorski, & Garber, 2012).

During the past three decades there have been efforts to improve accessibility of mental health services within the CAF. Initial comparisons between the 2002 CCHS-CF and 2013 CFMHS survey data indicate there was a 6-8% increase in perceived need for care and a 2-8% increase in perceived sufficiency of care within the CAF, depending on types of care (Fikretoglu, Liu, Zamorski, & Jetly, 2016). Nevertheless, the most recent

data suggests that professional mental health service use and perceived need for care remain lower than rates of reported mental health needs (Fikretoglu et al., 2016).

Results of research from Canadian allies similarly indicate a substantial burden from mental disorders and relatively lower rates of professional mental health care seeking. A study assessing approximately 2,500 United States (US) Army soldiers deployed to Operation Iraqi Freedom and Operation Enduring Freedom in Afghanistan evidenced that 23-40% of soldiers meeting criteria for a psychiatric disorder had received professional help over the past 12 months (Hoge et al., 2004). Trends in mental health services utilization in the US Army suggest that, from 2002 to 2008, there was a 75% increase in the proportion of soldiers utilizing mental health services; however, the most recent estimates indicate that, to this day, only approximately 35% of US soldiers screening positive for mental health problems seek professional care (Quartana et al., 2014). Similarly, a study was conducted on a subsample of United Kingdom (UK) veterans based on 1997 and 2001 military surveys. Results demonstrate that approximately 50% of veterans endorsing a psychiatric diagnosis had received professional mental health care during their lifetime. Further, only a minority of veterans in that study had received help from a psychiatrist (i.e., 28%) or a psychologist (i.e., 8%; Iversen et al., 2005), exemplifying challenges for accessing care as a global concern.

Rates of professional mental health care seeking in military samples have been compared to rates of professional mental health service use in Canadian (i.e., 9.5%-39%; Helen-Maria, Lesage, Adair, & Boyer, 2005; Wang, 2006), US (i.e., 13.3-52%; Kessler et al., 1999; Kessler et al., 2003), and UK (i.e., 14%; Bebbington et al., 2000) civilian populations reporting levels of symptoms and impairments consistent with a mental

health disorder. Service utilization appears limited to a minority of those individuals who have a mental health need in both military and civilian populations (e.g., Hoge et al., 2004). Stigma has often been discussed as a barrier to mental health care (e.g., Gould et al., 2010); however, recent evidence suggests the relationship between stigma and care seeking is unclear. The results from military populations have not demonstrated a consistent relationship (Sharp et al., 2015; Sudom et al., 2012; Weeks, Zamorski, Rusu, & Colman, 2017). In comparison to stigma, failure to perceive a need for care appears to be more consistently documented as a barrier for mental health care-seeking in both civilian and military samples (e.g., Fikretoglu et al., 2008; Fikretoglu et al., 2016; Wang, 2006).

Estimates based on a large representative sample from the 2002 CCHS-CF suggested that 82-100% of CAF personnel with a mental disorder will eventually seek treatment; however, median delay to contact with a health care professional appeared to vary from 3 to 26 years depending on the specific diagnosis and only 7-37% of CAF personnel were expected to seek mental health care in a timely manner (i.e., within a year of diagnosis; Fikretoglu et al., 2010). Recent data from CAF personnel deployed in support of the Afghanistan missions between 2001-2008 indicates that delay to mental health care was three times shorter in 2009/2010 relative to 2002/2004; nonetheless, median delay to care was 400 days, indicating that a fraction of CAF personnel will only seek care several years after receiving a mental health diagnosis (Boulos & Zamorski, 2016). Similarly, a recent study of US Iraq and Afghanistan veterans suggests that 75% of veterans in the Veterans Affairs system with a mental health diagnosis had not engaged in minimally adequate mental health care three years after deployment. Median

time between initial mental health contact and minimally adequate mental health care was seven and a half years (Maguen, Madden, Cohen, Bertenthal, & Hope, 2012). Moreover, less than half of US veterans deployed to Iraq and referred for mental health treatment received follow up care subsequent to their initial assessment (Milliken, Auchterlonie, & Hoge, 2007).

Mental health status has a significant impact on the general health of military populations (e.g., Asmundson, Stein, & McCreary, 2002). Mental health prognosis, and health more broadly, can be significantly improved by early interventions, especially with respect to PTSD and comorbid disorders (see Cuijper, van Straten, Smit, Mihalopoulos, & Beekman, 2008 for review; e.g., Asmundson & Taylor, 2006; Boulos & Zamorski, 2015; Litz, 2008; O'Donnell et al., 2012). Nevertheless, several CAF personnel with a need for care do not appear to seek professional mental health services (e.g., Fikretoglu et al., 2008). Many studies have focused on barriers to military populations receiving mental health care (e.g., Hoge et al., 2004; Gould et al., 2010; Sudom et al., 2012); however, less is known about facilitators of mental health care seeking behaviours (Zinzow, Britt, McFadden, Burnette, & Gillipsie, 2012). Identifying factors which can facilitate professional care seeking and access to mental health services among the CAF (e.g., Fetzner & Asmundson, 2015) appears timely and critical in light of the recent withdrawal of Canadian forces from active combat in Afghanistan and evidence of increased mental health care needs (Pearson et al., 2014; Boulos & Zamorski, 2016a)

1.1.1. Andersen's Behavioural Model of Health Services Use

Sociologists and psychologists have posited different theoretical frameworks to identify predictors of health services use in large population samples (e.g., Ajzen's theory of planned behavior; Penchansky's elements of access; the Health Belief Model; Ajzen, 1985; see Fortney, Burgess, Bosworth, Booth, & Kaboli, 2011 for review; see Godin & Kok, 1996 for review; Janz & Becker, 1984; Penchansky & Thomas, 1981; see Ricketts & Goldsmith, 2005 for review). The Behavioural Model of Health Services Use (Andersen, 1995; 2008; Andersen & Davidson, 2001) was originally developed in the 1960s (Andersen, 1968) and is one of the most widely used and recognized models of health services use in large population studies (Babitsch, Gohl, & von Lengerke, 2012; see Ricketts & Goldsmith, 2005 for review). Andersen's (1968) model has been expanded on several times in the past decade to reflect the importance of contextual factors as well as interactions between an individual and their health care system (Andersen, 2008); nevertheless, the fundamental components of the model (i.e., individual characteristics) have remained (Andersen, 2008). The core components of the model are commonly employed in studies conducted with large nationally representative samples (e.g., Elhai, Reeves, & Frueh, 2004; Fikretoglu, Brunet, Schmitz, & Guay, 2006; Fikretoglu et al., 2009) and can serve as a framework for understanding mental health care seeking behaviors of military members, including CAF personnel.

Andersen's model (1968) was designed to predict and explain the use of personal health services. Andersen's work initially focused on family as the unit of analysis (Andersen, 1968); however, his work subsequently identified the individual as the primary unit of interest in understanding health service utilization (Andersen, 1995). According to the model, individual health services use is a function of personal

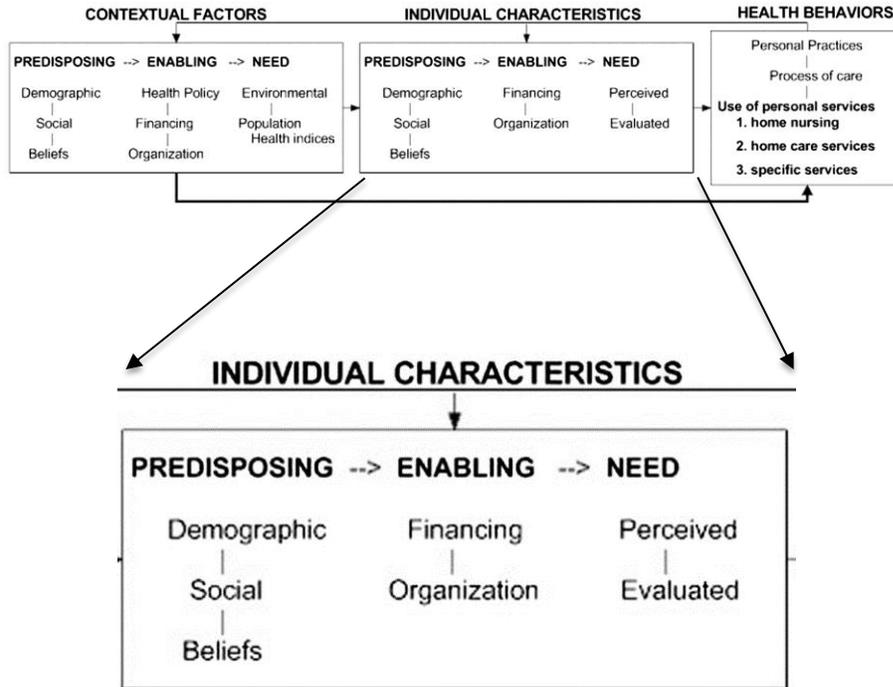


Figure 1. Individual Determinants of Healthcare Utilization in Andersen's (1995) Behavioral Model of Health Services Use as presented in Demaerschack and Vanden Boer (2013). Figure reproduced with kind permission from Oxford University Press.

predisposing characteristics, enabling/impeding factors to service utilization, and need for care (see Figure 1; see Andersen, 1995, 2008 for review).

Personal predisposing characteristics tend to be exogenous to the individual and represent an array of factors that can determine the likelihood that someone will seek health care services. Predisposing characteristics have been divided into three categories: 1) demographics; 2) social structure; and 3) health beliefs. Demographics represent biological imperatives such as sex and age. Social structure is comprised of factors that have an influence on the physical environment an individual is exposed to, how they will interact with this environment, and whether or not they will have the ability to cope should problems arise. Education, occupation, and ethnicity represent traditional social structure factors; however, Andersen (1995) also recognizes social networks and culture (e.g., nationality of origin; Chen, Kazanjian, & Wong, 2007; Portes, Kyle, & Eaton, 1992) as components of the social structure. Health beliefs represent attitudes, values, or knowledge that people have about health or health services. Health beliefs directly impact individual perceptions of need for care and use of services. They may also partially mediate the relationship between social structure and enabling factors, perceived need for care, and service use (Andersen, 1995). Andersen's (1968) model is limited to the previous three subcategories for predisposing characteristics; however, subsequent publications indicate that predisposing variables can also comprise individual differences in psychological factors (e.g., trauma exposure; Andersen, 1995; Elhai, Patrick, Anderson, Simons, & Frueh, 2006).

Enabling (and conversely impeding) factors are subdivided into community and family/personal resources (Andersen, 1995). Community resources mainly represent the

availability of care within an individual's physical environment (e.g., mental health facility); by contrast, personal resources refer to all factors that may facilitate or impede access to available resources (e.g., travel time, access to a regular source of care). Andersen's (1968) model places substantial emphasis on income and health insurance as personal enabling/impeding factors to health service utilization; however, universal health insurance coverage may reduce the impact of income and availability of insurance on health service use in Canada (e.g., Sareen, Jagdeo, et al., 2007; Siddiqi, Zuberi, & Nguyen, 2009). The impact of financial barriers on health service use also appears to be lower in military populations as a result of the structure of the military health care system (e.g., Veterans Affairs; Drapalski, Milford, Goldberg, Brown, & Dixon, 2008; Fikretoglu et al., 2006). Accordingly, within a Canadian military context, personal enabling/impeding factors such as travel time, access to childcare, and social relationships may more readily impact access to health services than financially related factors (e.g., Andersen, 1995; Greene-Shortridge, Britt, & Andrew, 2007; Kouzis & Eaton, 1998).

Andersen (1968, 1995) suggests that need for care is a necessary determinant of service use. Need for care can be either perceived or evaluated. Perceived need for care refers to an individual's own view of their health status and their functionality, whereas evaluated need for care represents a professional judgment about an individual's health status and need. Both perceived and evaluated need for care are intrinsically linked to social structure; however, evaluated need for care is likely a better approximation of an individual's objective biological need (i.e., illness; Andersen, Kravits, & Andersen, 1975). Andersen (1995) suggests that perceived need for care is a better predictor of

initial care seeking behavior and evaluated need for care is more indicative of the type and frequency of help received following initiation of care.

Andersen (1968) hypothesizes that predisposing, enabling/impeding, and need factors weigh differentially on health services use depending on the type of care sought. Specifically, hospital inpatient services used when a severe health problem arises would be primarily explained by demographic and need characteristics; in contrast, more discretionary services (e.g., dental care) would be influenced by social structure, health beliefs, and enabling factors. Physician outpatient services would be explained by all components of the model, provided that they are typically employed for problems more severe than those requiring discretionary care, but not severe enough to necessitate inpatient hospital care (Andersen, 1995). Andersen does not directly comment on the use of professional mental health services in his model; however, epidemiological data suggest that professional mental health service use correlates with all three components of the model (Bland, Newman, & Orn, 1997).

Self-reported mental health symptoms and perceived need for care have been most closely associated with professional mental health service use in large representative civilian samples (e.g., Elhai & Ford, 2007; Katz et al., 1997); however, predisposing characteristics and enabling factors also appear to influence propensity to seek care. For example, younger age (e.g., Kessler, Olfson, & Berglund, 1998; Lewis et al., 2005), being a woman (e.g., Kessler, Chiu, Demler, & Walters, 2005; Wang et al., 2005), higher education (e.g., Lewis et al., 2005; Parslow & Jorm, 2000), being White (e.g., Kessler et al., 2005; Lewis et al., 2005; Wang et al., 2005), unemployment (Bland et al., 1997), and increased social support (Maulik, Eaton, & Bradshaw, 2011; Vasiliadis,

Tempier, Lesage, & Kates, 2009) have all been associated with increased professional mental health service use. Conversely, researchers have evidenced that low income (e.g., Wang et al., 2005), residing in rural areas (e.g., Wang et al., 2005), and negative attitudes and beliefs about mental health services (e.g., Sareen, Jagdeo, et al., 2007; Steele, Dewa, & Lee, 2007) can all impede access to care. Nevertheless, studies conducted on large civilian samples have yielded several mixed results regarding factors that may influence propensity to seek mental health care (e.g., age, education, marital status, income, social support; e.g. Alonso et al., 2004; Dhingra, Zack, Strine, Pearson, & Balluz, 2010; Elhai & Ford, 2007; Maulik, Eaton, & Bradshaw, 2009). The mixed results are perhaps due to methodological and cultural differences associated with different civilian samples or to differential relationships emerging depending on the type of care sought. Consequently, mental health care seeking behaviors may be better understood by applying Andersen's (1995) model to specific samples (e.g., CAF personnel) and specific types of professional mental health services (e.g., medical, psychological, social).

Fikretoglu and colleagues (2006) were the first to use Andersen's (1995) model to evaluate professional mental health care seeking behaviors in a large nationally representative sample of active duty CAF personnel with PTSD (i.e., CCHS-CF). Based on Fikretoglu and colleagues' (2006) final regression model, perceived need for care (i.e., interference from PTSD symptoms) was the most important predictor of professional mental health care seeking, followed by cumulative number of lifetime trauma exposures. Present or past engagement in a close relationship (i.e., being married/common-law or divorced/separated/widowed) and lower income also increased the likelihood of seeking professional mental health care, although to a lesser degree.

Sex and social support did not display a linear relationship with professional mental health care seeking behaviors; however, a classification and regression tree analysis demonstrated that women with high PTSD symptom interference were less likely to seek professional mental health care if they did not also present comorbid depressive symptoms. In similar analyses, low levels of social support appeared to facilitate professional mental health care seeking in individuals with low interference from PTSD symptoms (Fikretoglu et al., 2006).

A different team of researchers (Sareen, Cox, et al., 2007; Sareen et al., 2008; Sareen, Belik, Stein, & Asmundson, 2010) used data from the CCHS-CF to clarify the effect of combat and peacekeeping operations on professional mental health service use and perceived need for care. In one study, deployment to both combat and peacekeeping operations was associated with perceived need for care and professional mental health service use, but not exposure to combat alone or peacekeeping alone. Men tended to report a perceived need for information, medication, and skills training, whereas women were more likely to report a perceived need for information, counseling, and social services (Sareen et al., 2008). In a different study, deployment with exposure to combat and witnessing of atrocities was associated with a general increase in perceived need for care, and a perceived need for information and counseling more specifically. In contrast, deployment in the absence of exposure to combat and witnessing of atrocities was only associated with a perceived need for information (Sareen et al., 2010). Exposure to combat and the witnessing of atrocities was not consistently associated with increased professional mental health service use, despite associations with perceived need for care (Sareen, Cox, et al. 2007). The results suggest lack of trust in military health,

administration, or social services (i.e., health beliefs) is the most commonly reported barrier to seeking care, a result replicated by other researchers (Fikretoglu et al., 2008).

Fikretoglu and colleagues (2008) highlighted several predictors for past 12-month professional mental health service use based on the CCHS-CF. Being a woman, having a current or past close relationship (i.e., being married/common-law or divorced/separated/widowed), and lower military rank were all associated with increased likelihood of past 12-month professional mental health service use. In a follow up study, older age and unemployment were also identified as predisposing characteristics increasing the likelihood of professional mental health service use (Fikretoglu et al., 2009). Congruent with earlier military (e.g., Fikretoglu et al., 2006) and civilian studies (e.g., Elhai & Ford, 2007; Vasiliadis, Lesage, Adair & Boyer, 2005), lower self-perceived quality of health and self-reported symptoms consistent with a mental health disorder were the strongest predictors of professional mental health service use (Fikretoglu et al., 2008, Fikretoglu et al., 2009). Conversely, negative health beliefs, lack of time, and decreased availability of mental health resources were identified as significant barriers for seeking care (Fikretoglu et al., 2008).

1.2. Current Studies

Results from most studies conducted on large representative Canadian military samples to date are limited because data collection occurred prior to the Afghanistan mission. The CAF mental health system has been dramatically reformed since the 2002 CCHS-CF (Zamorski et al., 2016), with substantial efforts having been made to reduce stigmatization through novel prevention and treatment programs (e.g., Road to Mental Readiness, Operational Stress Injury Social Support Program [OSSIS]). The needs of

CAF personnel have also changed (e.g., continuously evolving deployment expectations; Pearson et al., 2014; Zamorski & Boulos, 2014) and there have been documented decreases in delays to mental health care (Boulos & Zamorski, 2016b). Consequently, facilitators and barriers to professional mental health care seeking may have evolved. Further, all factors relevant to professional mental health care seeking behaviors were not assessed in the CCHS-CF. For example, preference for self-management of problems (i.e., health beliefs) was endorsed by 64% of respondents as the main reason for not seeking professional mental health care in the 2008 Health and Lifestyle Information Survey; however, this was not assessed in the CCHS-CF (Zamorski, 2011).

Andersen and Newman (1973) highlight the importance of using the Behavioral Model of Health Services Use to identify “mutable” variables that allow for policy changes and subsequent behavioral changes. Enabling/impeding factors, such as social relationships and accessibility of care, are considered to be highly mutable. Similar to stigma and negative health attitudes and beliefs, perceived need for care may also be mutable when considering evidence that perceived need can be increased or decreased by social networks and programs focused on health education (Andersen, 1995). Minimal research is available on the impact of social support on perceived need for care and professional mental health services use in CAF personnel. There is also very little known about paraprofessional initiatives (e.g., OSSIS, Internet-based programs) that could help increase accessibility of care, as well as facilitate perceived need for care and subsequent use of professional mental health services. Accordingly, the overarching aims for the current studies were: 1) to examine the basic tenets of Andersen’s (1995) model using a large representative military sample surveyed at the end of the Afghanistan mission (i.e.,

CFMHS; Statistics Canada, 2014), with a particular emphasis being placed on social support as an enabling factor for care seeking behavior; and 2) to explore the current use of paraprofessional forms of care that could serve as adjuncts to professional mental health care services and a mean to increase access to care in CAF personnel.

Study 1 assessed CAF personnel's propensity to seek help from their social network (e.g., family, coworkers), and the impact of seeking such help on utilization of professional mental health services and perceived need for care, after controlling for Andersen's (1995) individual predictors of service utilization (i.e., predisposing, enabling/impeding, need). Study 2 examined patterns of use for the OSSIS military peer support program and individual predictors of use in accordance with Andersen's (1995) model. Study 3 examined estimates of Internet use for mental health related activities among CAF personnel. Individual predictors of Internet use, frequency of use, and specific reasons for Internet use (e.g., learn information about symptoms, find resources, discuss with others) were also examined, as well as the relationship between Internet use and professional mental health services use and perceived need for care. All three studies are presented below and have the potential to inform research and the development of initiatives aimed at increasing professional care seeking behaviors and access to mental health services in the CAF.

CHAPTER 2: Study 1

2.1. Introduction

A large body of literature indicates that positive social support is associated with better health outcomes (see Cohen, 2004 for review). Broadly, social support is conceptualized as the comfort and assistance an individual receives when coming into contact with others (Wallston, Alagna, DeVillis, & DeVillis, 1983). More specifically, research and theory suggests that an important distinction can be made between structural and perceived social support (see Albert, Becker, McCrone, & Thornicroft, 1998 for review; e.g., Maulik et al., 2011; Platt, Keyes, & Koenen, 2014). Structural social support (i.e., social network) typically refers to the objective qualities of an individual's social network (e.g., number of members, different types of supportive role filled by an individual's network); in contrast, perceived social support emphasizes an individual's perception of the support received or made available by their social network (e.g., Platt et al. 2014; Sripada, Bohnert, et al., 2015).

Both social networks and perceived social support have been associated with mental health status (e.g., Smyth, Siriwardhana, Hotopf, & Hatch, 2014). For example, studies conducted with community samples (e.g., Smyth et al., 2014), veterans (e.g. Hatch et al., 2013), and cancer survivors (e.g., Soares et al., 2013) evidenced that individuals with larger social networks have lower rates of mental health problems. Similarly, larger perceived availability of social support has been associated with improved mental health status in civilian samples (e.g., Fuller-Thomson, Battiston, Gadalla, & Brennenstuhl, 2014), military samples (e.g., Pietrzak et al., 2010; Shallcross et al., 2016; Therrien, Richer, Lee, Watkins, & Zamorski, 2016), and cancer survivors

(e.g., Soares et al., 2013). One explanation proffered for the previous relationships is the *stress-reduction function* (Cohen & Wills, 1985; Gourash, 1978; Maulik et al., 2011). The stress-reduction hypothesis posits that positive social support, especially perceived support (Maulik et al., 2011), influences an individual's subjective appraisal of daily stressors and life events (e.g., traumatic event) such that negative internal and external responses to stressors, including psychological distress, are reduced. Supporting the stress-reduction hypothesis, one large meta-analysis identified low (or negative) social support as one of the strongest predictors of PTSD (Brewin, Andrews, & Valentine, 2000) and several studies have recognized positive social support as a protective factor for PTSD (see Charuvastra & Cloitre, 2008 for review; e.g., King, King, Fairbank, Keane, & Adams, 1998; Platt, Lowe, Galea, Norris, & Koenen, 2016).

In addition to its protective function, positive social support may also facilitate the use of professional mental health services in individuals with a mental health need (i.e., *referral function*; Maulik et al., 2011). Referral may occur when members of a social network (e.g., friends, family member) identify mental health symptoms displayed by an individual and encourage that individual to seek professional mental health care. Additionally, members of a social network can provide guidance and assistance at the time of seeking professional care. A small body of literature is available for understanding the referral function by looking at the relationship between social support and professional mental health treatment seeking; however, results have been inconsistent. Perceived social support and, to a lesser degree social networks, was previously positively associated with professional mental health treatment seeking in civilian (e.g., Broadhead, Gehlbach, deGruy, & Kaplan, 1989; Maulik et al., 2009, 2011)

and military samples (e.g., Harpaz-Rotem, Rosenheck, Pietrzak, & Southwick, 2014; Sayer et al., 2009; Spont et al., 2014); however, civilian (e.g., Maulik et al., 2009, 2011) and military (e.g., Lehavot, Der-Martirosian, Simpson, Shpherd, & Washington, 2013; Sayer et al., 2009) studies have also shown the opposite relationship or found no association with mental health treatment seeking (e.g., Sripada, Bohnert, et al., 2015; Sripada, Pfeiffer, et al., 2015). The discrepancies found in the literature could be attributed to several factors; for example, differences in the assessment of social support (e.g., Fikretoglu et al., 2006; Haber, Cohen, Lucas, & Baltes, 2007; Maulik et al., 2009; Sripada, Bohnert, et al., 2015; Sripada, Pfeiffer, Rauch, & Bohnert, 2015), the type of professional service examined (Maulik et al., 2009, 2011), and the specific nature of social support available (e.g., military unit versus family support; Harpaz-Rotem et al., 2014). Within military samples, differences in combat deployment eras may also account for some discrepancies (e.g., Keane, Scott, Chavoya, Lamparski, & Fairbank, 1985; Vogt et al., 2011). Moreover, only a few studies have looked at population-based samples (Fikretoglu et al., 2006; Maulik et al., 2009, 2011; Sripada, Pfeiffer, et al., 2015).

Given important differences in the literature on social support and professional mental health service use, research conducted with CAF personnel specifically may be the most informative for understanding professional mental health care seeking patterns in Canadian military personnel. Only one such study has been published to date and the researchers employed a nationally representative military sample (Fikretoglu et al., 2006). In the study, perceived social support was assessed based on 24 questions in the 2002 CCHS-CF survey and was not associated with past 12 month professional mental health service use within a subsample of CAF personnel with PTSD. Fikretoglu and

colleagues' (2006) results are consistent with more recent studies conducted with US military samples (Sripada, Bohnert, et al., 2015; Sripada, Pfeiffer, et al., 2015), but there were several limitations. First, Fikretoglu and colleagues (2006) made no distinction between different sources of perceived support. Recent evidence suggests some sources of support may have a stronger impact on professional mental health care seeking behaviors than others (i.e., family, unit support; Harpaz-Rotem et al., 2014; Jennings, 2014). Second, Fikretoglu and colleagues (2006) limited their assessment of perceived social support to the availability of support and did not assess the practical access to that support. Assessing perceived availability of support as a proxy for social support is common (e.g., Maulik et al., 2009, 2011; Sripada, Bohnert, et al., 2015); however, individuals with mental health problems (e.g., PTSD) might perceive especially low levels of support from their social network as a result of the psychopathology (Guay, Billette, & Marchand, 2006; Jacupcak et al., 2010; Platt et al., 2016; Shallcross et al., 2016; Tsai, Harpaz-Rotem, Pietrzak, & Southwick, 2012). Based on past research and Andersen's (1995) model, actual receipt of support from one's social network may also be relevant to perceived need for care and subsequent professional mental health care seeking behaviors (Pescosolido, Gardner, & Lubell, 1998; Spont et al., 2014). Third, Fikretoglu and colleagues' (2006) sample was collected prior to the Afghanistan missions and limited to CAF members with a lifetime PTSD diagnosis based on any index trauma (e.g., combat exposure; childhood adversity), which raises questions about representativeness for the current CAF population (Keane et al., 1985; Vogt et al., 2011).

Study 1 was designed to expand on and address some of the limitations of Fikretoglu and colleagues' (2006) research. The study made use of a nationally

representative sample of CAF Regular Forces personnel (i.e., CFMHS; Statistics Canada, 2014) and had two main objectives. First, the study provided estimates of social support seeking from: 1) family members; 2) friends; 3) co-workers, supervisors, or boss; 4) clergy or spiritual advisers; and 5) OSISS Peer Support Coordinators. Second, the study examined the association of social support seeking with: 1) professional mental health service use; and 2) perceived need for care within the context of other predisposing (e.g., marital status), enabling/impeding (e.g., income), and need factors (e.g., meeting criteria for a disorder in the past 12 months) in accordance with Andersen's (1995) model. The current study had two primary hypotheses. First, seeking help for emotional and psychological difficulties from various sources of social support was expected to be associated with an increased likelihood of seeking professional mental health care or with identifying a perceived need for care. Second, congruent with Andersen's (1995) framework, individual predisposing, enabling/impeding, and need factors were expected to relate to professional mental health service use and perceived need for care. Based on previous research from the civilian and military literature (e.g., Elhai & Ford, 2007; Fikretoglu et al., 2008; Fikretoglu et al., 2009), the relationship was expected to be larger for need factors than predisposing or enabling/impeding factors.

2.2. Method

2.2.1. Participants and Procedure

Data was drawn from the 2013 CFMHS conducted by Statistics Canada (2014). The CFMSH is an epidemiological survey of mental health status and mental health needs of active CAF Regular members and Reservists. The target population for the CFMHS included all full-time Regular Force members. The CFMHS also included a

target population of Reservists who had been deployed in support of the mission in Afghanistan at least once prior to September 2012. Both target populations (i.e., Regular Force and Reservists) were stratified by rank and regular force members were also stratified based on deployment status. Rank was collapsed into three categories (i.e., Privates-Master Corporals, Sergeants-Chief Warrant Officers, Officers) and deployment included two categories (i.e., deployed in support of the mission in Afghanistan, not so deployed). Within each design stratum, the units were sorted based on first language, gender, CAF environment (i.e., land, air, sea), and CAF support base (i.e., location). The final sample was obtained using a systematic sampling scheme. After removing out of scope units, 8,393 Regular members and 1,867 Reservists were selected for interviews. Most interviews were conducted by trained Statistics Canada interviewers, in-person, and in private on-base rooms. Data collection took place between April 15, 2013 and August 31, 2013. A total of 6,700 Regular members (i.e., response rate 79.80%) and 1,500 Reservists (i.e., response rate 78.70%) completed the interviews (Statistics Canada, 2014). The sample of Reservists only included personnel who had been deployed in support of the mission to Afghanistan and is not considered nationally representative of the CAF Reservist population. To ensure the use of a nationally representative sample, only CAF Regular members were included in the current analyses.

2.2.2. Measures

An Expert Group of mental health professionals guided the development and content of the CFMHS. The content for the CFMHS is based on the 2002 CCHS-CF, the 2012 Canadian Community Health Survey (Cycle 5.2), and modules from the World

Health Organization World Mental Health Composite International Diagnostic Interview version 3.0 (CIDI; World Health Organization, 2004). The CIDI is a structured computer-assisted instrument used to generate diagnoses based on the definitions and criteria of the International Statistical Classification of Diseases, 10th Revision (ICD-10; World Health Organization, 1992) and the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; APA, 1994). The CIDI has demonstrated good reliability and validity with clinical-based DSM-IV diagnoses, including when administered by trained lay interviewers without clinical experience (Boyle et al., 1996; Kessler et al., 1997; Kessler & Ustun, 2004).

Enabling/impeding variable. In line with Andersen's (1995) model, a four-level categorical income variable (i.e., less than \$40,000, \$40,000-\$60,000, \$60,000-\$80,000, \$80,000 or more) was drawn from a socio-demographic section of the survey. Categorical classification was based on eight total household income range categories provided by Statistics Canada.

Past 12-month mental health need. Consistent with Andersen's (1995) framework, the CIDI diagnostic modules included in the CFMHS were used to assess past 12-month mental health need based on DSM-IV mental disorders. The CIDI diagnostic instrument includes screener questions designed to reduce response burden and identify general feelings and experiences typically associated with specific mental disorders. Participants completed the full section for major depressive disorder, panic disorder, and generalized anxiety disorder based on their initial responses to screener questions. The CIDI does not include screening questions for PTSD; accordingly, all CFMHS participants were asked questions from the CIDI PTSD module. All CFMHS

participants were also asked questions from the CIDI alcohol use, abuse, and dependence module.

The CIDI depression, panic disorder, and generalized anxiety disorder modules were used to assess past 12-month prevalence of major depressive disorder, panic disorder, and generalized anxiety disorder respectively. Each module required respondents to report on symptoms typically associated with each disorder. Initial analyses were conducted with three separate dichotomous variables produced by Statistics Canada (i.e., meeting WHO-CIDI criteria for major depressive disorder, panic disorder, generalized anxiety disorder). Panic disorder and generalized anxiety disorder symptoms presented similar patterns of association with professional service use and perceived need for care. Accordingly, for the current study, the two variables were combined into a new variable that represented past 12-month prevalence of anxiety disorder (Elhai & Ford, 2007) in an attempt to reduce Type I error. PTSD was classified as an anxiety disorder in DSM-IV (APA, 2000); however, PTSD was examined as a separate variable in the current study. The distinction was made for two primary reasons: 1) to reflect the classification of PTSD as a stressor-related disorder in the ICD-10 (World Health Organization, 1992) and in the most recent DSM-5 (APA, 2013) and because 2) unlike other anxiety disorders, the experience of a trauma is explicitly required for a PTSD diagnosis (APA, 2013).

The PTSD section included in the CFMHS was adapted for the CAF. Respondents were given a reference card with 28 potentially traumatic events and asked to identify which of these events they had experienced during their lifetime. The reference card was congruent with commonly used measures of trauma exposure (e.g.,

Traumatic Life Events Questionnaire; Kubany et al., 2000) and included items such as exposure to combat, peacekeeping, torture, life threatening motor vehicle accidents, sexual abuse, and child maltreatment (Statistics Canada, 2014). Affirmative responses were used to index cumulative lifetime trauma exposure. Respondents who reported multiple potentially traumatic events were asked to identify the event that produced the most psychological and physiological reactions for them (i.e., worst trauma). Respondents answered additional questions about their reactions to the worst trauma (i.e., Criterion A) and specific PTSD symptoms (i.e., re-experiencing, avoidance, numbing, hyperarousal), which served as the basis for a lifetime PTSD diagnosis. Respondents were subsequently asked to report on PTSD symptoms in the past 12 months specifically to determine PTSD status in the past year. A past 12-month PTSD variable was provided by Statistics Canada.

The alcohol use, abuse, and dependence section of the CFMHS was based on the CIDI and adapted for the CAF (Statistics Canada, 2014). Frequency and amount of alcohol consumption in the past 12 months was assessed for all respondents. Respondents were asked additional questions from the alcohol abuse set if they identified ever drinking at least 12 drinks in a year, in addition to drinking at least once per week or, if drinking less than once per week, drinking at least three drinks per occasion. Respondents were asked additional questions from the alcohol dependence set if they identified ever drinking at least 12 drinks in a year, in addition to drinking approximately four times per week or, if drinking less than four times per week, drinking at least five drinks per occasion. The higher threshold for screening into the alcohol dependence set in the CFMHS compared to the CIDI was based on analyses of the CCHS-MF pilot data

and expert advice (Statistics Canada, 2014). Alcohol abuse and alcohol dependence were mutually exclusive diagnoses and a three-level alcohol abuse or dependence variable was produced by Statistics Canada (i.e., alcohol dependence versus alcohol abuse versus no alcohol use disorder). All other mental health diagnosis related variables included in the current study were dichotomized (i.e., presence versus absence of symptoms consistent with a mental health diagnosis)¹.

Past 12-month perceived need for care. The perceived need for care section of the CFMHS is based on the Perceived Need for Care Questionnaire (Meadows, Harvey, Fossey, & Burgess, 2000), which has demonstrated good reliability and validity (Meadows, Burgess, Fossey, & Harvey, 2000; Meadows, Harvey, et al., 2000; Meadows et al., 2002). All respondents were asked if *Yes/No* they had received help or perceived a need for help “because of problems with [...] emotions, mental health or use of alcohol or drugs” in the past 12 months. Using a dichotomous *Yes/No* question, participants were subsequently asked to identify the kind of help they felt they needed in the past 12 months from the following list: 1) information about problems, treatments, or available services; 2) medication; and 3) counseling, therapy, or help for problems with personal relationships. There were three separate dichotomous variables (i.e., information, medication, counseling) produced by Statistics Canada and used to identify individuals with a perceived need for care in the past 12 months (i.e., received or perceived a need for help versus not).

Past 12-month professional mental health service use. All respondents were asked if *Yes/No*, “over the past 12 months, they had seen, or talked on the telephone

¹ Analyses were also conducted with severity of interference in functioning from mental health symptoms (i.e., Sheehan Disability Scale interference score) as the past 12-month mental health need variables and are available upon request; however, there were no differences in patterns of association.

[about problems with their emotions, mental health or use of alcohol or drugs]” to any of the following health professionals: 1) a psychiatrist; 2) a family doctor or general practitioner; 3) a psychologist; 4) a nurse, including a CF case manager; and 5) a social worker, counselor, or psychotherapist. Past 12-month professional mental health service use variables for contact (i.e., *Yes/No*) with each of the previous health care professionals were provided by Statistics Canada. Preliminary analyses for the current study did not reveal any major differences in patterns of association based on type of professional care provider; accordingly, a dichotomous professional mental health service use variable (i.e., contact with any care provider versus no contact) produced by Statistics Canada was used in an attempt to reduce Type I error².

Predisposing variables. Congruent with Andersen’s (1995) model, predisposing variables were drawn from socio-demographic related sections of the survey and included questions on age, sex, ethnicity, marital status, and education, as well as predisposing military related variables such as rank and element. Predisposing psychological variables based on deployment experiences (i.e., number of type of deployment traumas) and childhood experiences (i.e. childhood adversity) were also included in the analyses. The deployment experiences section was designed by the DND in collaboration with Statistics Canada (Statistics Canada, 2014) and represents a subset of the commonly used Combat Experiences Scale (Killgore et al., 2008). The childhood experiences section was adapted based on the Childhood Experiences of Violence Questionnaire (Walsh, MacMillan, Trocmé, Jamieson, & Boyle, 2008) used in the

² Analytical models were also run with the following combinations of outcome variables and are available upon request: 1) medical (i.e., family doctor or general practitioner, nurse) versus psychological (i.e., psychiatrist, psychologist) versus social (i.e., social worker, counselor, or psychotherapist); 2) specialized (i.e., psychiatrist, psychologist) versus non-specialized (family doctor or general practitioner, nurse, social worker, counselor, or psychotherapist); and 3) diagnosers (family doctor or general practitioner, psychiatrist, psychologist) versus non-diagnosers (i.e., nurse, social worker, counselor, or psychotherapist).

Ontario Mental Health Supplement (OHSUP; Ministry of Health, Premiers Council on Health, Wellbeing and Social Justice 1990) and the Ontario Child Health Study (OCHS; Statistics Canada, 2015). In accordance with previous studies conducted on CAF samples, predisposing variables were transformed into dichotomous (e.g., Caucasian/White versus ethnic minority) and categorical variables (e.g., junior non-commissioned officer [NCO], senior NCO, officer; Fikretoglu et al., 2009). In the current study, there were three dichotomous childhood adversity variables (i.e., physical abuse, sexual abuse, exposure to intimate partner violence) computed as *Yes/No* based on the Childhood Experiences of Violence Questionnaire guidelines and recent research conducted with the CFMHS (Afifi et al., 2016).

Past 12-month social support. In the mental health services section of the survey, all respondents were asked if *Yes/No*, “over the past 12 months, they had seen, or talked on the telephone [about problems with their emotions, mental health or use of alcohol or drugs]” to: 1) a religious or spiritual adviser such as a priest, padre, chaplain, or rabbi; 2) a family member; 3) a friend, other than a co-worker, supervisor, or boss; 4) a co-worker, supervisor, or boss; and 5) a Peer Support Coordinator from the OSISS program. Use of social support in the past 12 months was identified based on respondents reporting contact with individuals from each of the previous categories. Five dichotomous variables (i.e., contact versus no contact) were computed, one for each source of social support. Respondents who communicated about mental health problems with a religious or spiritual adviser, a family member, a friend, a co-worker or supervisor, or a Peer Support Coordinator from the OSISS program were asked how many times they did so in the past 12 months. Respondents were subsequently asked

about the perceived level of help received from each different type of social support (i.e., 1 “A lot” to 4 “Not at all”), whether or not the individuals they communicated with gave them advice about seeking professional care (e.g., “Did this friend give you any advice about whether you should or should not seek professional help for your problems?”) and, if so, whether they were advised to seek professional help. Specific questions about frequency of use and helpfulness of each type of social support were included in descriptive analyses.

2.2.3. Analyses

All analyses were conducted using Stata version 12 or higher (StataCorp LP, 2015). There were two estimation procedures used for all data analyses in the current study. First, the final survey weights created by Statistics Canada were applied to each CFMHS respondent as per the survey instructions. The final survey weights reflect adjustments for initial sampling, removal of out-of-scope units, and person nonresponse, and are used to ensure the representativeness of the data to the Canadian Forces target population (Statistics Canada, 2014). All proportions and regression analyses were based on the weighted sample to ensure accurate point estimates (e.g., odds ratios). Second, the logistic regression models were bootstrapped using the data files and programs provided by Statistics Canada. Replicated bootstrapping ensures accuracy of the variances produced (e.g., confidence intervals) by generating random samples with replacement from within the CFMHS sample and estimating variance based on the random sample estimates. In accordance with the CFMHS use requirement, a total of 500 random samples generated by Statistics Canada were used for the proposed study.

Descriptive statistics were computed for all variables of interest. Univariate logistic regressions were used to assess the relationship between predisposing, enabling/impeding, need, and social support variables, and the outcome variables (i.e., past 12-month professional mental health service use, past 12-month perceived need for information, medication, and counseling). Univariate logistic regressions served to identify independent variables to be included in the final multivariate logistic regression models. A total of four multivariate logistic regressions models were created to identify predictors of: 1) past 12-month professional mental health service use; and 2) each past 12-month perceived need for care variable (i.e., information, medication, counseling). All independent variables included in the multivariate models other than past 12-month social support served as covariates. In accordance with Andersen's (1995) model, variables were entered as follows: 1) socio-demographic and military predisposing variables; 2) psychological predisposing variables; 3) income; 4) past 12-month mental health need variables; and 5) past 12-month social support variables (i.e., family, friends, co-workers, supervisors, or boss, clergy or spiritual adviser, OSISS Peer Support Coordinator).

2.3. Results

2.3.1. Descriptive Statistics

Overall sample

Descriptive statistics for predisposing, enabling/impeding, and need variables in the overall sample of CAF Regular Force members are presented in Table 1a and 1b³.

³ Descriptive statistics for subsamples of individuals who reported past 12-month professional mental health service use or a past 12-month perceived need for care (i.e., information, medication, counseling) are available upon request.

Table 1a. *Predisposing (i.e., Socio-demographic, Military) and Enabling/Impeding Variable Estimates Within the Overall Sample*

Variable	Overall sample % (95% CI)
Age	
16-24 years old	13.29 (12.38-14.21)
25-34 years old	37.61 (36.45-38.78)
35-44 years old	27.73 (26.64-28.81)
45-60 years old	21.37 (20.47-22.25)
Sex	
Male	86.15 (85.29-86.99)
Female	13.85 (13.00-14.71)
Marital status	
Single	26.88 (25.81-27.97)
Married or common-law	65.57 (64.44-66.73)
Separated, divorced, or widowed	7.52 (6.88-8.17)
Ethnicity	
Caucasian/White	90.10 (89.28-90.94)
Minority	9.90 (9.06-10.72)
Education	
Some high school education	4.08 (3.57-4.60)
High school diploma	25.74 (24.61-26.85)
Some post-secondary education	8.87 (8.17-9.58)
Post-secondary graduation	61.31 (60.10-62.51)
Rank	
Junior NCO	55.03 (54.83-55.24)
Senior NCO	24.07 (23.85-24.31)
Officer	20.90 (20.79-20.99)
Element	
Army	53.14 (51.93-54.32)
Navy	17.20 (16.29-18.15)
Air Force	29.66 (28.55-30.75)
Income	
Less than \$40,000	3.57 (3.07-4.09)
\$40,000-\$60,000	9.41 (8.61-10.20)
\$60,000-\$80,000	22.67 (21.55-23.79)
\$80,000 and more	64.35 (63.18-65.51)

Note. CI = confidence interval; NCO = Non-Commissioned Officer. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

Table 1b. *Predisposing (i.e., Psychological) and Past 12-Month Mental Health Needs Variable Estimates Within the Overall Sample*

Variable	Overall sample % (95% CI)
Childhood experiences	
Physical abuse	
No	56.3 (54.93-57.65)
Yes	43.7 (42.35-45.07)
Sexual abuse	
No	92.42 (91.73-93.13)
Yes	7.58 (6.87-8.27)
Exposure to domestic violence	
No	89.66 (88.87-90.46)
Yes	10.34 (9.54-11.13)
Past 12-month MH need	
Anxiety disorder	
No	93.27 (92.61-93.92)
Yes	6.73 (6.08-7.40)
Major depressive disorder	
No	92.04 (91.37-92.74)
Yes	7.96 (7.26-8.63)
Posttraumatic stress disorder	
No	94.75 (94.14-95.36)
Yes	5.25 (4.64-5.86)
Alcohol use disorders	
No	95.51 (94.97-96.05)
Yes - alcohol abuse	2.52 (2.10-2.96)
Yes - alcohol dependence	1.96 (1.59-2.34)

Note. CI = confidence interval; MH = mental health. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

Most respondents were male, 34 years or younger, from white/Caucasian ethnic background, in a married or had a common-law relationship, in junior NCO ranks and in the Army, and reported a household income over \$80,000. Physical abuse in childhood was more commonly reported than childhood experiences of sexual abuse or exposure to intimate partner violence. Individuals who were deployed to Afghanistan since 2001 represented 45.12% (95% CI [44.78-45.46]) of the sample and the mean number of types of deployment trauma experiences was 1.62 ($SD = 1.98$). A total of 16.50% (95% CI [15.55-17.47]) of individuals reported symptoms consistent with a mental health disorder in the past 12 months. In order of prevalence, past 12-month major depressive disorder (7.96%), anxiety disorders (6.73%), PTSD (5.25%), alcohol abuse (2.52%), and alcohol dependence (1.96%) were endorsed.

Descriptive statistics on the prevalence of professional mental health service use and perceived need for care in the overall sample are presented in Table 1c. A total of 20.75% (95% CI [19.70-21.78]) of individuals reported using professional mental health services in the past 12 months. Additionally, 14.17% (95% CI [13.25-15.07]) reported a perceived need for information, 13.23% (95% CI [12.37-14.08]) a perceived need for medication, and 25.05% (95% CI [23.90-26.17]) a perceived need for counseling.

Social support

Overall, 25.50% (95% CI [24.39-26.61]) of individuals in the sample sought out any source of social support for mental health purposes in the past 12 months. Family members (19.25%) and friends other than co-workers, supervisors, or boss (14.61%) were most commonly sought out followed by co-workers, supervisors, or boss (10.42%), clergy or spiritual advisers (4.85%), and OSISS Peer Support Coordinators (1.21%). In

Table 1c. *Estimates for Past 12-Month Professional Mental Health Service Use by Provider and Past 12-Month Perceived Need for Care by Type Within the Overall Sample*

Variable	Overall sample % (95% CI)
Any professional MH service use	
No	79.25 (78.22-80.30)
Yes	20.75 (19.70-21.78)
General practitioner/family doctor	
No	90.11 (89.36-90.86)
Yes	9.89 (9.14-10.64)
Psychiatrist	
No	93.47 (92.83-94.11)
Yes	6.53 (5.89-7.17)
Psychologist	
No	92.10 (91.41-92.78)
Yes	7.90 (7.22-8.59)
Nurse or CF case manager	
No	94.34 (93.73-94.93)
Yes	5.66 (5.07-6.27)
Psychotherapist, counselor, social worker	
No	87.28 (86.39-88.16)
Yes	12.72 (11.84-13.61)
Any PN for care	
No	70.21 (69.04-71.40)
Yes	29.79 (28.60-30.96)
PN for information	
No	85.83 (84.93-86.75)
Yes	14.17 (13.25-15.07)
PN for medication	
No	86.77 (85.92-87.63)
Yes	13.23 (12.37-14.08)
PN for counseling or therapy	
No	74.95 (73.83-76.10)
Yes	25.05 (23.90-26.17)

Note. CI = confidence interval; MH = mental health; CF = Canadian Forces; PN = perceived need. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

the past 12 months, help seeking per respondent occurred an average of 109.58 times ($SD = 109.74$) from family members, 58.81 times ($SD = 73.37$) from friends other than co-workers, supervisors, or boss, 42.52 times ($SD = 59.75$) from co-workers, supervisors, or boss, 7.71 times ($SD = 10.96$) from clergy or spiritual advisers, and 9.08 times ($SD = 8.38$)⁴ from OSISS Peer Support Coordinators. Among participants who sought help from different sources of social support, participants reported receiving advice about “whether they should or should not seek professional help for [their] problems” from 42.14% (95% CI [39.18-45.22]) of family members, 30.28% (95% CI [27.04-33.36]) of friends other than co-workers, supervisors, or boss, 37.01% (95% CI [33.04-41.03]) of co-workers, supervisors, or boss, 34.83% (95% CI [28.75-40.96]) of clergy or spiritual advisers, and 56.41% (95% CI [46.64-69.26]) of OSISS Peer Support Coordinators. Within the subsample of individuals who were told “whether they should or should not seek professional help”, 91.89% (95% CI [89.77-94.66]) of family members, 90.71% (95% CI [86.72-94.41]) of friends other than co-workers, supervisors, or boss, 96.77% (95% CI [94.40-98.82]) of co-workers, supervisors, or boss, and 90.74% (95% CI [84.91-97.09]) of clergy or spiritual advisers reportedly advised to “seek professional help” specifically⁵. Additional statistics on the prevalence of social support seeking and perceived helpfulness of social support are presented in Tables 2a and 2b respectively.

⁴A high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

⁵To protect confidentiality, Statistics Canada prohibits release of proportions and cross-tabulations which, when unweighted, contain fewer than five participants in a cell. For the variable assessing specific advice to “[seek] professional help” from an OSISS Peer Support Coordinator, there was at least one such cell.

Table 2a. *Estimates for Past 12-Month Help Seeking by Type of Social Support Within the Overall Sample*

	Overall sample % (95% CI)
Clergy or spiritual adviser	
No	95.15 (94.58-95.72)
Yes	4.85 (4.28-5.42)
Family members	
No	80.75 (79.77-81.74)
Yes	19.25 (18.26-20.23)
Friends	
No	85.39 (84.48-86.29)
Yes	14.61 (13.71-15.52)
Co-workers, supervisors, or boss	
No	89.58 (88.78-90.37)
Yes	10.42 (9.63-11.22)
OSISS Peer Support Coordinator	
No	98.79 (98.50-99.08)
Yes	1.21 (1.00-1.50)

Note. CI = confidence interval; OSISS = Operational Stress Injury Social Support. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

Table 2b. *Estimates of Perceived Helpfulness of Social Support by Source of Social Support*

Perceived helpfulness	Clergy or spiritual adviser % (95% CI)	Family members % (95% CI)	Friends % (95% CI)	Co-workers, supervisors, or boss % (95% CI)	OSISS % (95% CI)
Not at all helpful	9.62 (6.27-13.45) ^a	2.10 (1.29-2.75) ^a	3.19 (2.03-4.53) ^a	11.94 (9.33-14.71)	20.51 (10.33-30.81) ^a
A little helpful	15.38 (10.99-19.49)	12.60 (10.61-14.75)	16.81 (14.13-19.39)	22.99 (19.71-26.47)	10.26 (4.30-18.33) ^a
Some helpful	30.13 (25.09-35.62)	27.46 (24.82-30.05)	35.74 (32.34-39.07)	33.43 (29.44-37.16)	28.21 (17.06-37.71) ^a
A lot helpful	44.23 (38.65-50.44)	57.84 (54.89-60.84)	44.26 (40.77-47.74)	31.64 (28.07-35.11)	41.03 (29.64-51.82)

Note. CI = confidence interval; OSISS = Operational Stress Injury Social Support. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aA high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

2.3.2. Logistic Regressions

Past 12-month professional mental health service use

Prevalence estimates and results for logistic regression analyses with any past 12-month professional mental health service use as the outcome variable are presented in Table 3. Age, sex, marital status, rank, element, number of types of deployment trauma experiences, exposure to childhood physical abuse, sexual abuse, or domestic violence, income, and meeting diagnostic criteria for a past 12-month anxiety disorder, major depressive disorder, PTSD, or alcohol-related disorder were statistically significantly related to past 12-month professional mental health service use in unadjusted models and included as covariates in the final adjusted model. Seeking social support from family members, friends, co-workers, supervisors, or boss, clergy or spiritual advisers, and OSISS Peer Support Coordinators was statistically significantly related to past 12-month professional mental health service use in the final adjusted model.

Past 12-month perceived need for care

Prevalence estimates and results for logistic regression analyses with past 12-month perceived need for information as the outcome variable are presented in Table 4a. Age, sex, marital status, rank, element, number of types of deployment trauma experiences, exposure to childhood physical abuse, sexual abuse, or domestic violence, income, meeting diagnostic criteria for a past 12-month anxiety disorder, major depressive disorder, PTSD, or alcohol-related disorder were statistically significantly related to past 12-month perceived need for information in unadjusted models and included as covariates in the final adjusted model. Seeking social support from family members, friends, co-workers, supervisors, or boss, clergy or spiritual advisers, and

Table 3. Oversample Sample Estimates and Unadjusted and Adjusted Associations Between Predisposing, Enabling/Impeding, Need, and Social Support Variables and Past 12-Month Professional Mental Health Service Use

Variable	% (95% CI) ^a	Past 12-month prof. MH Service Use			
		OR (95% CI)	<i>p</i>	AOR (95% CI)	<i>p</i>
<i>Predisposing (socio-demographic)</i>					
Age					
16-24 years old (ref.)	9.81 (7.60-12.21)	1.00		1.00	
25-34 years old	21.30 (19.46-23.18)	2.47 (1.87-3.26)	< .000	2.21 (1.49-3.26)	< .000
35-44 years old	25.64 (23.68-27.63)	3.14 (2.37-4.16)	< .000	2.79 (1.85-4.21)	< .000
45-60 years old	20.06 (18.12-22.02)	2.29 (1.70-3.08)	< .000	2.58 (1.67-4.00)	< .000
Sex					
Male (ref.)	18.82 (17.73-19.91)	1.00		1.00	
Female	32.74 (29.40-35.93)	2.09 (1.77-2.47)	< .000	1.85 (1.46-2.34)	< .000
Marital status					
Single (ref.)	17.57 (15.65-19.46)	1.00		1.00	
Married or common-law	20.14 (18.83-21.43)	1.18 (1.02-1.38)	0.03	0.94 (0.72-1.21)	0.62
Separated, divorced, or widowed	37.60 (33.11-41.76)	2.81 (2.23-3.54)	< .000	1.76 (1.24-2.52)	0.002
Ethnicity					
Caucasian/White (ref.)	20.76 (19.69-21.83)	1.00			
Minority	20.44 (17.09-24.01)	1.01 (0.81-1.26)	0.91		
Education					
Some high school education (ref.)	22.14 (16.69-26.97)	1.00			
High school diploma	19.95 (17.88-22.03)	0.89 (0.64-1.24)	0.50		
Some post-secondary education	21.05 (17.52-24.82)	0.96 (0.65-1.42)	0.84		
Post-secondary graduation	20.91 (19.51-22.28)	0.96 (0.69-1.30)	0.73		

Predisposing (military)

Rank

Junior NCO (ref.)	22.07 (20.52-23.64)	1.00		1.00	
Senior NCO	21.55 (19.74-23.45)	0.97 (0.84-1.12)	0.69	0.83 (0.66-1.04)	0.10
Officer	16.20 (14.49-17.93)	0.68 (0.58-0.80)	< .000	0.74 (0.59-0.92)	0.006

Element

Army (ref.)	22.09 (20.61-23.58)	1.00		1.00	
Navy	19.68 (17.25-21.93)	0.86 (0.72-1.03)	0.09	0.97 (0.75-1.23)	0.80
Air Force	18.95 (17.10-20.84)	0.83 (0.71-0.96)	0.01	1.01 (0.81-1.24)	0.96

Predisposing (psychological)

Deployment trauma experiences

Mean (SD)	2.15 (2.27)	1.15 (1.12-1.19)	< .000	1.05 (1.00-1.10)	0.03
-----------	-------------	------------------	--------	------------------	------

Childhood adversity

Physical abuse

No (ref.)	17.11 (15.87-18.37)	1.00		1.00	
Yes	25.46 (23.77-27.08)	1.65 (1.46-1.86)	< .000	1.01 (0.84-1.20)	0.94

Sexual abuse

No (ref.)	19.20 (18.12-20.29)	1.00		1.00	
Yes	38.68 (33.88-43.96)	2.68 (2.13-3.37)	< .000	1.53 (1.11-2.10)	0.01

Exposure to domestic violence

No (ref.)	19.56 (18.44-20.68)	1.00		1.00	
Yes	31.02 (27.02-34.74)	1.84 (1.50-2.25)	< .000	1.10 (0.82-1.46)	0.53

Enabling/Impeding

Income

Less than \$40,000 (ref.)	11.30 (6.72-15.57)	1.00		1.00	
\$40,000-\$60,000	21.78 (17.90-26.01)	2.24 (1.34-3.75)	0.002	1.06 (0.55-2.06)	0.86

\$60,000-\$80,000	24.93 (22.58-27.26)	2.65 (1.66-4.21)	< .000	1.08 (0.60-1.94)	0.79
\$80,000 and more	19.64 (18.39-20.85)	1.95 (1.22-3.11)	0.005	0.99 (0.55-1.81)	0.98

Past 12-month mental health need

Anxiety disorder					
No (ref.)	16.94 (15.88-18.02)	1.00		1.00	
Yes	74.53 (70.08-78.52)	14.17 (11.20-17.92)	< .000	3.59 (2.51-5.14)	< .000
Major depressive disorder					
No (ref.)	16.07 (15.05-17.06)	1.00		1.00	
Yes	74.61 (70.39-78.77)	15.34 (12.11-19.44)	< .000	4.89 (3.47-6.87)	< .000
Posttraumatic stress disorder					
No (ref.)	17.54 (16.53-18.57)	1.00		1.00	
Yes	73.65 (68.67-78.62)	13.12 (10.04-17.16)	< .000	2.59 (1.72-3.91)	< .000
Alcohol use disorder					
No (ref.)	19.80 (18.74-20.83)	1.00		1.00	
Yes - alcohol abuse	33.33 (24.08-41.30)	1.97 (1.31-2.95)	0.001	1.30 (0.73-2.31)	0.38
Yes - alcohol dependence	52.38 (43.25-61.87)	4.49 (3.07-6.57)	< .000	2.31 (1.23-4.35)	0.01

Past 12-month social support

Family members					
No (ref.)	12.17 (11.19-13.12)	1.00		1.00	
Yes	56.87 (54.01-59.74)	9.53 (8.23-11.04)	< .000	3.61 (2.84-4.57)	< .000
Friends					
No (ref.)	14.20 (13.17-15.20)	1.00		1.00	
Yes	59.15 (55.95-62.37)	8.76 (7.46-10.29)	< .000	1.59 (1.19-2.12)	0.002
Co-workers, supervisors, boss					
No (ref.)	15.10 (14.12-16.10)	1.00		1.00	
Yes	69.25 (65.80-72.87)	12.70 (10.54-15.31)	< .000	2.58 (1.90-3.51)	< .000

Clergy or spiritual advisers

No (ref.)	18.24 (17.21-19.27)	1.00		1.00	
Yes	70.51 (64.53-75.97)	10.59 (7.91-14.16)	< .000	2.69 (1.77-4.11)	< .000

OSISS Peer Support Coordinator

No (ref.)	19.86 (18.84-20.91)	1.00		1.00	
Yes	92.31 (87.00-98.97)	53.43 (18.43-154.95)	< .000	20.43 (5.67-73.71)	< .000

Note. SD = standard deviation; OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval; MH = mental health; NCO = Non-Commissioned Officer; OSISS = Operational Stress Injury Social Support; Ref. = reference group. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aIndicates the percentage of individuals who reported using professional mental health services in the past 12 months.

Table 4a. Oversample Sample Estimates and Unadjusted and Adjusted Associations Between Predisposing, Enabling/Impeding, Need, and Social Support Variables and Past 12-Month Perceived Need for Information

Variable	% (95% CI) ^a	Past 12-month PN Information			
		OR (95% CI)	<i>p</i>	AOR (95% CI)	<i>p</i>
<i>Predisposing (socio-demographic)</i>					
Age					
16-24 years old (ref.)	8.67 (6.32-10.88)	1.00		1.00	
25-34 years old	15.15 (13.54-16.73)	1.90 (1.39-2.59)	< .000	1.55 (1.02-2.35)	0.04
35-44 years old	17.25 (15.54-19.02)	2.22 (1.62-3.05)	< .000	1.76 (1.11-2.80)	0.02
45-60 years old	11.88 (10.22-13.55)	1.43 (1.03-2.00)	.03	1.42 (0.90-2.26)	0.13
Sex					
Male (ref.)	13.22 (12.28-14.15)	1.00		1.00	
Female	20.05 (17.10-23.02)	1.65 (1.35-2.01)	< .000	1.17 (0.90-1.52)	0.25
Marital status					
Single (ref.)	13.02 (11.27-14.89)	1.00		1.00	
Married or common-law	13.42 (12.35-14.50)	1.03 (0.86-1.23)	0.74	0.98 (0.74-1.29)	0.87
Separated, divorced, or widowed	24.58 (20.59-28.71)	2.17 (1.65-2.87)	< .000	1.41 (0.95-2.10)	0.09
Ethnicity					
Caucasian/White (ref.)	14.12 (13.19-15.06)	1.00			
Minority	14.51 (11.33-17.92)	0.96 (0.73-1.26)	0.77		
Education					
Some high school education (ref.)	15.27 (10.34-20.15)	1.00			
High school diploma	12.73 (11.11-14.44)	0.81 (0.55-1.20)	0.30		
Some post-secondary education	14.04 (10.75-17.19)	0.90 (0.56-1.46)	0.67		
Post-secondary graduation	14.66 (13.47-15.88)	0.96 (0.64-1.42)	0.73		

Predisposing (military)

Rank

Junior NCO (ref.)	15.35 (13.99-16.77)	1.00		1.00	
Senior NCO	13.77 (12.24-15.38)	0.88 (0.74-1.05)	0.15	0.85 (0.67-1.08)	0.18
Officer	11.36 (9.93-12.80)	0.71 (0.59-0.84)	< .000	0.90 (0.70-1.15)	0.39

Element

Army (ref.)	15.48 (14.20-16.75)	1.00		1.00	
Navy	13.77 (11.71-15.80)	0.87 (0.71-1.06)	0.17	1.00 (0.77-1.30)	0.98
Air Force	12.04 (10.47-13.61)	0.75 (0.63-0.89)	0.001	0.89 (0.70-1.12)	0.31

Predisposing (psychological)

Deployment trauma experiences

Mean (SD)	2.13 (2.27)	1.14 (1.10-1.17)	< .000	1.02 (0.97-1.07)	0.51
-----------	-------------	------------------	--------	------------------	------

Childhood adversity

Physical abuse

No (ref.)	11.78 (10.69-12.92)	1.00		1.00	
Yes	17.20 (15.79-18.65)	1.56 (1.35-1.79)	< .000	0.98 (0.81-1.19)	0.86

Sexual abuse

No (ref.)	13.11 (12.16-14.04)	1.00		1.00	
Yes	26.97 (22.48-31.80)	2.47 (1.91-3.20)	< .000	1.76 (1.28-2.42)	< .000

Exposure to domestic violence

No (ref.)	13.46 (12.50-14.41)	1.00		1.00	
Yes	20.24 (16.92-23.53)	1.63 (1.30-2.04)	< .000	0.94 (0.70-1.27)	0.68

Enabling/Impeding

Income

Less than \$40,000 (ref.)	6.96 (3.39-11.17) ^b	1.00		1.00	
\$40,000-\$60,000	16.89 (13.22-20.69)	2.60 (1.33-5.10)	0.005	1.30 (0.58-2.89)	0.52

\$60,000-\$80,000	16.99 (14.85-19.12)	2.61 (1.37-4.96)	0.004	1.29 (0.62-2.69)	0.50
\$80,000 and more	13.14 (12.04-14.25)	1.93 (1.03-3.62)	0.04	1.21 (0.58-2.51)	0.62

Past 12-month mental health need

Anxiety disorder					
No (ref.)	11.40 (10.48-12.32)	1.00		1.00	
Yes	54.59 (49.76-59.12)	9.29 (7.52-11.47)	< .000	2.05 (1.46-2.86)	< .000
Major depressive disorder					
No (ref.)	10.43 (9.60-11.29)	1.00		1.00	
Yes	58.00 (53.69-62.30)	11.84 (9.71-14.43)	< .000	3.58 (2.67-4.81)	< .000
Posttraumatic stress disorder					
No (ref.)	11.70 (10.84-12.56)	1.00		1.00	
Yes	56.71 (51.05-62.62)	9.94 (7.72-12.79)	< .000	2.23 (1.53-3.26)	< .000
Alcohol use disorder					
No	13.07 (12.18-13.94)	1.00		1.00	
Yes - alcohol abuse	26.25 (18.48-34.35)	2.39 (1.57-3.64)	0.001	1.48 (0.91-2.43)	0.12
Yes - alcohol dependence	53.23 (43.87-63.18)	7.67 (5.15-11.41)	< .000	4.10 (2.27-7.38)	< .000

Past 12-month social support

Family members					
No (ref.)	8.03 (7.23-8.85)	1.00		1.00	
Yes	40.03 (37.03-43.14)	7.65 (6.45-9.08)	< .000	2.61 (2.01-3.37)	< .000
Friends					
No (ref.)	9.02 (8.17-9.84)	1.00		1.00	
Yes	44.61 (41.21-48.07)	8.15 (6.82-9.74)	< .000	1.91 (1.45-2.52)	< .000
Co-workers, supervisors, boss					
No (ref.)	10.02 (9.18-10.85)	1.00		1.00	
Yes	50.30 (46.24-54.26)	9.07 (7.55-10.90)	< .000	2.03 (1.52-2.71)	< .000

Clergy or spiritual advisers

No (ref.)	12.23 (11.35-13.11)	1.00		1.00	
Yes	52.60 (46.26-59.03)	7.98 (6.08-10.46)	< .000	1.91 (1.27-2.88)	0.002

OSISS Peer Support Coordinator

No (ref.)	13.39 (12.49-14.28)	1.00		1.00	
Yes	81.08 (71.71-90.40)	27.69 (13.98-54.84)	< .000	7.22 (2.82-18.44)	< .000

Note. SD = standard deviation; OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval; PN = perceived need; NCO = Non-Commissioned Officer; OSISS = Operational Stress Injury Social Support; Ref. = reference group. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aIndicates the percentage of individuals who reported a perceived need for information in the past 12 months.

^bA high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

OSISS Peer Support Coordinators was statistically significantly related to past 12-month perceived need for information in the final adjusted model.

Prevalence estimates and results for logistic regression analyses with past 12-month perceived need for medication as the outcome variable are presented in Table 4b. Age, sex, marital status, ethnicity, rank, element, number of types of deployment trauma experiences, exposure to childhood physical abuse, sexual abuse, or domestic violence, income, and meeting diagnostic criteria for a past 12-month anxiety disorder, major depressive disorder, PTSD, or alcohol-related disorder were statistically significantly related to past 12-month perceived need for medication in unadjusted models and included as covariates in the final adjusted model. Seeking social support from family members or OSISS Peer Support Coordinators was statistically significantly related to past 12-month perceived need for medication in the final adjusted model. Seeking social support from friends, co-workers, supervisors, or boss, and clergy or spiritual advisers was not statistically significant in the final adjusted model.

Prevalence estimates and results for logistic regression analyses with past 12-month perceived need for counseling as the outcome variable are presented in Table 4c. Age, sex, marital status, rank, element, number of types of deployment trauma experiences, exposure to childhood physical abuse, sexual abuse, or domestic violence, income, and meeting diagnostic criteria for a past 12-month anxiety disorder, major depressive disorder, PTSD, or alcohol-related disorder were statistically significantly related to past 12-month perceived need for counseling in unadjusted models and included as covariates in the final adjusted model. Seeking social support from family members, friends, co-workers, supervisors, or boss, and clergy or spiritual advisers was

Table 4b. *Oversample Sample Estimates and Unadjusted and Adjusted Associations Between Predisposing, Enabling/Impeding, Need, and Social Support Variables and Past 12-Month Perceived Need for Medication*

Variable	% (95% CI) ^a	Past 12-month PN Medication			
		OR (95% CI)	<i>p</i>	AOR (95% CI)	<i>p</i>
<i>Predisposing (socio-demographic)</i>					
Age					
16-24 years old (ref.)	5.87 (3.95-7.94) ^b	1.00		1.00	
25-34 years old	13.14 (11.59-14.63)	2.39 (1.60-3.56)	< .000	1.84 (1.15-2.93)	0.01
35-44 years old	16.37 (14.69-18.11)	3.10 (2.09-4.60)	< .000	2.30 (1.42-3.70)	0.001
45-60 years old	13.76 (11.99-15.67)	2.54 (1.72-3.75)	< .000	2.58 (1.60-4.16)	< .000
Sex					
Male (ref.)	11.85 (10.99-12.72)	1.00		1.00	
Female	21.85 (18.65-24.82)	2.07 (1.69-2.53)	< .000	1.80 (1.36-2.39)	< .000
Marital status					
Single (ref.)	11.02 (9.49-12.66)	1.00		1.00	
Married or common-law	12.95 (11.90-13.95)	1.19 (0.99-1.43)	0.06	1.00 (0.76-1.32)	0.98
Separated, divorced, or widowed	23.43 (19.42-27.64)	2.47 (1.85-3.31)	< .000	1.32 (0.86-2.01)	0.21
Ethnicity					
Caucasian/White (ref.)	13.60 (12.69-14.53)	1.00		1.00	
Minority	9.78 (7.24-12.19)	1.46 (1.09-1.97)	0.01	1.83 (1.19-2.80)	0.01
Education					
Some high school education (ref.)	14.50 (9.97-19.53)	1.00			
High school diploma	13.33 (11.56-14.98)	0.88 (0.59-1.34)	0.56		
Some post-secondary education	12.68 (9.81-15.80)	0.85 (0.53-1.36)	0.50		
Post-secondary graduation	13.17 (12.04-14.27)	0.88 (0.59-1.30)	0.51		

Predisposing (military)

Rank

Junior NCO (ref.)	14.16 (12.83-15.49)	1.00		1.00	
Senior NCO	14.69 (13.08-16.25)	1.04 (0.88-1.23)	0.64	0.87 (0.68-1.12)	0.28
Officer	9.10 (7.74-10.43)	0.61 (0.49-0.74)	< .000	0.70 (0.53-0.92)	0.01

Element

Army (ref.)	14.37 (13.14-15.58)	1.00		1.00	
Navy	13.43 (11.36-15.56)	0.93 (0.75-1.14)	0.48	1.24 (0.93-1.66)	0.14
Air Force	11.08 (9.50-12.57)	0.74 (0.61-0.90)	0.002	0.92 (0.71-1.18)	0.49

Predisposing (psychological)

Deployment trauma experiences

Mean (SD)	2.30 (2.32)	1.18(1.14-1.22)	< .000	1.03 (0.98-1.09)	0.24
-----------	-------------	-----------------	--------	------------------	------

Childhood adversity

Physical abuse

No (ref.)	10.22 (9.23-11.22)	1.00		1.00	
Yes	17.13 (15.62-18.58)	1.81 (1.56-2.10)	< .000	1.18 (0.96-1.45)	0.11

Sexual abuse

No (ref.)	12.05 (11.19-12.89)	1.00		1.00	
Yes	27.39 (22.80-31.83)	2.75 (2.15-3.50)	< .000	1.62 (1.16-2.25)	0.01

Exposure to domestic violence

No (ref.)	12.14 (11.27-12.97)	1.00		1.00	
Yes	22.66 (19.38-26.12)	2.14 (1.74-2.62)	< .000	1.30 (0.97-1.74)	0.08

Enabling/Impeding

Income

Less than \$40,000 (ref.)	5.22 (1.65-8.97) ^c	1.00		1.00	
\$40,000-\$60,000	13.62 (10.33-17.03)	2.82 (1.16-6.90)	0.02	1.21 (0.43-3.41)	0.72

\$60,000-\$80,000	17.52 (15.37-19.69)	3.79 (1.55-9.27)	0.004	1.83 (0.67-5.03)	0.24
\$80,000 and more	12.07 (11.08-13.09)	2.45 (1.02-5.88)	0.05	1.26 (0.46-3.42)	0.65

Past 12-month mental health need

Anxiety disorder					
No (ref.)	10.10 (9.31-10.88)	1.00		1.00	
Yes	58.65 (53.66-63.76)	12.67 (10.13-15.85)	< .000	2.69 (1.95-3.71)	< .000
Major depressive disorder					
No (ref.)	9.38 (8.61-10.17)	1.00		1.00	
Yes	58.00 (53.61-62.90)	13.46 (10.84-16.71)	< .000	4.20 (3.13-5.64)	< .000
Posttraumatic stress disorder					
No (ref.)	10.40 (9.60-11.19)	1.00		1.00	
Yes	62.20 (56.50-67.93)	14.20 (10.97-18.37)	< .000	3.12 (2.13-4.55)	< .000
Alcohol use disorder					
No	12.32 (11.47-13.15)	1.00		1.00	
Yes - alcohol abuse	26.25 (17.51-33.73)	2.45 (1.58-3.80)	< .000	1.73 (1.01-2.96)	0.04
Yes - alcohol dependence	42.62 (33.23-51.89)	5.28 (3.57-7.81)	< .000	3.05 (1.68-5.54)	< .000

Past 12-month social support

Family members					
No (ref.)	7.83 (7.07-8.59)	1.00		1.00	
Yes	36.17 (33.28-38.93)	6.65 (5.65-7.83)	< .000	3.01 (2.28-3.98)	< .000
Friends					
No (ref.)	9.17 (8.41-9.95)	1.00		1.00	
Yes	36.99 (33.79-40.32)	5.83 (4.92-6.89)	< .000	1.21 (0.90-1.62)	0.21
Co-workers, supervisors, boss					
No (ref.)	10.02 (9.25-10.84)	1.00		1.00	
Yes	40.91 (36.91-44.98)	6.21 (5.13-7.53)	< .000	1.36 (0.98-1.89)	0.07

Clergy or spiritual advisers

No (ref.)	11.77 (10.93-12.58)	1.00		1.00	
Yes	42.48 (36.24-48.76)	5.55 (4.23-7.28)	< .000	1.42 (0.94-2.15)	0.10

OSISS Peer Support Coordinator

No (ref.)	12.32 (11.51-13.15)	1.00		1.00	
Yes	86.84 (81.13-95.92)	54.83 (22.42-134.12)	< .000	20.19 (5.81-70.20)	< .000

Note. Ref. = Reference group for odds ratios; SD = standard deviation; OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval; PN = perceived need; NCO = Non-Commissioned Officer; OSISS = Operational Stress Injury Social Support; Ref. = reference group. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aIndicates the percentage of individuals who reported a perceived need for medication in the past 12 months.

^bA high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

^cThe estimate does not meet Statistics Canada quality standards. Conclusions based on this data will be unreliable and most likely invalid.

Table 4c. Oversample Sample Estimates and Unadjusted and Adjusted Associations Between Predisposing, Enabling/Impeding, Need, and Social Support Variables and Past 12-Month Perceived Need for Counseling

	% (95% CI) ^a	Past 12-month PN Counseling			
		OR (95% CI)	<i>p</i>	AOR (95% CI)	<i>p</i>
<i>Predisposing (socio-demographic)</i>					
Age					
16-24 years old (ref.)	12.21 (9.72-14.83)	1.00		1.00	
25-34 years old	26.68 (24.65-28.66)	2.60 (2.01-3.36)	< .000	2.54 (1.78-3.63)	< .000
35-44 years old	31.49 (29.25-33.65)	3.28 (2.54-4.23)	< .000	3.27 (2.25-4.74)	< .000
45-60 years old	21.82 (19.78-23.82)	1.99 (1.52-2.61)	< .000	2.28 (1.53-3.40)	< .000
Sex					
Male (ref.)	22.95 (21.78-24.09)	1.00		1.00	
Female	38.06 (34.43-41.67)	2.06 (1.75-2.44)	< .000	1.72 (1.37-2.17)	< .000
Marital status					
Single (ref.)	21.65 (19.48-23.70)	1.00		1.00	
Married or common-law	24.08 (22.68-25.50)	1.15 (1.00-1.33)	0.06	0.95 (0.75-1.21)	0.67
Separated, divorced, or widowed	45.83 (41.32-50.35)	3.07 (2.46-3.83)	< .000	2.29 (1.66-3.17)	< .000
Ethnicity					
Caucasian/White (ref.)	24.75 (23.57-25.94)	1.00			
Minority	27.53 (23.83-31.24)	0.87 (0.71-1.05)	0.15		
Education					
Some high school education (ref.)	24.43 (18.81-29.74)	1.00			
High school diploma	25.09 (22.76-27.34)	1.04 (0.76-1.44)	0.80		
Some post-secondary education	26.06 (22.04-29.91)	1.09 (0.75-1.60)	0.64		
Post-secondary graduation	24.89 (23.37-26.40)	1.03 (0.75-1.42)	0.84		

Predisposing (military)

Rank

Junior NCO (ref.)	27.06 (25.34-28.75)	1.00		1.00	
Senior NCO	24.55 (22.67-26.47)	0.88 (0.77-1.01)	0.06	0.75 (0.61-0.92)	.01
Officer	20.33 (18.37-22.15)	0.69 (0.59-0.79)	< .000	0.74 (0.61-0.91)	.004

Element

Army (ref.)	26.57 (25.00-28.16)	1.00		1.00	
Navy	23.96 (21.50-26.55)	0.87 (0.74-1.03)	0.11	0.98 (0.78-1.23)	0.84
Air Force	22.83 (20.85-24.81)	0.82 (0.71-0.94)	0.003	0.99 (0.82-1.19)	0.91

Predisposing (psychological)

Deployment trauma experiences

Centered Mean	2.08 (2.23)	1.14 (1.11-1.17)	< .000	1.05 (1.00-1.09)	0.03
---------------	-------------	------------------	--------	------------------	------

Childhood adversity

Physical abuse

No (ref.)	20.18 (18.84-21.50)	1.00		1.00	
Yes	31.28 (29.49-33.05)	1.80 (1.61-2.01)	< .000	1.15 (0.98-1.35)	0.09

Sexual abuse

No (ref.)	23.25 (22.06-24.41)	1.00		1.00	
Yes	45.64 (40.73-50.69)	2.78 (2.24-3.45)	< .000	1.65 (1.23-2.20)	0.001

Exposure to domestic violence

No (ref.)	23.38 (22.19-24.57)	1.00		1.00	
Yes	39.09 (35.01-42.94)	2.09 (1.75-2.51)	< .000	1.26 (0.97-1.64)	0.09

Enabling/Impeding

Income

Less than \$40,000 (ref.)	15.65 (10.17-20.99) ^b	1.00		1.00	
\$40,000-\$60,000	25.58 (21.56-29.94)	1.88 (1.17-3.01)	0.01	0.88 (0.48-1.60)	0.67

\$60,000-\$80,000	29.46 (26.91-32.02)	2.26 (1.47-3.48)	< .000	0.91 (0.53-1.57)	0.74
\$80,000 and more	23.90 (22.54-25.26)	1.70 (1.11-2.60)	0.01	0.94 (0.54-1.63)	0.93

Past 12-month mental health need

Anxiety disorder					
No (ref.)	21.10 (19.94-22.28)	1.00		1.00	
Yes	82.13 (78.83-85.68)	17.33 (13.51-22.22)	< .000	4.68 (3.25-6.74)	< .000
Major depressive disorder					
No (ref.)	20.27 (19.15-21.40)	1.00		1.00	
Yes	80.40 (76.80-84.40)	16.34 (12.60-21.20)	< .000	4.96 (3.48-7.08)	< .000
Posttraumatic stress disorder					
No (ref.)	21.65 (20.54-22.78)	1.00		1.00	
Yes	81.10 (77.48-85.75)	16.05 (12.09-21.32)	< .000	3.63 (2.41-5.47)	< .000
Alcohol use disorder					
No (ref.)	23.76 (22.63-24.88)	1.00		1.00	
Yes - alcohol abuse	43.75 (35.20-52.93)	2.53 (1.75-3.65)	< .000	2.05 (1.23-3.42)	0.01
Yes - alcohol dependence	65.57 (56.17-74.87)	6.10 (3.98-9.35)	< .000	3.69 (1.93-7.04)	< .000

Past 12-month social support

Family members					
No (ref.)	15.95 (14.87-17.02)	1.00		1.00	
Yes	63.40 (60.50-66.32)	9.14 (7.87-10.60)	< .000	3.21 (2.54-4.06)	< .000
Friends					
No (ref.)	17.91 (16.82-18.99)	1.00		1.00	
Yes	66.88 (63.60-70.07)	9.24 (7.84-10.88)	< .000	1.97 (1.51-2.57)	< .000
Co-workers, supervisors, boss					
No (ref.)	19.20 (18.14-20.28)	1.00		1.00	
Yes	75.23 (71.87-78.76)	12.83 (10.51-15.66)	< .000	2.64 (1.97-3.55)	< .000

Clergy or spiritual advisers

No (ref.)	22.48 (21.38-23.60)	1.00		1.00	
Yes	75.32 (69.34-80.66)	10.34 (7.57-14.13)	< .000	2.46 (1.58-3.83)	< .000

OSISS Peer Support Coordinator

No (ref.)	NR	NR	-	NI	-
Yes	NR	NR		NI	

Note. OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval; PN = perceived need; NCO = Non-Commissioned Officer; OSISS = Operational Stress Injury Social Support; Ref. = reference group; NR = not released to protect confidentiality of respondents as per Statistics Canada data release policies; NI = not included in analyses due to sample size restrictions. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aIndicates the percentage of individuals who reported a perceived need for counseling in the past 12 months.

^bA high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

statistically significantly related to past 12-month perceived need for counseling in the final adjusted model⁶.

2.4. Discussion

The current study was completed using a nationally representative sample of CAF Regular Force members surveyed approximately a decade after the beginning of Canada's Afghanistan missions. The study had two main objectives: 1) to provide estimates of social support seeking from family members, friends, co-workers or supervisors, clergy or spiritual advisers, and OSISS Peer Support Coordinators; and 2) to examine the relationship between social support seeking and professional mental health service use and perceived need for care within the context of other predisposing, enabling, and need variables in accordance with Andersen's (1995) model. Congruent with the first hypothesis, social support seeking was associated with increased professional mental health service use and perceived need for care. Congruent with the second hypothesis, several predisposing and need factors were associated with professional mental health service use and perceived for care, and need factors had the strongest association. Comprehensive results, limitations, and implications are presented below.

2.4.1. Past 12-Month Social Support

Prevalence of social support seeking varied depending on the source of social support sought out. In the current study, only 1.21% of individuals reported seeking help from an OSISS Peer Support Coordinator and 4.85% from clergy or spiritual advisers.

⁶ To protect confidentiality, Statistics Canada prohibits release of cross-tabulations and covariance matrices which, when unweighted, contain fewer than five participants in a cell. For seeking care from an OSISS Peer Support Coordinator, there was at least one such cell when analyses were conducted with past 12-month perceived need for counseling as the outcome variable. Accordingly, seeking care from an OSISS Peer Support Coordinator was not included in the model.

Comparatively, 10.42%, 14.61%, and 19.25% of individuals sought help from co-workers or supervisors, friends, and family members, respectively. The mean frequency of help seeking also differed based on the source of social support. Frequency of help seeking was highest for family members and lowest for the OSISS peer support program and clergy or spiritual advisers. Most individuals who sought help reported the help was beneficial and family members were primarily rated as very helpful.

There is a paucity of research examining social support seeking in military personnel; however, several postulates may help explain differences in social help seeking patterns in the current sample. First, challenges related to living with a family member with an operational stress injury have been well documented in the literature (e.g., see Dekel & Monson, 2010 for review; Possemato, Pratt, Barrie, & Ouimette, 2015; Zerach, Solomon, Horesh, & Ein-Dor, 2013). Respondents in the current sample who were experiencing mental health symptoms may have sought help from family members in an attempt to acknowledge and minimize the familial impact of their symptoms. Second, military service and deployments appear to impact family systems (e.g., see Blaisure, Saathoff-Wells, Pereira, Wadsworth, & Dombro, 2012; McFarlane, 2009 for reviews). Other sources of social support are less likely to be impacted by military service and deployments in the absence of mental health difficulties. Individuals who did not report symptoms consistent with a mental health diagnosis may have elected to seek help from family members to minimize military-related disturbances in the family unit, but might have been less inclined to seek help from other sources of social support such as OSISS Peer Support Coordinators or co-workers and supervisors. Third, stigma was not assessed in the current study; however, perceived or anticipated mental

health stigma may have reduced an individual's propensity to seek help (e.g., Clement et al., 2015; Gould et al., 2010). Despite evidence of higher prevalence of mental health stigma in military compared to civilian populations with mental health symptoms (Weeks et al., 2017), stigma does not appear to necessarily impede professional mental health care-seeking behaviours in military populations (Sharp et al., 2015; Sudom et al., 2012). Stigma may, nonetheless, interfere with disclosure of psychological and emotional difficulties to individuals outside the family unit, especially during earlier stages of help seeking (Blais, Renshaw, & Jakupcak, 2014).

An additional explanation for differences in social help seeking patterns may be that the process required to receive help from the OSISS peer support program (i.e., emailing or phoning the Peer Support Coordinator for the region) made OSISS comparatively less readily accessible than other sources of social support (Canadian Forces Morale and Welfare Services [CFMWS], 2017). Initial challenges associated with funding and staffing for OSISS have resulted in reduced availability of services in certain geographical locations (e.g., DND & Veterans Affairs, 2005). Structural barriers associated with accessing OSISS Peer Support coordinators may have reduced motivation to seek help from the program (Hom, Stanley, Schneider, & Joiner Jr., 2017).

2.4.2. Association Between Social Support, Professional Mental Health Service Use, and Perceived Need for Care

Congruent with the first hypothesis, seeking help from one's social network was related to increased likelihood of professional mental health service use and perceived need for care, even after adjusting for covariates. The results are congruent with several studies from the civilian (Broadhead et al., 1989; Maulik et al., 2009, 2011) and military

(Harpaz-Rotem, Rosenheck, Pietrzak, & Southwick, 2014; Sayer et al., 2009; Spont et al., 2014) literature suggesting that social support is positively related to mental health care-seeking behaviours; however, the current study results are incongruent with previous research which failed to demonstrate a significant association between social support and professional mental health service use in a CAF sample (Fikretoglu et al., 2006). The divergent results may primarily reflect differences in study methods (i.e., examination of seeking social support versus perceived social support) and exclusion of military personnel without PTSD from the earlier study. Evidence that many individuals who sought help from their social network were advised whether or not they should seek professional help aligns with theory suggesting that social networks can serve a referral function in addition to facilitating stress reduction (Maulik et al., 2011).

Despite the low prevalence of OSISS use, seeking help from OSISS demonstrated the strongest association with professional mental health service use and perceived need for care. Most people who reported seeking help from OSISS indicated that they received a comment about whether they should or should not seek professional care. The result is congruent with theory underlying the development of peer support programs (Grenier, Darte, Hebert, & Richardson, 2007; Jain et al., 2013). The result is also congruent with evidence from military samples (Borah et al., 2015; Grenier et al., 2007; Hundt, Robinson, Arney, Stanley, & Cully, 2015; Jain et al., 2013; Murphy, Hunt, Luzon, & Greenberg, 2014; Zinzow et al., 2013) suggesting that peer support workers may benefit from increased credibility when commenting on mental health status and utilization of professional mental health services.

Seeking help from family members or the OSISS program was positively related to a perceived need for medication; however, seeking help from friends, coworkers or supervisors, and clergy or spiritual advisers had no significant association. There is limited military data available to explain the difference in patterns of association; but, hypotheses can be put forth based on the broader care-seeking literature. First, education interventions have been identified as one of the most effective facilitators of pharmacological treatment adherence in individuals with psychiatric disorders (see Leclerc, Mansur, & Brietzke, 2013; Osterbeg & Blaschke, 2005). Increases in perceived need for medication have been proposed to mediate the relationship between psychoeducation and treatment adherence (Zwicker, van Dulmen, den Broeder, van den Bemt, & van den Ende, 2014). Given that individuals providing social support typically have limited medical knowledge, an individual's social network would be unlikely to deliver psychoeducation and, therefore, also be less likely to increase perceived need for medication. Second, trust in one's medical care provider appears to have a significant impact on perceived need for medication and pharmacological treatment adherence (Rosser, McCracken, Velleman, Boichat, & Eccleston, 2011; Schousboe et al., 2011). Trust in medical care providers may be even more critical for military personnel subject to various pharmacological restrictions as a result of their occupational duties (Hom et al., 2017). Accordingly, within military populations, seeking help from professional healthcare providers might be more relevant to perceived need for medication than seeking help from one's social network. Third, perceived need for medication has been linked to beliefs about mental health status (Clatworthy, Bowskill, Rank, Parham, & Horne, 2007; Petrie, Broadbent & Kydd, 2009). The shared military experiences of

OSISS Peer Support Coordinators and the close proximity of family members may lead to increased credibility of the help providers. Help providers with increased credibility may more readily facilitate changes in mental health beliefs and, indirectly, beliefs in the need for psychopharmacological treatment. Irrespective of the reasons for the differences in patterns of association across sources of social support and perceived need for medication, the current study does support a valuable relationship between social support and both professional mental health service use and perceived need for care.

2.4.3. Associations Between Predisposing, Enabling/Impeding, and Need Variables and Professional Mental Health Service Use and Perceived Need for Care

In addition to seeking help from social networks, several predisposing and need variables were significantly associated with professional mental health service use and perceived need for care in the current sample. The results align with Andersen's (1995) model and support the view that health care-seeking behaviours are best explained by a complex system of variables. Congruent with the second hypothesis, professional mental health service use and perceived need for care were more robustly and consistently associated with mental health need than predisposing and enabling/impeding factors. The result is consistent with previous research (e.g., Elhai & Ford, 2007; Fikretoglu et al., 2008; Fikretoglu et al., 2009; Katz et al., 1997) and highlights the importance of mental health symptoms and perceived interference from such symptoms for health care-seeking behaviours.

The significant associations identified for the predisposing variables of age, sex, marital status (i.e., being separated, divorced, or widowed in comparison to being single), deployment trauma experiences, and exposure to childhood sexual abuse were

consistent with previous military research (e.g., Fikretoglu et al., 2006; Fikretoglu et al., 2008; Sareen et al., 2008; Sareen et al., 2010; Sareen et al., 2013). In contrast, the absence of a significant association between professional mental health service use, or perceived need for care, and being in a married or common-law relationship was unexpected (e.g., Fikretoglu et al., 2006; Fikretoglu et al., 2008; Maulik et al., 2011; McKibben et al., 2013). One possible explanation is that seeking help from family members accounted for most of the effect of being in a relationship (Therrien et al., 2016). Being in a relationship may also positively impact mental health status and limit the need for care (Brewin et al., 2000; Therrien et al., 2016; Watkins, Lee, & Zamorski, manuscript revised and resubmitted for publication).

The predisposing variables of ethnicity, education, element, and the enabling/impeding variable of income were either inconsistently or not significantly associated with professional mental health service use and perceived need for care. The result supports claims of a universal Canadian military health care system minimizing inequities in access (DND, 2013; Lewis, 2015). There was, however, a significant association with rank status. Specifically, officers were less likely to seek professional mental health services or to identify a perceived need for care than junior NCOs, a difference not identified between junior and senior NCOs. Despite recent efforts to decrease mental health stigma in Canada (Mental Health Commission of Canada, 2017) and increased awareness of mental health challenges in the CAF (e.g., Boulos & Zamorski, 2016a; Rusu, Zamorski, Boulos, & Garber, 2016; DND, 2013), officers may have held more negative beliefs about mental health care (Weeks et al., 2017) as a function of their leadership role (Pury, Britt, Zinzow, & Raymond, 2013) and possible

experiences in the CAF prior to the development of a global mental health strategy. Additional research would be beneficial to help clarify the impact of rank status on professional mental service use and perceived need for care.

2.4.4. Limitations

The use of a large and nationally representative sample of CAF Regular Force personnel from the post-Afghanistan era is a valuable strength of the current study. That said, several limitations should be taken into consideration when interpreting the results. First, the cross-sectional nature of the data precludes the establishment of any causal relationships between the variables of interest. Military personnel may have sought social support after the recognition of a need for care or the initiation of professional mental health care. Longitudinal research would help clarify temporal relationships within the data. Irrespective of the directionality of the relationships, seeking social support is likely relevant to initiation of care, treatment retention, or both (Jennings, 2014). Second, social support was defined as seeking help from one's social network. The variable used in the current study may have offered a more tangible measure of social support than assessing perceived availability of social support; however, a small proportion of the sample indicated that the individuals they sought help from were unhelpful. The limited sample size precluded further analyses based on perceived helpfulness of the help received or reported advice to seek professional mental health care. Further research would benefit from exploring the impact of such variables on professional care seeking behaviours. Third, OSISS Peer Support Coordinators were included as a source of social support in the current study. Including OSISS is a unique feature of the current study given the limited availability of empirical research

supporting the use of peer support programs in military organizations and the absence of research on the OSISS program specifically. Nevertheless, OSISS could not be included in all statistical analyses due to low prevalence of use. Results related to help seeking from OSISS Peer Support Coordinators should be interpreted with caution. Future research would also benefit from examining professional mental health service use and perceived need for care patterns within the context of a larger OSISS program evaluation.

2.4.5. Conclusion

The current study is the first to examine social support seeking and its impact on professional mental health service use and perceived need for care in a nationally representative sample of CAF Regular Forces personnel from the post-Afghanistan era. Seeking social support was associated with an increased likelihood of accessing professional mental health services or identifying a perceived need for care. The strength of the association was larger when military personnel sought help from an OSISS Peer Support Coordinator or family members; however, only a relatively small fraction of the sample sought help from an OSISS Peer Support Coordinator. In accordance with Andersen's (1995) model, several predisposing and need factors were related to professional mental health service use and perceived need for care in the current sample. Need factors had stronger associations with care seeking behaviours than predisposing factors.

The current study has at least two implications. First, military organizations may benefit from further developing psycho-educational interventions geared towards military personnel's social networks. Efforts targeting family members may be

particularly impactful to increase access to mental health care given that family members appear more commonly sought out than other sources of social support. Recent research also suggests that military personnel who perceive organizational barriers to care are more likely to seek help from nonprofessional sources of care such as military peers and chaplains (Kim et al., 2016; Morgan, Hourani, Lane, & Tueller, 2016). Accordingly, the development and refinement of programs targeting social groups within the CAF specifically (e.g., co-workers or supervisors, chaplains) might be beneficial. Second, although the OSISS military peer support program may be helpful to increase professional care seeking behaviours, the program appears to be under utilized and may have limited reach. Future research would benefit from further examining patterns and predictors of OSISS use within the CAF.

CHAPTER 3: Study 2

3.1. Introduction

Recent research indicates objective mental health needs and perceived need for care in the CAF have both increased over the past decade (Fikretoglu et al., 2016; Rolland-Harris, Whitehead, Matheson, & Zamorski, 2014; see Thompson et al., 2016 for review); however, not all military personnel with a mental health need access professional mental health care in a timely fashion, if at all (e.g., Hom et al., 2017; Zamorski & Boulos, 2014; Zivin et al., 2007; Fikretoglu et al., 2010). The underutilization of professional mental health services by military personnel with a mental health need suggests novel initiatives are necessary to increase accessibility and palatability of treatment (Hoge, 2011; see Hom et al., 2017 for review). Anderson's (1995) model emphasizes social relationships and accessibility of care (e.g., cost, travel time) as highly mutable enabling/impeding factors for professional health service use. Accordingly, addressing either one of these factors as part of novel program initiatives could help increase professional mental health service use in diverse populations (Andersen, 1995). Peer support programs are unique paraprofessional services that often target both social relationships and accessibility of care, either directly or indirectly (see Jain et al., 2013; Repper & Carter, 2011, Williams, Bambara, & Turner, 2012 for review). Peer support programs have been successfully used in populations with severe mental illness (see Davidson, Ballamy, Guy, & Miller, 2012 for review) and may also prove beneficial with military populations, including CAF personnel.

Peer support can be defined as, “social emotional support, frequently coupled with instrumental support, that is mutually offered or provided by persons having a

mental health condition to others sharing a similar mental health condition to bring about a desired social or personal change” (Solomon, 2004, p. 393). Peer support is not homogenous and typically follows one of four models (Davidson et al., 1999; Grenier et al., 2007; Leung & De Sousa, 2002). The first model, mutual support groups, consists of informal groups led by peers, often conducted on a drop-in basis, which aim to reduce the stigma associated with a particular condition (e.g., Alcoholics Anonymous, Al-Anon; Davidson et al., 1999). The second model, peer-run services (e.g., Mood Disorders Ottawa, 2011), includes peer providers paid by an agency or program to offer a supportive environment and interactively engage with members receiving the service; however, within this model, peer support workers do not receive support or assistance themselves. In the third model, peers are integrated within the mental healthcare team (e.g., Vet-to-Vet; Barber, Rosenheck, Armstrong, & Resnick, 2008). When part of the mental health care team, peer support workers are paid employees of a mental healthcare organization, receive professional mental health training and services themselves, and work alongside other mental health workers (e.g., psychiatrists, social workers). The fourth model, the workplace model, differs from the other three models in that colleagues who share the demands of a high-risk occupation provide peer support (e.g., policing, fire fighting, military related duties; Jones, Roberts, & Greenberg, 2003; Whybrow, Jones, & Greenberg, 2015). Peer workers in the workplace model are trained to provide support and counseling following critical incidents or psychological difficulties, but may not have shared psychological experiences with the receiver of the service (Grenier et al., 2007).

The available evidence suggests peer support programs based on all four models can be useful for populations with diverse mental health needs and populations at high risk for psychological difficulties (e.g., Greenberg et al., 2010; see Repper & Carter, 2011 for review). Within a military context, several peer support programs have been utilized to help de-stigmatize the use of professional mental health services and to facilitate access to such services (Money et al., 2011). Research indicates veterans with PTSD prefer the support of military peers with respect to traumatic events (Laffaye, Cavella, Drescher, & Rosen, 2008) and veteran peers can help increase empowerment within a treatment context (Chinman et al., 2008); nonetheless, few programs directly incorporate peers into the treatment and recovery of military members and veterans (i.e., recovery oriented approach; Money et al., 2011; Jain et al., 2013). To date, the Canadian OSISS initiative remains one of the most comprehensive recovery oriented peer support programs available for Canadian military populations (Money et al., 2011).

Developed in 2001, the OSISS initiative was designed to integrate components from all four models of peer support (Grenier et al., 2007). In the OSISS program, the peer support provider (i.e., Peer Support Coordinator) has personal experience with an operational stress injury (e.g., PTSD) but is further along in his/her recovery. The peer support provider is encouraged to share about their experience with the injury, especially the skills, strengths, and resources used in their own personal recovery. Peer support providers are trained by professional mental health providers in active listening, problem solving, and crisis management and considered to be an integral part of the mental health services team. The importance of referral to professional mental health service providers, therapeutic boundaries, and self-care for the peer support coordinator are also

emphasized during training. Finally, OSISS peer support providers are involved in outreach work through peer support groups and informational sessions about the program.

Jain and colleagues (2013) suggest that comprehensive peer support programs such as OSISS can foster psychological wellbeing through three distinct mechanisms of action. First, OSISS may promote social bonds, facilitating involvement in social and community activities and reducing PTSD symptoms such as avoidance. Social bonds may also indirectly encourage seeking professional mental health care through a reduction of social stigma. Second, OSISS peer support providers can instill hope for recovery through personal accounts of their own mental health difficulties, including the usefulness of various skills and resources (e.g., medication, cognitive-behavioral therapy) in their own recovery. Third, OSISS peer support providers have first hand experience with the military healthcare system and some may have had their own reservations about the system. The peer support providers can help individuals using OSISS services so as to explore their ambivalence about professional mental health care, as well as guide them through the healthcare system (e.g., direct someone to the appropriate source of care, help complete administrative forms associated with the use of services).

The OSISS program is primarily designed to enable professional mental health service utilization and can serve as an adjunct to professional mental health care (Grenier et al., 2007; Hundt et al., 2015). The program offers the advantage of increasing accessibility to care. For example, OSISS can offer peer support services to individuals living in rural regions who may encounter additional barriers to professional care (e.g.,

travel time; Wallace, Weeks, Wang, Lee, & Kazis, 2006), as well as to military families who may have limited access to service providers acquainted with the unique challenges facing military families (Eaton et al., 2008). OSISS is also accessible to current CAF members and veterans, which facilitates continuation of care when transitioning from military to civilian life (Grenier et al., 2007; Money et al., 2011).

OSISS has unique features and advantages that have brought international attention to the program (Grenier et al., 2007; Money et al., 2011; Richardson, Darte, Grenier, English, & Sharpe, 2008) and that increase the potential for Canada to become an international leader in the development of structured peer support programs for military members. However, very little is known about the use of OSISS by CAF personnel (DND & Veterans Affairs Canada, 2005). Consequently, Study 2 made use of a recent nationally representative sample of CAF Regular Forces personnel (i.e., CFMHS; Statistics Canada, 2014) and was designed for two primary purposes: 1) to provide estimates of use for the OSISS peer support program; and 2) to identify individual predictors of OSISS use within the context of Andersen's (1995) model. The study was exploratory in nature because of the limited available empirical research on military peer support programs. Nevertheless, based on the structure and development of the OSISS program (Grenier et al., 2007), two hypotheses were formulated: 1) need factors (i.e., meeting criteria for a mental health diagnosis) were expected to be more consistently associated with OSISS use than predisposing and enabling/impeding factors; and 2) meeting criteria for PTSD was expected to have the largest association with use of the peer support program.

3.2. Method

3.2.1. Participants and Procedure

A detailed description of the study design and sampling frame has been provided in Study 1.

3.2.2. Measures

A detailed description of the CFMHS content and CIDI modules has been provided in Study 1.

Enabling/impeding variable. A dichotomous income variable (i.e., household income of more or less than \$80,000) was drawn from a socio-demographic section of the survey.

Past 12-month mental health need. A detailed description of the CIDI diagnostic modules used to identify CFMHS respondents' past 12-month mental health diagnosis has been provided in Study 1. Given the small number of respondents who made use of the OSISS program, mental health needs were aggregated into four dichotomous variables indicating the presence or absence of self-reported mental health symptoms consistent with a mental health diagnosis in the past 12 months (i.e., alcohol-related disorder, anxiety disorder, major depressive disorder, PTSD)⁷.

Past 12-month OSISS use. All CFMHS respondents were asked if *Yes/No*, “over the past 12 months, they had seen, or talked on the telephone [about problems with their emotions, mental health or use of alcohol or drugs] to a Peer Support Coordinator from the OSISS program.” A dichotomous variable was created to reflect OSISS use in the past 12 months. The variable served as a grouping variable and the primary outcome variable for the current study.

⁷ Analyses were also conducted with severity of interference in functioning from mental health symptoms (i.e., Sheehan Disability Scale interference score) as the past 12-month mental health need variables and are available upon request; however, there were no differences in patterns of association.

Respondents who used the OSISS program were asked how many times they communicated with an OSISS Peer Support Coordinator in the past 12 months. Respondents were also asked about the perceived level of help received from the OSISS Peer Support Coordinator (i.e., 1 “A lot” to 4 “Not at all”), whether or not this person gave them advice about seeking professional care (i.e., “Did this Peer Support Coordinator give you any advice about whether you should or should not seek professional help for your problems?”) and, if so, whether they were advised to seek professional help. Specific questions about the use of the OSISS program (i.e., mean frequency, perceived helpfulness, advice to seek professional care) have been discussed elsewhere (see Study 1) and, therefore, are not discussed further in Study 2.

Past 12-month perceived need for care. A detailed description of the module used to identify CFMHS respondents’ past 12-month perceived need for care has been provided in Study 1. Specific associations between OSISS use and perceived need for care (i.e., information, medication, counseling) have been discussed elsewhere (see Study 1) and, therefore, are not discussed further in Study 2. Information pertaining to perceived need for care was used to describe the sample of OSISS users in the current study.

Past 12-month professional mental health service use. A detailed description of the module used to identify CFMHS respondents’ past 12-month professional mental health service use has been provided in Study 1. Specific associations between OSISS use and professional mental health service use have been discussed elsewhere (see Study 1) and, therefore, are not discussed further in Study 2. Information pertaining to

professional mental health service use was used to describe the sample of OSISS users in the current study.

Predisposing variables. A detailed description of socio-demographic, military, and psychological variables found in various socio-demographic related sections of the CFMHS has been provided in Study 1. The current study included age, sex, ethnicity, marital status, education, rank, element, number of types of deployment trauma experiences, and childhood adversity as predisposing variables. The Statistics Canada variables for marital status, education, rank, element, and childhood adversity were dichotomized or simplified (i.e., smaller number of levels) to allow for the release of data in accordance with Statistics Canada data release policies. Children under 18 years of age living in the household were also included as a variable in the current study, providing that the OSISS peer support program includes a family component. Respondents were asked to identify the number of children living in their household (i.e., under 18 years of age), including stepchildren, adopted children, or foster children. A dichotomous variable was computed to reflect the absence or presence of children in the household.

3.2.3. Analyses

All analyses were conducted using Stata version 12 or higher (StataCorp LP, 2015). A detailed description of weighting and bootstrapping estimation procedures used for all data analyses in the current study has been provided in Study 1. Descriptive statistics were computed for all variables of interest, for both the entire sample and respondents who used OSSIS. Univariate logistic regressions were used to assess the relationship between predisposing, enabling/impeding, and need variables and past 12-

month OSISS use within the entire sample. Univariate logistic regressions served to identify independent variables to be included in the final multivariate logistic regression model. In accordance with Andersen's (1995) model, variables were entered as follows: 1) socio-demographic and military predisposing variables; 2) psychological predisposing variables; 3) enabling/impeding; and 4) past 12-month mental health need variables.

3.3. Results

3.3.1. Descriptive Statistics

Past 12-month OSISS use

Descriptive statistics for predisposing, enabling/impeding, and need variables in the overall sample have been presented in Tables 1a and 1b. As previously presented in Table 2a, 1.21% (95% CI [0.01-1.50]) of the overall sample reported seeking care from the OSISS program in the past 12 months. Descriptive statistics for socio-demographic and psychological variables in the subsample of individuals who sought care from the peer support program are presented in Table 5a and 5b. Most individuals who sought care from the program were male, 35-44 years old, from white/Caucasian ethnic background, in a married/common-law relationship, living with children under 18 years old in the household, in junior NCO ranks and in the Army, had completed at least some postsecondary education, and reported a household income over \$80,000. Most OSISS users reported some adverse childhood experience (i.e., physical abuse, sexual abuse, or exposure to domestic violence). Approximately 79.49% of individuals who used OSISS had been deployed to Afghanistan since 2001 and the mean number of types of deployment trauma experienced was 4.42 ($SD = 2.18$). A total of 76.92% (95% CI

Table 5a. *Predisposing (i.e., Socio-demographic, Military) and Enabling/Impeding Variable Estimates Within the OSISS Users Subsample*

Variable	OSISS users % (95% CI)
Age	
16-34 years old	30.77 (20.20-42.43) ^a
35-44 years old	43.59 (32.04-55.19)
45-60 years old	25.64 (15.14-34.99) ^a
Sex	
Male	89.74 (81.80-96.55)
Female	10.26 (3.45-18.20) ^b
Marital status	
Married or common-law	71.79 (62.48-83.10)
Single, separated, divorced, or widowed	28.21 (16.91-37.52) ^a
Ethnicity	
Caucasian/White	92.31 (84.42-97.58)
Minority	7.69 (2.42-15.58) ^b
Education	
High school education or diploma	28.21 (17.97-38.08) ^a
Post-secondary education or graduation	71.79 (61.92-82.03)
Rank	
Junior NCO	58.97 (47.82-70.60)
Senior NCO or Officer	41.03 (29.40-52.18)
Element	
Army	71.80 (60.11-81.34)
Navy/Air Force	28.21 (18.66-39.89) ^a
Household	
No child < 18 years old	41.03 (28.92-52.08)
At least one child < 18 years old	58.97 (47.92-71.08)
Income	
Less than \$80,000	35.90 (24.68-46.52)
\$80,000 and more	64.10 (53.48-75.32)

Note. CI = confidence interval; OSISS = Operational Stress Injury Social Support; NCO = Non-Commissioned Officer. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aA high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

^bThe estimate does not meet Statistics Canada quality standards. Conclusions based on this data will be unreliable and most likely invalid.

Table 5b. *Predisposing (i.e., Psychological) Variables and Past 12-Month Mental Health Need Variables Estimates Within the OSISS Users Subsample*

Variable	OSISS users % (95% CI)
Adverse childhood experiences	
No	46.15 (33.63-56.44)
Yes	53.85 (43.56-66.37)
Past 12-month MH need	
Anxiety disorder	
No	47.37 (36.42-59.29)
Yes	52.63 (40.71-63.57)
Major depressive disorder	
No	56.41 (45.18-68.86)
Yes	43.59 (31.14-54.82)
Alcohol-related disorder	
No	79.49 (70.61-90.91)
Yes	20.51 (9.09-29.39) ^a
Posttraumatic stress disorder	
No	47.22 (35.44-59.54)
Yes	52.78 (40.46-64.56)

Note. CI = confidence interval; M = mean; SD = standard deviation; MH = mental health; OSISS = Operational Stress Injury Social Support. Adverse childhood experiences included physical abuse, sexual abuse, and/or exposure to domestic violence. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aA high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

[67.77-86.51]) of individuals who sought care from OSISS reported symptoms consistent with a mental health disorder in the past 12 months. In order of prevalence, past 12-month PTSD (52.78%), anxiety disorder (52.63%), major depressive disorder (43.59%), and alcohol-related disorder (20.51%) were endorsed. As presented in Table 5c, individuals who sought care from the OSISS program tended to report a perceived need for care⁸ and most reported seeking professional mental health care in the past 12 months. Additional statistics on the frequency of OSISS use are presented in Table 5d.

3.3.2. Logistic Regressions

Past 12-month OSISS use

Results of all prevalence estimates and logistic regressions analyses with past 12-month OSISS use as the outcome variable are presented in Table 6. Age, element, presence of children under 18 years old in the household, number of types of deployment trauma experiences, meeting diagnostic criteria for an anxiety disorder, a major depressive disorder, an alcohol-related disorder, or PTSD were statistically significantly related to past 12-month OSISS use in unadjusted models and included in the final adjusted model. Within the final adjusted model, presence of children under 18 years old in the household, number of deployment trauma experiences, as well as meeting diagnostic criteria for an anxiety disorder, an alcohol-related disorder, or PTSD, were statistically significantly related to an increased likelihood of past 12-month OSISS use.

3.4. Discussion

The current study was completed using a nationally representative sample of

⁸To protect confidentiality, Statistics Canada prohibits release of proportions and cross-tabulations which, in their unweighted version, contain fewer than five participants in a cell. For seeking care from an OSISS Peer Support Coordinator, there was at least one such cell when analyses were conducted with past 12-month any perceived need for care or perceived need for counseling.

Table 5c. *Estimates for Past 12-Month Professional Mental Health Service Use by Provider and Past 12-Month Perceived Need for Care by Type Within the OSISS Users Subsample*

Variable	OSISS users % (95%CI)
Any professional MH service use	
No	7.69 (1.03-13.00) ^b
Yes	92.31 (87.00-98.97)
General practitioner/family doctor	
No	33.33 (22.50-46.46) ^a
Yes	66.67 (53.54-77.50)
Psychiatrist	
No	33.33 (21.15-43.50) ^a
Yes	66.67 (56.50-78.85)
Psychologist	
No	33.33 (22.38-43.50)
Yes	66.67 (56.50-77.62)
Nurse or CF case manager	
No	33.33 (22.45-42.52)
Yes	66.67 (57.48-77.55)
Psychotherapist, counselor, social worker	
No	38.46 (26.67-49.96)
Yes	61.54 (50.04-73.33)
Any PN for care	
No	NR
Yes	NR
PN for information	
No	18.92 (9.60-28.29) ^a
Yes	81.08 (71.71-90.40)
PN for medication	
No	13.16 (4.08-18.87) ^a
Yes	86.84 (81.13-95.92)
PN for counseling or therapy	
No	NR
Yes	NR

Note. CI = confidence interval; OSISS = Operational Stress Injury Social Support; CF = Canadian Forces; NR = not released to protect confidentiality of respondents as per Statistics Canada data release policies. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aA high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

^bThe estimate does not meet Statistics Canada quality standards. Conclusions based on this data will be unreliable and most likely invalid.

Table 5d. *OSISS Frequency of Use Estimates*

Frequency	OSISS users % (95%CI)
1 time	25.64 (16.16-37.05) ^a
2 times	17.95 (8.41-25.91) ^a
3-10 times	30.77 (19.63-40.59) ^a
11-24 times	12.82 (3.99-20.55) ^b
25 times or more	12.82 (6.52-21.23) ^a

Note. CI = confidence interval; OSISS = Operational Stress Injury Social Support. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aA high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

^bThe estimate does not meet Statistics Canada quality standards. Conclusions based on this data will be unreliable and most likely invalid.

Table 6. Oversample Sample Estimates and Unadjusted and Adjusted Associations Between Predisposing, Enabling/Impeding, and Need Variables and Past 12-Month OSISS Use

Variable	% (95% CI) ^a	Past 12-month OSISS use			
		OR (95% CI)	<i>p</i>	AOR (95% CI)	<i>p</i>
<i>Predisposing (socio-demographic)</i>					
Age					
16-34 years old (ref.)	0.73 (0.43-1.06) ^b	1.00		1.00	
35-44 years old	1.91 (1.19-2.62) ^b	2.59 (1.43-4.66)	0.002	1.40 (0.72-2.70)	0.32
45-60 years old	1.46 (0.81-2.04) ^b	1.92 (0.99-3.71)	0.05	1.58 (0.77-3.24)	0.21
Sex					
Male (ref.)	1.26 (0.93-1.58)	1.00			
Female	0.90 (0.23-1.61) ^c	0.75 (0.31-1.84)	0.53		
Marital status					
Single, separated, divorced, or widowed (ref.)	0.99 (0.52-1.40) ^b	1.00			
Married or common-law	1.35 (0.98-1.72)	1.41 (0.81-2.43)	0.22		
Ethnicity					
Caucasian/White (ref.)	1.24 (0.91-1.54)	1.00			
Minority	1.26 (0.28-1.93) ^c	1.11 (0.41-3.00)	0.84		
Education					
High school education or diploma (ref.)	1.15 (0.66-1.62) ^b	1.00			
Post-secondary education or graduation	1.24 (0.90-1.60)	1.09 (0.66-1.81)	0.73		
<i>Predisposing (military)</i>					
Rank					
Junior NCO (ref.)	1.30 (0.87-1.74) ^b	1.00			
Senior NCO or Officer	1.11 (0.74-1.46) ^b	0.84 (0.52-1.36)	0.48		

Element					
Army (ref.)	1.64 (1.15-2.08)	1.00		1.00	
Navy or Air Force	0.73 (0.44-1.08) ^b	0.47 (0.27-0.79)	0.005	0.98 (0.54-1.80)	0.96
Household					
No child < 18 years old (ref.)	0.87 (0.55-1.16) ^b	1.00		1.00	
At least one child < 18 years old	1.68 (1.15-2.23)	1.99 (1.22-3.27)	0.006	1.80 (1.02-3.19)	0.04
<i>Predisposing (psychological)</i>					
Deployment trauma experiences					
Mean (SD)	4.42 (2.18)	1.61 (1.46-1.77)	< .000	1.32 (1.18-1.46)	< .000
Adverse childhood experiences					
No (ref.)	1.07 (0.67-1.43) ^b	1.00			
Yes	1.37 (0.99-1.82)	1.34 (0.84-2.14)	0.22		
<i>Enabling/Impeding</i>					
Income					
Less than \$80,000 (ref.)	1.22 (0.75-1.68) ^b	1.00			
\$80,000 and more	1.21 (0.86-1.57)	1.00 (0.61-1.64)	1.00		
<i>Past 12-month mental health need</i>					
Anxiety disorder					
No (ref.)	0.61 (0.41-0.84) ^b	1.00		1.00	
Yes	9.43 (6.45-12.32)	16.58 (10.24-26.85)	< .000	2.89 (1.37-6.07)	0.005
Major depressive disorder					
No (ref.)	0.70 (0.51-1.00) ^b	1.00		1.00	
Yes	6.64 (4.33-8.79) ^b	9.26 (5.65-15.19)	< .000	1.59 (0.78-3.23)	0.20

Alcohol-related disorder						
No (ref.)	1.04 (0.75-1.30)	1.00		1.00		
Yes	5.59 (2.30-8.17) ^b	5.31 (2.66-10.60)	< .000	2.79 (1.27-6.08)	0.01	
Posttraumatic stress disorder						
No (ref.)	0.57 (0.36-0.77) ^b	1.00		1.00		
Yes	11.38 (7.60-14.87)	22.31 (13.36-37.28)	< .000	4.88 (2.17-10.96)	< .000	

Note. SD = standard deviation OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval; NCO = Non-Commissioned Officer; OSISS = Operational Stress Injury Social Support; Ref. = reference group. Adverse childhood experiences included physical abuse, sexual abuse, and/or exposure to domestic violence. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aIndicates the percentage of individuals who reported seeking help from OSISS in the past 12 months.

^bA high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

^cThe estimate does not meet Statistics Canada quality standards. Conclusions based on this data will be unreliable and most likely invalid.

CAF Regular Force personnel surveyed approximately a decade following inception of the OSISS peer support program. The study had two main objectives: 1) to provide estimates of use for the OSISS peer support program; and 2) to identify individual predictors of OSISS use in accordance with Andersen's (1995) model. Congruent with the first study hypothesis, need factors increased the likelihood of OSISS use and had stronger associations with utilization of the peer support program than predisposing or enabling/impeding factors. Consistent with the second study hypothesis, meeting criteria for PTSD had the largest association with OSISS use. Comprehensive results, limitations, and implications are presented below.

3.4.1. Past 12-Month OSISS Use

The current study results suggest that only a small portion (i.e., 1.21%) of CAF Regular Forces personnel made use of the OSISS program within a one-year period (see Study 1 for a discussion of the low prevalence of OSISS use in the current sample). Most people who made use of the program reported at least one mental health need, a perceived need for care, and seeking professional mental health care. The results are consistent with earlier qualitative studies that have identified military peers as potent facilitators of professional care seeking (Murphy et al., 2014; Pfeiffer et al., 2012; Pury et al., 2013; Zinzow et al., 2013). The results are also consistent with Study 1 results indicating that OSISS use significantly increased the likelihood of professional mental health service use and perceived need for care, and that most military personnel who made use of OSISS received a comment about whether or not they should seek professional help. Within the sample of OSISS users, rates of care seeking from general

practitioners or family doctors, psychiatrists, psychologists, nurses, and psychotherapists, counselors, or social workers were generally comparable.

The categorical classification of past year OSISS use frequency in the current study suggests that there is a wide range of usage for the program. Over 40% of individuals who made use of the program only connected with the Peer Support Coordinator once or twice. Comparatively, less than 25% of individuals contacted the Peer Support Coordinator more than 10 times, including approximately 12% of individuals who did so more than 25 times. Inconsistent use of military-sponsored support groups has been documented in recent U.S. studies (Reedy & Kobayashi, 2015; Resnik, Ekerholm, Johnson, Ellison, & O'Toole, 2016) and there are several possibilities that may explain the inconsistent or limited frequency of OSISS use. First, as reported in Study 1, approximately 21% of OSISS users found contact with the OSISS Peer Support coordinator “not at all helpful”. Perceived unhelpfulness was not further explored in the 2013 CFMHS, but could have occurred for several reasons (e.g., geographical distance from a peer provider); in any case, unhelpfulness likely deterred individuals from making further use of the program (Resnik et al., 2016). Second, some OSISS users might have contacted a Peer Support Coordinator for the purpose of receiving assistance to access mental health resources in their area, but may not have had an interest in long-term peer support. Third, a substantial fraction of OSISS users made use of several professional mental health services. Some structural or logistical barriers to care may have emerged as a result of accessing multiple sources of care within a relatively limited timeframe. Barriers to care and attempts to prioritize professional care providers could have reduced motivation to seek help from OSISS (Hom et al., 2017). Fourth, OSISS

users are likely to be a heterogeneous group. High frequency OSISS users may have experienced increases in functional impairment (Fikretoglu et al., 2007; McKibben et al., 2013) or sought out services that are less readily available elsewhere (e.g., family support). Sample size restrictions precluded comparisons of low versus high frequency OSISS users; however, a program evaluation of OSISS might help to clarify potential differences.

3.4.2. Association Between Predisposing, Enabling/Impeding, and Need Factors and OSISS Use

As expected, meeting criteria for a PTSD diagnosis had the strongest positive association with OSISS use. Alcohol-related disorders and anxiety disorders were also significantly and positively related to OSISS use, although to a lesser degree. The results are congruent with the OSISS mandate of providing a national peer support network for military personnel and their families living with an operational stress injury (CFMWS, 2017). Convergent factors may explain why PTSD is more strongly related to OSISS use than other mental health diagnoses. First, the program was initially developed and advertised by a CAF member living with PTSD (Grenier et al., 2007). Second, PTSD is more commonly discussed than other operational stress injuries within the context of military mental health (Figley & Nash, 2007) and CAF personnel may have come to view OSISS as specifically for PTSD. Third, approximately half of military personnel with PTSD identify a deployment related experience as their index trauma (Brunet et al., 2015). The possibility of discussing trauma symptoms with individuals who have lived through similar deployment experiences may be comforting to some military personnel with PTSD, especially during earlier stages of recounting their trauma (Caddick,

Phoenix, Smith, 2015). Similarly, individuals with an alcohol-related disorder may find the peer support component of the OSISS program appealing based on similarities to common addictions treatments (e.g., Alcoholics Anonymous; Davidson et al., 1999). Finally, anxiety disorders are associated with significant distress and impairment in daily functioning (Erickson et al. 2015; Roy-Byrne et al., 2008; Sareen et al., 2005; Thibodeau, Welch, Sareen, & Asmundson, 2013). Recent research indicates that individuals with poorer daily functioning utilize more mental health services (McKibben et al., 2013), which may include paraprofessional services such as OSISS.

Major depressive disorder was not significantly associated with use of the OSISS program. There are at least three potential explanations for the result. First, individuals with a mood disorder may not readily perceive their symptoms to be related to military experiences, making them less likely to seek out support from military peers specifically. Second, indicators of military performance and success such as unit cohesion, decision-making, and self-efficacy (Moore & Barnett, 2013) are contrary to core symptoms of depression (e.g., social isolation, low energy, negative self-worth; APA, 2013). Individuals with depressive symptoms may, therefore, be more hesitant to seek out support from military peers because of a perceived failure to meet military performance standards. Relatedly, depressive symptoms have been linked to increased perceived stigma and barriers to care in military populations (Chapman et al., 2014a; Chapman et al., 2014b). Third, a reduction in behavioral activation (APA, 2013) might concomitantly decrease motivation to seek help from paraprofessional sources of care, particularly for military personnel already receiving professional mental health care.

Within predisposing and enabling/impeding factors, the average number of types of deployment trauma experiences and having at least one child under 18 years old living in the household were significantly positively correlated with OSISS use. The results are congruent with earlier studies that identified a positive association between deployment-related trauma and professional mental health service use (e.g., Sareen, Cox, et al., 2007). OSISS facilitates bonding over shared military experiences and normalizes reactions to such experiences (Grenier et al., 2007). The program may be increasingly more attractive to military personnel wishing to disclose and discuss deployment trauma experiences with military peers (Caddick et al., 2015).

Research to explain the positive relationship between living with a child under 18 years old and OSISS use is lacking; however, two possible explanations are provided. First, having a child under 18 living in the household has been related to lower levels of perceived social support (Therrien et al., 2016). Lower perceived social support may reflect a higher need for such support in families with children and could be a motivator for seeking care from peer support programs such as OSISS. Alternatively, the negative impact of operational stress injuries on the family unit and daily functioning may be more salient for military personnel living with a child (see Cramm, Tam-Seto, Norris, Eichler, & Smith-Evans, 2016 for review). Perceived disruptions in family functioning, increased encouragement from children, or desire to model healthy coping strategies could all act as motivators to seek care from OSISS, which is mandated to provide services to both military personnel and their families (CFMWS, 2017).

The absence of a significant association between most predisposing variables and OSISS use is encouraging and suggests equitable access to the service across socio-

demographic and military characteristics. The lack of relationship between marital status and OSISS use is unexpected given the family services provided by the program.

Including “living with at least one child under 18 years old” in the model may have accounted for most of the variance between marital status and OSISS use; however, that explanation is unlikely given that marital status also did not hold a significant relationship in the univariate model. An alternative is that the effect of marital status was diluted when being single and being separated, divorced, or widowed were combined for confidentiality reasons. Having currently (i.e., married or common-law) or previously (i.e., separated, divorced, or widowed) lived with a partner or family may both potentiate the likelihood of OSISS use relative to being single (Fikretoglu et al, 2006; Fikretoglu et al., 2008). Future research would benefit from further exploring the association between household composition and OSISS use in a larger sample.

3.4.3. Limitations

The use of a nationally representative sample of CAF Regular Forces personnel who utilized the OSISS peer support program is a valuable strength of the current study. Nonetheless, several limitations should be taken into consideration when interpreting the results. First, the data is cross-sectional, which precludes causal inferences. Longitudinal research would help clarify temporal relationships within the data. Second, asking participants how often they talked or met with a Peer Support Coordinator from the program was used to assess care seeking from OSISS. Peer Support Coordinators are the main care providers within OSISS; however, some military personnel may have sought informal support from peers they had met through the OSISS program without contacting the Peer Support Coordinator. In addition, military personnel may have

indirectly received care from OSISS through their partner independently seeking help from a family Peer Support Coordinator. Future examinations of OSISS use would benefit from evaluating both formal and informal use, as well as utilization of the program by family members. Third, the present study only examined OSISS use in a sample of CAF active duty Regular Members. The sample selection offers the advantage of providing nationally representative estimates. That said, an OSISS program evaluation indicates that, in 2005, 54% of OSISS users were veterans and approximately 10% of users were Reservists (DND & Veterans Affairs Canada, 2005). Including CAF veterans and Reservists in the sample may have yielded different patterns of association. Fourth, the model may have been underpowered because OSISS was only used by a small proportion of the sample; relatedly, predictor variables also had to be simplified to protect confidentiality of respondents and some meaningful relationships may have been weakened as a result.

3.4.4. Conclusion

The current study was the first to examine use of the OSISS peer support program in a nationally representative sample of CAF Regular Members from the post-Afghanistan era. The study is also one of the first quantitative studies of military peer support programs. OSISS use was very limited and tended to occur in conjunction with a perceived need for care and professional mental health service use. Almost all OSISS care seekers reported an objective mental health need. Meeting criteria for PTSD was more robustly associated with use of the program than other mental health diagnoses. Predisposing (i.e., socio-demographic, military, psychological) and enabling factors were not related to OSISS use, with the exception of living with a child under 18 years old and

the experience of deployment traumas. Currently, OSISS may primarily be a peer support service for military personnel with children and meeting criteria for an anxiety, alcohol-related, or trauma-related disorder. Varied frequencies of use for the program allude to the possibility that there may exist qualitatively different groups of OSISS users. A contemporary program evaluation of OSISS would be needed to verify that assumption.

The current study has at least two implications. First, OSISS is the only program continuously available to Canadian military personnel and their families during their transition from military to civilian life. Maintaining that service may be beneficial (Eaton et al., 2008; Grenier et al., 2007; Money et al., 2011) and would be supported by qualitative studies indicating that military peer support programs are conducive to professional mental health care (Hundt et al., 2015; Murphy et al., 2014; Pfeiffer et al., 2012; Pury et al., 2013). However, if OSISS is maintained, it should be explicitly emphasized as available for all operational stress injuries (e.g., marital difficulties, anger) and additional strategies should be developed to increase reach of the program. Second, given the relatively low rate of OSISS use, paraprofessional services for military personnel and their families may need to be delivered through means other than peer support. Within the digital era, e-technologies may be particularly useful to provide psychoeducation and mental health services to military personnel and families, facilitate peer connections, and reduce structural barriers to care (Cozza, Haskins, & Lerner, 2013; see Fortney et al., 2011 for review; Hom et al., 2017; Milburn & Lightfoot, 2013). Future research examining web-based access to mental health resources in CAF samples would

help to clarify the potential utility of e-technologies for delivering mental health services to Canadian military personnel.

CHAPTER 4: Study 3

4.1. Introduction

The US Department of Veterans Affairs has made access to healthcare, including mental health care, a priority (Shinseki, 2009). Within Andersen's (1995) model, access to care can be potential or realized. Realized access is effectively equated with the use of services. Potential access refers to enabling resources that ultimately increase the likelihood that realized access will take place (Andersen, 1995). Whether realized or potential, access to care has traditionally been viewed as face-to-face interactions with healthcare providers; however, following the introduction and proliferation of use of digital media, access to care may be re-conceptualized to include virtual healthcare utilization (for review see Fortney et al., 2011 for review).

Broadly speaking, virtual healthcare utilization refers to a variety of health services typically making use of an Internet platform. Virtual interactions can occur through synchronous patient-provider interactions (e.g., teletherapy), asynchronous patient-provider interactions (e.g., Internet cognitive-behavioral therapy [ICBT]), peer-to-peer discussions (e.g., social networking), and/or synchronous patient-computer health applications interactions (e.g., OSI Connect smartphone application; Fortney et al., 2011; Veterans Affairs Canada, 2015). Some virtual health interventions are relatively novel and have yet to be scientifically evaluated (e.g., OSI Connect); however, other Internet-based interventions (e.g., ICBT) have received extensive empirical support. Research demonstrates ICBT interventions for anxiety and depression are effective and comparable to in-person CBT (Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010). Moreover, research results support the efficacy of disorder-specific (e.g.,

Hadjistavropoulos et al., 2014) and transdiagnostic ICBT interventions (e.g., Dear et al., 2011).

A recent meta-analysis (Olthuis et al., 2016) has demonstrated that therapist-supported distance-delivered CBT interventions can facilitate significant reductions in PTSD symptoms and other trauma-related symptoms (i.e., anxiety, depression, alcohol use) in both civilian (e.g., Amstadter, Broman-Fulks, Zinzow, Ruggiero, & Cercone, 2009; Ivarsson et al., 2014; Knaevelsrud, Brand, Lange, Ruwaard, & Wagner, 2015; Sloan, Gallagher, Feinstein, Lee, & Pruneau, 2011; Spence et al., 2014; Ruggiero et al., 2015) and military (e.g., Amstadter et al., 2009; Nelson, Abraham, Walters, Pfeiffer, & Valenstein, 2014; Brief et al., 2013; Engel et al., 2015; Sloan et al., 2011) samples. Internet-based interventions have also been used to improve relationship quality in distressed couples (see Cicilia, Georgia, & Doss, 2014 for review) and children functioning in families of wounded veterans (Walker et al., 2014). More recently, Internet-based interventions have been extended to parent-child dyads exposed to trauma and results appear promising (Cernvall, Carlbring, Ljungman, Ljungman, & von Essen, 2015; Ruggiero et al., 2015; Yuen et al., 2015).

Internet-based interventions offer large content flexibility (e.g., diagnosis, population) and can help reduce important barriers to care in military populations (i.e., transportation and time constraints, stigma, scheduling; Grubaugh, Gros, Davidson, Frueh, & Ruggiero, 2014; Nichols, 2015). For example, a study making use of a nationally representative sample of US veterans indicates most US veterans were willing to receive online information regarding Veterans Affairs or their own health records (Tsai & Rosenheck, 2012). In another sample of active duty US personnel, 33% of

individuals were willing to use technology based mental health services but not traditional, in-person counseling (Wilson, Onorati, Mishkind, Reger, & Gahm, 2008). A recent literature review also suggests Internet-based interventions may be more acceptable to women veterans having experienced military sexual trauma (see Nichols, 2015 for review).

Internet-based interventions have the potential to benefit a wide continuum of symptom severity amongst military populations. Internet-based interventions could be useful for active duty members and veterans with mild to moderate psychological symptoms who may not otherwise seek professional mental health care (Nelson et al., 2014). At the opposite end of the spectrum, Internet-based interventions could help facilitate access to in-person care for individuals encountering significant barriers to care as a result of their symptoms (e.g., avoidance of travel or avoidance of major urban centers; Grubaugh et al., 2014). Irrespective of symptom severity, Internet-based interventions could serve as adjuncts or follow-up interventions to in-person care (Grubaugh et al., 2014; see Price et al., 2014 for review). For example, in a sample of veterans with PTSD receiving outpatient care, the majority of participants with access to the Internet were willing to try Internet-based interventions to help manage their anger, sleep, and anxiety difficulties (Erbes et al., 2014). Internet-based interventions also offer the advantage of being easily dispensable to military families (i.e., spouse, children, parents, siblings) either as a stand-alone treatment or as an adjunct to care received by a military member in the family (e.g., Blom, Zarit, Groot Zwaafink, Cuijpers, & Pot, 2015; Ruzek et al., 2011).

Internet-based interventions are a promising avenue to increase access to mental health care in CAF personnel; however, increased reliance on the Internet for the provision of services may create novel access disparities in certain military subpopulations (Fortney et al., 2011). Research conducted with nationally representative samples of US civilians (Baker, Wagner, Singer, & Bundorf, 2003) and veterans (Tsai & Rosenheck, 2012) indicates individuals who are younger, Caucasian, more highly educated, married, and have higher income are more likely to use the Internet for health purposes. A recent study looking at a sample of US veterans with severe mental illness also provided evidence that individuals with PTSD were less likely to use the Internet than individuals with major depressive disorder (Record et al., 2015). Similar studies of Internet use for mental health purposes in the CAF appear critical to inform the development of Internet-based interventions in this population, as well as to minimize disparities in access to mental health care for CAF personnel.

Study 3 made use of a recent nationally representative sample of CAF Regular Forces personnel (i.e., CFMHS; Statistics Canada, 2014) and had three main purposes: 1) to provide estimates of Internet use for problems with emotions, mental health, or alcohol or drug use (i.e., mental health related problems), and to contrast such estimates to rates of use for other forms of paraprofessional care (i.e., self-help groups, telephone helplines); 2) to examine the relationship between Internet use for mental health related problems and professional mental health service use and perceived need for care; and 3) to identify individual predictors of Internet use for problems with emotions, mental health, or alcohol or drug use in accordance with Andersen's (1995) model. The current study was exploratory in nature; however, three hypotheses were put forward based on

the broader Internet and health care seeking literatures. First, given the rapid surge of Internet-based mental health interventions, Internet use was expected to be more common than other forms of paraprofessional care (i.e., support groups, telephone helplines). Second, use of the Internet for problems with emotions, mental health, or alcohol or drug use was expected to be associated with increased perceived need for care and professional mental health service use. Third, based on previous studies of in-person professional mental health service use, need factors (i.e., meeting criteria for a mental health diagnosis) were expected to be most consistently significantly associated with Internet use for problems with emotions, mental health, or use of alcohol or drugs. Predisposing and enabling/impeding factors such as sex, education, and income were also expected to be significantly associated with Internet use, although to a lesser degree.

4.2. Method

4.2.1. Participants and Procedure

A detailed description of the study design and sampling frame has been provided in Study 1.

4.2.2. Measures

A detailed description of the CFMHS content and CIDI modules has been provided in Study 1.

Enabling/impeding variable. A detailed description of the dichotomous income variable derived from the socio-demographic section of the CFMHS has been provided in Study 2.

Past 12-month Internet use. All CFMHS respondents were asked if *Yes/No*, “over the past 12 months, they had used the Internet to get information, help or support for

problems with [their] emotions, mental health or use of alcohol or drugs.” Respondents who used the Internet were subsequently asked if *Yes/No* they used the Internet for the following reasons: 1) to learn about symptoms; 2) to find out where to get help; 3) to discuss with others through forums, social groups, or Internet social networks; or 4) to get e-therapy. One dichotomous variable (i.e., any type of Internet use for problems with emotions, mental health, or use of alcohol or drugs) was created and served as the primary outcome variable in the current study. An additional four dichotomous variables (i.e., each reason for Internet use) were created and served to help clarify patterns of Internet use.

Past 12-month mental health need. A detailed description of the CIDI diagnostic modules used to identify CFMHS respondents’ past 12-month mental health diagnosis has been provided in Study 1. A small number of respondents used the Internet for reasons such as discussing with others or online therapy. To maintain confidentiality in accordance with Statistics Canada data release policies, mental health needs were aggregated into four dichotomous variables identifying the presence or absence of symptoms consistent with a mental health diagnosis in the past 12 months (i.e., alcohol-related disorder, anxiety disorder, major depressive disorder, PTSD)⁹.

Past 12-month perceived need for care. A detailed description of the module used to identify CFMHS respondents’ past 12-month perceived need for care has been provided in Study 1. Perceived need for care (i.e., information, medication, counseling) was examined as a correlate of Internet use for problems with emotions, mental health, or use of alcohol or drugs in the current study.

⁹ Analyses were also conducted with severity of interference in functioning from mental health symptoms (i.e., Sheehan Disability Scale interference score) as the past 12-month mental health need variables and are available upon request; however, there were no differences in patterns of association.

Past 12-month professional mental health service use. A detailed description of the module used to identify CFMHS respondents' past 12-month professional mental health service use has been provided in Study 1. Professional mental health service use was examined as a correlate of Internet use for problems with emotions, mental health, or use of alcohol or drugs in the current study.

Past 12-month use of a telephone helpline. All CFMHS respondents were asked if *Yes/No*, “over the past 12 months, they had used a telephone helpline for problems with [their] emotions, mental health or use of alcohol or drugs.” A dichotomous variable (i.e., use of a telephone helpline versus no use) was created for the present study. Respondents who used a telephone helpline were subsequently asked how many times they did so over the past 12 months. Providing that a restricted number of respondents made use of a telephone helpline, questions about the use of a telephone helpline were utilized as secondary outcome variables in descriptive analyses. Information gathered about the use of a telephone helpline was used to clarify the relative importance of Internet as a treatment modality for emotional, mental health, or alcohol or drugs problems.

Past 12-month use of self-help groups. All CFMHS respondents were asked if *Yes/No*, “over the past 12 months, they had [attended] a self-help group for help with problems with [their] emotions, mental health or use of alcohol or drugs.” A dichotomous variable (i.e., use of a self-help group versus no use) was created for the study. Respondents who used a self-help group were asked how many times they did so over the past 12 months and what type of group was attended. Providing that a restricted number of respondents made use of self-help groups, questions about the use of self-help

groups were utilized as secondary outcome variables in descriptive analyses. Information gathered about the use of self-help groups was used to help clarify the relative importance of Internet as a treatment modality for emotional, mental health, or alcohol or drugs problems.

Predisposing variables. A detailed description of socio-demographic, military, and psychological variables found in various socio-demographic related sections of the CFMHS has been provided in Study 1. The current study included age, sex, ethnicity, marital status, education, rank, element, number of types of deployment trauma experiences, and childhood adversity as predisposing variables.

4.2.3. Analyses

All analyses were conducted using Stata version 12 or higher (StataCorp LP, 2015). A detailed description of weighting and bootstrapping estimation procedures used for all data analyses in the current study has been provided in Study 1. Descriptive statistics were computed for all variables of interest. Univariate logistic regressions were used to assess the relationship between past 12-month Internet use for problems with emotions, mental health, or use of alcohol or drugs and past 12-month perceived need for care and past 12-month professional mental health service use. Univariate logistic regressions were also used to assess the relationship between predisposing, enabling/impeding, and need variables and past 12-month Internet use for problems with emotions, mental health, or use of alcohol or drugs. Within the subsample of past 12-month Internet users, additional univariate logistic regressions were conducted to identify predictors of specific reasons for Internet use (i.e., to learn about symptoms, to

find resources, to discuss with others)¹⁰. Univariate logistic regressions were used to select independent variables to be included in the final multivariate logistic regression models (i.e., any past 12-month Internet use, Internet use for specific reasons). In accordance with Andersen's (1995) model, variables were entered in the following order: 1) socio-demographic and military predisposing variables; 2) psychological predisposing variables; 3) enabling/impeding; and 4) past 12-month mental health need variables.

4.3. Results

4.3.1. Descriptive Statistics

Past 12-month Internet use

Descriptive statistics for predisposing, enabling/impeding, and need variables in the overall sample have been presented in Table 1a and 1b. A total of 9.82% (95% CI [9.07-10.60]) of the overall sample reported using the Internet in the past 12 months “for problems with emotions, mental health or use of alcohol or drugs”. Within the subsample of individuals who made use of the Internet in the past 12 months, 74.29% (95% CI [70.68-77.84]) used the Internet to “find out about symptoms”, 29.52% (95% CI [25.68-33.42]) to “find out where they could get help”, 15.24% (95% CI [12.33-18.18]) to “discuss with others through forums, support groups or Internet social networks”, and 4.44% (95% CI [2.75-6.23]) to “get online therapy”¹¹.

Descriptive statistics for predisposing, enabling/impeding, and need variables within the subsample of Internet users are presented in Table 7a and 7b¹². Most

¹⁰ Due to sample size restrictions, analyses were not conducted with past 12-month Internet use for online therapy purposes specifically.

¹¹ A high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

¹² Descriptive statistics for subsamples of Internet users by specific reasons for Internet use are available upon request.

Table 7a. *Predisposing (i.e., Socio-demographic, Military) and Enabling/Impeding Variable Estimates Within the Subsample of Internet Users for Problems with Emotions, Mental Health, or Use of Alcohol or Drugs*

Variable	Internet users % (95% CI)
Age	
16-34 years old	49.68 (45.89-53.86)
35-44 years old	32.59 (28.71-36.38)
45-60 years old	17.72 (14.72-20.43)
Sex	
Male	80.06 (76.97-83.46)
Female	19.94 (16.54-23.03)
Marital status	
Single, separated, divorced, or widowed	40.19 (36.23-44.54)
Married or common-law	59.81 (55.46-63.77)
Ethnicity	
Caucasian/White	86.35 (83.46-89.32)
Minority	13.65 (10.68-16.54)
Education	
High school education or diploma	23.73 (19.89-27.40)
Post-secondary education or graduation	76.27 (72.60-80.11)
Rank	
Junior NCO	56.33 (52.57-60.26)
Senior NCO or Officer	43.67 (39.74-47.43)
Element	
Army	52.53 (48.53-56.86)
Navy or Air Force	47.47 (43.14-51.47)
Income	
Less than \$80,000	39.87 (35.73-44.09)
\$80,000 and more	60.13 (55.91-64.27)

Note. CI = confidence interval; NCO = Non-Commissioned Officer. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

Table 7b. *Predisposing (i.e., Psychological) and Past 12-Month Mental Health Need Variables Estimates Within the Subsample of Internet Users for Problems with Emotions, Mental Health, or Use of Alcohol or Drugs*

Variable	Internet users % (95% CI)
Adverse childhood experiences	
No	41.46 (37.20-45.52)
Yes	58.54 (54.48-62.80)
Past 12-month MH need	
Anxiety disorder	
No	77.17 (73.44-80.73)
Yes	22.83 (19.27-26.56)
Major depressive disorder	
No	72.47 (68.69-76.15)
Yes	27.53 (23.85-31.31)
Alcohol-related disorder	
No	89.84 (87.20-92.69)
Yes	10.16 (7.31-12.80)
Posttraumatic stress disorder	
No	83.77 (80.69-87.07)
Yes	16.23 (12.93-19.31)

Note. CI = confidence interval; M = mean; SD = standard deviation; MH = mental health. Adverse childhood experiences included physical abuse, sexual abuse, and/or exposure to domestic violence. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

individuals who used the Internet for problems with their emotions, mental health, or use of alcohol or drugs in the past 12 months were male, 16-34 years old, from White/Caucasian ethnic background, in a married/common-law relationship, in junior NCO ranks and in the Army, had completed at least some post-secondary education, and reported a household income over \$80,000. Most individuals who used the Internet also reported some adverse childhood experience (i.e., physical abuse, sexual abuse, or exposure to domestic violence). Approximately 45.25% (95% CI [41.37-48.87]) of individuals who used the Internet for problems with their emotions, mental health, or use of alcohol or drugs had been deployed to Afghanistan since 2001 and the mean number of types of deployment trauma experienced was 1.90 ($SD = 2.23$). A total of 45.63% (95% CI [41.23-49.90]) of individuals who used the Internet for problems with their emotions, mental health, or use of alcohol or drugs reported symptoms consistent with a mental health disorder in the past 12 months. In order of prevalence, past 12-month major depressive disorder (27.53%), anxiety disorder (22.83%), PTSD (16.23%), and alcohol-related disorder (10.16%) were endorsed. Additional descriptive statistics on Internet use for problems with emotions, mental health, or use of alcohol or drugs and past 12-month perceived need for care and past 12-month professional mental health service use are presented in Tables 7c.

Past 12-month self-help group and telephone helpline use

A total of 2.42% (95% CI [2.03-2.83]) of the overall sample reported seeking help from a self-help group in the past 12 months. Within the subsample of individuals who sought help from a self-help group in the past 12 months, 48.72% (95% CI [39.72-56.70]) attended a group for “alcohol or drug use”, 47.44% (95% CI [39.24-56.37]) a

Table 7c. *Estimates for Past 12-Month Professional Mental Health Service Use by Provider and Past 12-Month Perceived Need for Care by Type Within the Subsample of Internet Users for Problems with Emotions, Mental Health, or Use of Alcohol or Drugs*

Variable	Internet users % (95% CI)
Any professional MH service use	
No	34.18 (30.04-38.34)
Yes	65.82 (61.66-69.96)
General practitioner/family doctor	
No	63.92 (59.73-68.16)
Yes	36.08 (31.84-40.27)
Psychiatrist	
No	76.90 (73.01-80.36)
Yes	23.10 (19.64-26.99)
Psychologist	
No	72.15 (68.21-75.96)
Yes	27.85 (24.04-31.79)
Nurse or CF case manager	
No	78.48 (74.77-81.99)
Yes	21.52 (18.01-25.23)
Psychotherapist, counselor, social worker	
No	56.96 (52.67-60.99)
Yes	43.04 (39.01-47.33)
Any PN for care	
No	17.21 (13.93-20.84)
Yes	82.79 (79.16-86.07)
PN for information	
No	42.12 (37.64-46.56)
Yes	57.88 (53.44-62.36)
PN for medication	
No	57.88 (53.53-62.17)
Yes	42.12 (37.83-46.47)
PN for counseling or therapy	
No	25.24 (21.47-29.07)
Yes	74.76 (70.93-78.53)

Note. CI = confidence interval; MH = mental health; CF = Canadian Forces; PN = perceived need. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

group for “emotional or mental health”, and 8.97% (95% CI [5.03-14.18]) a group for “other”¹³ reasons. Frequency of self-help group attendance in the past 12 months ranged from 1 to 200 times ($M = 25.95$, $SD = 21.13$). Within the subsample of individuals who attended a self-help group, 15.79% (95% CI [10.00-22.30]) of individuals attended 1-2 times¹⁴, 53.95% (95% CI [44.48-62.53]) attended 3-24 times, and 30.26% (95% CI [22.23-38.93]) attended 25 or more times.

Approximately 0.81% (95% CI [0.57-1.06]) of the overall sample reported using a telephone helpline in the past 12 months. Frequency of telephone helpline use in the past 12 months ranged from 1 to 24 times ($M = 1.92$, $SD = 1.87$). A total of 73.08% (95% CI [58.34-83.93]) of individuals who made use of a telephone helpline in the past 12 months did so on one occasion.

4.3.2. Logistic Regressions

Past 12-month perceived need for care and past 12-month professional mental health service use

Tables 8a and 8b present prevalence estimates and univariate logistic regression analyses for any past 12-month Internet use for problems with emotions, mental health, or use of alcohol or drugs, all in relation to past 12-month professional mental health service use and past 12-month perceived need for care. For the subsample of past 12-month Internet users, additional analyses subdivided by specific reason of use (i.e., to find out about symptoms, to find resources, to discuss with others through forums, support groups or Internet social networks) as predictor variables are presented in Tables

¹³ A high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

¹⁴ A high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

Table 8a. Overall Sample Estimates and Association Between Past 12-Month Internet Use for Problems with Emotions, Mental Health, or Use of Alcohol or Drugs and Past 12-Month Professional Mental Health Service Use

Variable	% (95% CI) ^a	Prof. MH service use	
		OR (95% CI)	<i>p</i>
Internet use			
No (ref.)	15.86 (14.88-16.81)	1.00	
Yes	65.82 (61.66-69.96)	10.22 (8.41-12.42)	< .000

Note. CI = confidence interval; MH = mental health; ref. = reference group. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aIndicates the percentage of individuals who reported using any professional mental health service in the past 12 months.

Table 8b. Overall Sample Estimates and Association Between Past 12-Month Internet Use for Problems with Emotions, Mental Health, or Use of Alcohol or Drugs and Past 12-Month Perceived Need for Care by Type

Variable	<u>PN information</u>			<u>PN medication</u>			<u>PN counseling</u>		
	% (95% CI) ^a	OR (95% CI)	<i>p</i>	% (95% CI) ^b	OR (95% CI)	<i>p</i>	% (95% CI) ^c	OR (95% CI)	<i>p</i>
Internet use									
No (ref.)	9.47 (8.65-10.29)	1.00		10.13 (9.32-10.92)	1.00		19.71 (18.60-20.84)	1.00	
Yes	57.88 (53.44-62.36)	13.15 (10.67-16.21)	< .000	42.12 (37.83-46.47)	6.47 (5.30-7.90)	< .000	74.76 (70.93-78.53)	12.04 (9.70-14.96)	< .000

Note. CI = confidence interval; PN = perceived need; ref. = reference group. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aIndicates the percentage of individuals who reported a perceived need for information in the past 12 months.

^bIndicates the percentage of individuals who reported a perceived need for medication in the past 12 months.

^cIndicates the percentage of individuals who reported a perceived need for counseling or therapy in the past 12 months.

8c and 8d. Past 12-month Internet use for problems with emotions, mental health, or use of alcohol or drugs was statistically significantly related to an increased likelihood of past 12-month professional mental health service use and past 12-month perceived need for information, medication, or counseling. Within the subsample of Internet users, Internet use to learn about symptoms and to find resources were both significantly and positively correlated with past 12-month professional mental health service use and past 12-month perceived need for care. Internet use to discuss with others through forums, support groups, or Internet social networks had no association with professional mental health service use or perceived need for care.

Past 12-month Internet use

Prevalence estimates and results of all logistic regression analyses with past 12-month Internet use for problems with emotions, mental health, or use of alcohol or drugs as the outcome variable are presented in Table 9. Age, sex, marital status, ethnicity, level of education, number of types of deployment trauma experiences, exposure to childhood adversity, income, meeting diagnostic criteria for an anxiety disorder, major depressive disorder, an alcohol-related disorder, or PTSD in the past 12 months were all statistically significantly related to past 12-month Internet use in unadjusted models and included in the final adjusted model. Within the final adjusted model, being a woman from White/Caucasian ethnic background, having at least some post-secondary education, having a history of childhood adversity, and meeting diagnostic criteria for an anxiety disorder, major depressive disorder, an alcohol-related disorder, or PTSD were statistically significantly associated with past 12-month Internet use for problems with emotions, mental health, or use of alcohol or drugs.

Table 8c. *Past 12-Month Internet Users Subsample Estimates and Association Between Reasons for Internet Use and Past 12-Month Professional Mental Health Service Use*

Variable	Prof. MH service use		<i>p</i>
	% (95% CI) ^a	OR (95% CI)	
Learn about symptoms			
No (ref.)	59.26 (50.40-66.79)	1.00	
Yes	68.38 (63.71-72.85)	1.52 (1.03-2.24)	0.03
Find resources			
No (ref.)	62.16 (57.26-67.20)	1.00	
Yes	74.19 (67.00-81.53)	1.75 (1.12-2.73)	0.01
Discuss with others			
No (ref.)	65.92 (61.34-70.21)	1.00	
Yes	66.67 (55.71-75.99)	1.00 (0.62-1.63)	0.99

Note. CI = confidence interval; MH = mental health; ref. = reference group. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aIndicates the percentage of individuals who reported using any professional mental health service in the past 12 months.

Table 8d. *Past 12-Month Internet Users Subsample Estimates and Association Between Reasons for Internet Use and Past 12-Month Perceived Need for Care by Type*

Variable	<u>PN information</u>			<u>PN medication</u>			<u>PN counseling</u>		
	% (95% CI) ^a	<i>OR</i> (95% CI)	<i>p</i>	% (95% CI) ^b	<i>OR</i> (95% CI)	<i>p</i>	% (95% CI) ^c	<i>OR</i> (95% CI)	<i>p</i>
Learn about symptoms									
No (ref.)	41.25 (32.39-49.18)	1.00		35.00 (26.74-42.61)	1.00		74.07 (66.20-81.71)	1.00	
Yes	63.91 (59.11-68.99)	2.59 (1.73-3.87)	< .000	44.78 (39.95-49.82)	1.53 (1.03-2.28)	0.03	75.00 (70.85-79.26)	1.04 (0.67-1.68)	0.80
Find resources									
No (ref.)	43.38 (38.20-48.37)	1.00		57.27 (52.43-62.44)	1.00		72.27 (67.84-76.71)	1.00	
Yes	61.54 (53.45-69.02)	1.21 (0.83-1.75)	0.32	41.11 (33.85-49.11)	0.96 (0.66-1.38)	0.81	80.90 (74.51-87.35)	1.63 (1.01-2.61)	0.04
Discuss with others									
No (ref.)	58.40 (53.25-63.10)	1.00		42.37 (37.48-46.77)	1.00		74.05 (70.18-78.41)	1.00	
Yes	57.45 (46.46-68.08)	0.96 (0.59-1.58)	0.88	42.55 (32.37-53.52)	1.03 (0.65-1.66)	0.89	76.60 (68.33-86.49)	1.19 (0.66-2.12)	0.56

Note. CI = confidence interval; PN = perceived need; ref. = reference group. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aIndicates the percentage of individuals who reported a perceived need for information in the past 12 months.

^bIndicates the percentage of individuals who reported a perceived need for medication in the past 12 months.

^cIndicates the percentage of individuals who reported a perceived need for counseling or therapy in the past 12 months.

Table 9. Overall Sample Estimates and Unadjusted and Adjusted Associations Between Predisposing, Enabling/Impeding, and Need Variables and Past 12-Month Internet Use for Problems with Emotions, Mental Health, or Use of Alcohol or Drugs

Variable	% (95% CI) ^a	Any past 12-month Internet use			
		OR (95% CI)	<i>p</i>	AOR (95% CI)	<i>p</i>
<i>Predisposing (socio-demographic)</i>					
Age					
16-34 years old (ref.)	9.65 (8.47-10.79)	1.00		1.00	
35-44 years old	11.55 (10.09-12.99)	1.22 (1.00-1.49)	0.045	1.10 (0.87-1.39)	0.41
45-60 years old	8.15 (6.73-9.46)	0.83 (0.66-1.03)	0.09	0.78 (0.60-1.00)	0.05
Sex					
Male (ref.)	9.17 (8.37-9.95)	1.00		1.00	
Female	14.13 (11.55-16.49)	1.62 (1.29-2.02)	< .000	1.42 (1.09-1.84)	0.01
Marital status					
Single, separated, divorced, or widowed (ref.)	11.57 (10.08-13.01)	1.00		1.00	
Married or common-law	8.94 (8.02-9.86)	0.75 (0.63-0.91)	0.003	0.85 (0.67-1.07)	0.17
Ethnicity					
Caucasian/White (ref.)	9.40 (8.63-10.18)	1.00		1.00	
Minority	13.52 (10.49-16.51)	0.67 (0.51-0.87)	0.003	0.63 (0.47-0.84)	0.002
Education					
High school education or diploma (ref.)	7.83 (6.38-9.19)	1.00		1.00	
Post-secondary education or graduation	10.69 (9.76-11.62)	1.42 (1.14-1.77)	.002	1.58 (1.23-2.02)	< .000
<i>Predisposing (military)</i>					
Rank					
Junior NCO (ref.)	10.06 (8.90-11.26)	1.00			
Senior NCO or Officer	9.54 (8.56-10.50)	0.94 (0.79-1.12)	0.48		

Element					
Army (ref.)	9.77 (8.69-10.81)	1.00			
Navy or Air Force	9.95 (8.81-11.05)	1.02 (0.86-1.21)	0.82		
<i>Predisposing (psychological)</i>					
Deployment trauma experiences					
Mean (SD)	1.90 (2.23)	1.07 (1.03-1.11)	.001	1.03 (0.98-1.07)	0.31
Adverse childhood experiences					
No (ref.)	7.82 (6.77-8.80)	1.00		1.00	
Yes	12.08 (10.90-13.26)	1.63 (1.36-1.95)	< .000	1.28 (1.05-1.57)	0.01
<i>Enabling/Impeding</i>					
Income					
Less than \$80,000 (ref.)	10.99 (9.61-12.41)	1.00		1.00	
\$80,000 and more	9.18 (8.24-10.12)	0.82 (0.68-0.98)	.03	0.97 (0.77-1.24)	0.84
<i>Past 12-month mental health need</i>					
Anxiety disorder					
No (ref.)	8.17 (7.39-8.93)	1.00		1.00	
Yes	33.49 (28.99-38.36)	5.71 (4.53-7.21)	< .000	2.67 (1.94-3.67)	< .000
Major depressive disorder					
No (ref.)	7.74 (7.04-8.41)	1.00		1.00	
Yes	33.98 (29.58-38.51)	6.17 (4.97-7.64)	< .000	3.38 (2.52-4.55)	< .000
Alcohol-related disorder					
No (ref.)	9.27 (8.50-10.01)	1.00		1.00	
Yes	22.38 (16.38-27.83)	2.78 (1.97-3.93)	< .000	1.69 (1.13-2.54)	0.01

Posttraumatic stress disorder

No (ref.)	8.61 (7.84-9.36)	1.00		1.00	
Yes	29.94 (24.45-35.11)	4.51 (3.41-5.95)	< .000	1.51 (1.00-2.26)	.048

Note. SD = standard deviation; OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval; NCO = Non-Commissioned Officer; ref. = reference group. Adverse childhood experiences included physical abuse, sexual abuse, and/or exposure to domestic violence. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aIndicates the percentage of individuals who reported using the Internet for problems with their emotions, mental health, or use of alcohol or drugs in the past 12 months.

Prevalence estimates by reason for Internet use (i.e., to find out about symptoms, to find resources, to discuss with others) within the subsample of Internet users are presented in Table 10. Being 45-60 years old was statistically significantly associated with a decreased likelihood of using the Internet to discuss with others through forums, support groups, or Internet social networks ($OR = 0.47$, 95% CI [0.25-0.89], $p = .02$). Being married or having a common-law partner ($OR = 1.68$, 95% CI [1.11-2.55], $p = .02$) and exposure to childhood adversity ($OR = 1.53$, 95% CI [1.05-2.22], $p = .03$) were both statistically significantly related to an increased likelihood of using the Internet to find resources and meeting diagnostic criteria for PTSD in the past 12 months was statistically significantly associated with increased Internet use to discuss with others through forums, support groups, or Internet social networks ($OR = 1.96$, 95% CI [1.10-3.49], $p = .02$). Being married or having a common-law partner ($AOR = 1.75$, 95% CI [1.14-2.67], $p = .01$) and exposure to childhood adversity ($AOR = 1.57$, 95% CI [1.07-2.30], $p = .02$) remained statistically significantly associated with past 12-month Internet use to find resources within an adjusted model. Being 45-60 years old ($AOR = 0.44$, 95% CI [0.23-0.84], $p = .01$) and meeting diagnostic criteria for PTSD in the past 12 months ($AOR = 2.12$, 95% CI [1.16-3.84], $p = .01$) also remained statistically significantly associated with past 12-month Internet use to discuss with others within an adjusted model. All other variables were not statistically significantly related ($ps > .05$) to past 12-month Internet use to find out about symptoms, to find resources, or to discuss with others through forums, support groups or Internet social networks.

Table 10. *Predisposing, Enabling/Impeding, and Need Variables Estimates by Reason for Internet Use Within the Past 12-Month Internet Users Subsample*

Variable	<u>Learn about symptoms</u> % (95% CI) ^a	<u>Find resources</u> % (95% CI) ^b	<u>Discuss with others</u> % (95% CI) ^c
<i>Predisposing (socio-demographic)</i>			
Age			
16-34 years old	70.25 (64.77-76.01)	30.38 (24.71-36.76)	18.35 (13.44-23.35)
35-44 years old	78.43 (72.19-84.21)	29.41 (23.37-35.65)	13.73 (9.00-17.90) ^d
45-60 years old	78.18 (69.96-86.06)	25.45 (18.68-33.82)	9.09 (4.82-14.44) ^d
Sex			
Male	74.70 (70.64-78.65)	30.43 (26.07-34.62)	14.62 (11.52-17.66)
Female	71.43 (63.48-81.91)	25.40 (17.78-34.92) ^d	17.46 (10.09-25.80) ^d
Marital status			
Single, separated, divorced, or widowed	76.38 (70.33-82.32)	23.62 (17.15-29.44)	16.54 (11.42-21.61)
Married or common-law	72.86 (68.45-77.27)	33.79 (28.85-38.74)	14.40 (10.78-18.02)
Ethnicity			
Caucasian/White	75.28 (71.59-79.12)	28.78 (24.74-32.60)	14.76 (11.58-17.80)
Minority	67.44 (55.97-79.01)	34.88 (23.63-48.12) ^d	18.60 (9.02-29.45) ^d
Education			
High school education or diploma	70.67 (63.25-78.49)	26.67 (19.36-34.95)	12.00 (6.43-16.90) ^d
Post-secondary education or graduation	75.42 (71.41-79.35)	30.42 (25.99-34.78)	16.25 (12.84-19.99)
<i>Predisposing (military)</i>			
Rank			
Junior NCO	71.91 (66.34-77.29)	29.21 (23.40-34.83)	15.73 (11.17-20.04)
Senior NCO or Officer	77.37 (73.13-81.73)	29.93 (25.17-35.07)	14.60 (11.11-18.50)

Element			
Army	74.85 (70.09-79.88)	28.74 (23.42-34.66)	14.37 (10.17-18.32)
Navy or Air Force	73.15 (68.16-78.72)	30.20 (24.74-35.51)	16.11 (11.93-20.85)
<i>Predisposing (psychological)</i>			
Deployment trauma experiences			
Mean (SD)	2.15 (2.22)	1.82 (2.17)	2.23 (2.40)
Adverse childhood experiences			
No	72.52 (67.67-78.31)	24.43 (19.12-29.79)	12.98 (8.03-17.35) ^d
Yes	75.00 (70.32-79.80)	33.15 (27.76-38.43)	17.39 (12.99-21.29)
<i>Enabling/Impeding</i>			
Income			
Less than \$80,000	73.81 (67.42-80.08)	26.98 (20.68-33.24)	16.67 (12.04-21.95)
\$80,000 and more	74.60 (70.22-78.98)	31.22 (26.47-36.08)	14.29 (10.51-17.69)
<i>Past 12-month mental health need</i>			
Anxiety disorder			
No	73.22 (69.03-77.19)	30.13 (25.67-34.94)	15.90 (12.54-19.55)
Yes	78.87 (71.32-85.17)	28.17 (20.96-35.54)	12.68 (7.67-18.41) ^d
Major depressive disorder			
No	75.44 (71.65-79.73)	28.07 (23.75-32.88)	14.47 (11.06-17.91)
Yes	70.11 (63.18-77.53)	33.33 (25.35-40.60)	17.24 (11.56-23.21) ^d
Alcohol-related disorder			
No	74.56 (70.78-78.13)	28.98 (25.15-33.16)	14.84 (11.63-17.91)
Yes	71.88 (61.97-86.10)	34.34 (20.63-46.70) ^d	18.75 (8.01-27.70) ^d

Posttraumatic stress disorder

No	73.64 (70.05-77.68)	29.84 (25.62-34.29)	13.95 (10.80-17.00)
Yes	73.47 (63.94-83.64)	24.49 (15.49-32.34) ^d	24.49 (14.82-33.32) ^d

Note. CI = confidence interval; SD = standard deviation; NCO = Non-Commissioned Officer; NR = not released to protect confidentiality of respondents as per Statistics Canada data release policies. Adverse childhood experiences included physical abuse, sexual abuse, and/or exposure to domestic violence. Statistics Canada permitted only weighted percentages to be released due to small cell sizes for certain variables. All percentages were rounded to base 20 for confidentiality purposes according to Statistics Canada data release policies.

^aIndicates the percentage of individuals who reported using the Internet for problems with their emotions, mental health, or use of alcohol or drugs in the past 12 months and used the Internet to learn about symptoms.

^bIndicates the percentage of individuals who reported using the Internet for problems with their emotions, mental health, or use of alcohol or drugs in the past 12 months and used the Internet to find resources where they could get help.

^cIndicates the percentage of individuals who reported using the Internet for problems with their emotions, mental health, or use of alcohol or drugs in the past 12 months and used the Internet to discuss with others through forums, support groups or Internet social networks

^dA high level of error is associated with this estimate. The estimate is considered marginally acceptable according to Statistics Canada guidelines.

4.4. Discussion

The current study was completed using a nationally representative sample of CAF Regular Force members surveyed in the post-Afghanistan era. The study had three main objectives: 1) to provide estimates of Internet use for problems with emotions, mental health, or alcohol or drug use and contrast such estimates to use of other forms of paraprofessional care; 2) to examine the relationship between Internet use for mental health related problems and professional mental health service use and perceived need for care; and 3) to identify individual predictors of Internet use for mental health related problems in accordance with Andersen's (1995) model. Congruent with the first hypothesis, the Internet was more commonly used than other forms of paraprofessional care (i.e., support groups, telephone helplines). In line with the second hypothesis, Internet use for mental health related problems was associated with a higher likelihood of professional mental health service use and perceived need for care. Finally, supporting the third hypothesis, need factors increased the likelihood of Internet use for mental health related problems and predisposing factors were also related to Internet use. Comprehensive results, limitations, and implications are presented below.

4.4.1. Past 12-Month Internet Use

Approximately 10% of CAF Regular Forces personnel in the current sample made use of the Internet for mental health related problems within a one year period. Prevalence of Internet use for mental health related problems was comparable to numbers previously reported in a large civilian sample (Powell & Clarke, 2006). Congruent with a recent US veterans study (Whealin, Jenchura, Wong, & Zulman, 2016), CAF personnel who used the Internet most commonly sought out information. A

substantial fraction of individuals also used the Internet to find out where they could get help. Internet use to discuss with others through forums, support groups, or Internet social networks and Internet use to receive online therapy services were less commonly reported. Internet use for the purpose of connecting with others was slightly higher than previous estimates from a US civilian sample (DeAndrea & Anthony, 2013). Differences may, in part, reflect qualitative distinctions between civilian and military populations (e.g., increased importance of camaraderie and shared experiences in the military; Laffaye et al., 2008; Murphy et al., 2014). The limited use of the Internet for therapy or counseling was unexpected given the rapid surge of online evidenced-based interventions (Wangelin, Szafranski, & Gros, 2016) for both military personnel and families (e.g., Nelson et al, 2014; Ruggiero et al., 2015). The limited used was also surprising given evidence that veterans and military personnel are open to receiving Internet-based interventions (Tsai & Rosenheck, 2012; Wilson et al., 2008). Nonetheless, the current results are consistent with low rates of e-technology use documented in a recent US military sample (Erbes et al., 2014) and lower reported willingness to use Internet-based interventions in a sample of US veterans with PTSD (Whealin, Seibert-Hatalsky, Willett Howell, & Tsai, 2015). Moreover, online therapy resources within the CAF system remain scarce, which could have impacted rates of use in by CAF military personnel. Overall, the pattern of Internet use for mental health related problems in the current study is comparable to patterns previously documented in the literature (Kalckreuth, Trefflich, & Rummel-Kluge, 2014).

Military personnel who used the Internet for mental health related problems represented a smaller fraction of the sample than individuals who sought care from

professional mental health service providers (i.e., 9.82% versus 20.75%; see Study 1). Nonetheless, in line with the first hypothesis, Internet was more commonly used than self-help groups or telephone helplines. The current result is consistent with mental health service preferences documented in a large civilian study (Powell & Clarke, 2006). The current pattern of care seeking may be influenced by the continual development of e-technologies and the increased availability of the Internet on mobile phone devices (Haight, Quan-Haase, & Corbett, 2014). Existing structural and logistical barriers to care (e.g., transportation) may also have impacted access to self-help groups, but not the Internet (Hom et al., 2017).

The Internet was less sought out than professional healthcare providers, despite most Canadians having ready access to the Internet (Haight et al., 2014). Evidence suggests Internet users report concerns about the accuracy and credibility of online health information (e.g., Ek, Eriksson-Backa, & Niemelä, 2013; Hesse et al., 2005) and distrust has previously been associated with decreased Internet use for health related activities (Zulman, Kirch, Zheng, & An, 2011). In contrast, research suggests professional care providers are perceived as the most highly trusted source of health information (Hesse et al., 2005; Powell & Clarke, 2006). Receiving help from a familiar and trusted source has been identified as an important consideration among military personnel seeking mental health care (Hom et al., 2017; Russell et al., 2014), which may have acted as an additional motivator to seek in-person professional care. Another possibility is that stigma (Weeks et al., 2017) deterred individuals from using the Internet as a resource due to risk of potential breaches in privacy and confidentiality associated with the use of e-technologies (Hom et al., 2017; Lawlor-Savage & Prentice, 2014).

4.4.2. Association Between Internet Use, Professional Mental Health Service Use, and Perceived Need for Care

Congruent with the second hypothesis, Internet use for mental health related problems was positively related to professional mental health service use and perceived need for information, medication, and counseling. Specifically, using the Internet to learn about symptoms was associated with increased professional mental health service use, perceived need for information, and perceived need for medication. Using the Internet to find resources had a positive relationship with professional mental health service use and perceived need for counseling. Using the Internet to connect with others had no association with professional mental health service use or perceived need for care. Some research indicates that Internet use for health related activities rarely translates into use of in-person professional services (Baker et al., 2003; Kauer, Mangan, & Sancu, 2014); however, other studies conducted on civilian samples suggest that Internet use for health related may potentiate access to in-person care (Fox, Rainie, & Horrigan, 2006; Younes, Chollet, Menard, Melchior, 2015). Congruent with the latter research, the current study results suggest that Internet use has the potential to increase perceived need for care and utilization of traditional mental health care services in military populations. Research on Internet use and health care seeking behaviours is still nascent and studies to date have tended to examine health related Internet use as one broad concept (Kauer et al., 2014; Hesse et al., 2005; Younes et al., 2015). People can use the Internet for a variety of different health related activities (e.g., learn information, find resources, online forums; Atkinson, Saperstein, & Pleis, 2009). Based on the current study results, different reasons for Internet use may hold different patterns of association

with perceived need for care and in-person health care utilization. Additionally, patterns of association may differ between specific populations (e.g., civilian versus military, health versus mental health, young adults versus adults). Future research on Internet use and traditional help-seeking behaviours would benefit from further exploring such distinctions within both civilian and military samples.

4.4.3. Association Between Predisposing, Enabling/Impeding, and Need Factors and Internet Use

Congruent with the third hypothesis, mental health needs were associated with a higher likelihood of using the Internet for mental health related problems. The result is consistent with civilian and military studies from the broad care-seeking literature (e.g., Elhai & Ford, 2007; Fikretoglu et al., 2008; Fikretoglu et al., 2009; Katz et al., 1997), as well as studies specific to Internet care-seeking behaviours (Kalckreuth et al., 2014; Powell & Clarke, 2006; Younes et al., 2015). Of all mental health disorders, meeting criteria for PTSD had the smallest association with Internet use for mental health related problems. The result is somewhat consistent with studies documenting limited access to e-health PTSD resources among veterans diagnosed with PTSD (Erbes et al., 2014) and decreased willingness to utilize Internet-based mental health services by veterans with PTSD compared to those without (Whealin et al., 2015); however, PTSD was the only mental health need related to use of the Internet for the specific reason of discussing with others through online forums, support groups, and Internet social media. The result is consistent with a qualitative study identifying “interactions with social support” as an important benefit of Internet technology for veterans with PTSD (Whealin et al., 2016),

as well as research documenting the potential advantages of peer support for military personnel with PTSD (Hom et al., 2017; Jain et al., 2013).

Also congruent with the third hypothesis, several predisposing factors remained associated with Internet use even after accounting for mental health needs. Specifically, being a woman, being from a White/Caucasian ethnic background, having completed at least some post-secondary education, and having a history of childhood adversity were all associated with a higher likelihood of using the Internet for mental health related problems. The results are generally consistent with US civilian and veterans studies that have previously identified several socio-demographic variables as potential barriers to health related Internet use (e.g., Atkinson et al., 2009; Baker et al., 2003; Powell & Clarke, 2006; Tsai & Rosenheck, 2012). The current results suggest such barriers may be less prominent within a Canadian military context. For example, older age and lower income have typically been documented as potential barriers to health related Internet use (e.g., McInnes et al., 2010; Powell & Clarke, 2006; Tsai & Rosenheck, 2012); but, neither were barriers in the current sample. Similarly, marital status, rank, and element were not associated with Internet use in the current study. Such results are consistent with a reduction of disparities in health related Internet access (i.e., digital divide). Finally, within the current sample of CAF personnel who used the Internet for mental health related problems, no specific patterns of use emerged based on predisposing, enabling/impeding, and need factors and reasons for Internet use. E-technology may, therefore, be helpful to increase access to care in military personnel. Based on the current study results, developing reliable and comprehensive (i.e., information, resources, peer support, self-help materials) Internet-based resources adapted to CAF populations (e.g.,

OSI Connect; Veterans Affairs Canada, 2015) may be more beneficial to personnel and their families than specialized Internet-based resources.

4.4.4. Limitations

The use of a nationally representative CAF sample of Regular Forces personnel who specifically used the Internet for mental health related problems is a valuable strength of the current study. That said, several limitations should be taken into consideration when interpreting findings. First, the data is cross-sectional, which precludes the establishment of any causal relationships. Approximately one third of Internet users used it to look up where they could get help. There is also evidence to suggest that individuals under 35 years old are nine times more likely to initially access health-information through the Internet relative to in-person health care providers (Hesse et al., 2005). Longitudinal research would, however, be necessary to clarify whether CAF personnel primarily use the Internet for mental health related activities before accessing professional mental health care or as an adjunct to in-person care. Irrespective of the directionality of the relationships, the current results indicate the Internet may be a useful platform to provide information and programs designed to facilitate initiation of in-person professional mental health care or to complement such services. Second, the current study did not assess whether CAF personnel more readily accessed the Internet on computer stations or mobile devices. The mobile health (i.e., mHealth) field is constantly evolving (Price et al., 2014). Examining CAF personnel preferences for traditional Internet-based mental health resources versus mHealth applications would help inform the development of future e-based resources and might help increase access to such resources. Third, online therapy programs specific to Canadian military

populations are sparse and online therapy was only used by a small fraction of personnel who accessed the Internet for mental health related problems. Sample size restrictions precluded the examination of predisposing, enabling/impeding, need, perceived need for care, and professional mental health service use variables in relation to Internet use for online therapy purposes specifically. Future research would benefit from exploring patterns of online therapy use within CAF populations when more online therapy programs become available.

4.4.5. Conclusion

The current study is the first to examine use of the Internet for mental health related problems in a nationally representative sample of CAF Regular Members from the post-Afghanistan era. Internet was less commonly used than professional in-person mental health services but it was used approximately five times and ten times more frequently than self-help groups and telephone helplines, respectively. Over three quarters of Internet users reported a perceived need for care and approximately two thirds reported accessing professional mental health services. Meeting criteria for a mental health disorder in the past 12 months was associated with Internet use for mental health related problems. Sex, ethnicity, education, and adverse childhood experiences were the only predisposing factors related to Internet use for mental health related problems. The current results suggest that, although there still exist some socio-demographic barriers to Internet use for CAF personnel, such barriers may be slowly disappearing.

The current study has at least two implications. First, the Internet may be a sought after platform for the delivery of mental health services and resources to military

personnel and their families, especially in comparison to traditional self-help groups or telephone helplines. Contemporary program evaluations of Internet tools currently available to Canadian military populations (e.g., OSI Connect website; Veterans Affairs Canada, 2015) would be needed to further clarify their reach and effectiveness. Internet-based services may be especially beneficial given their ease of access from both computer stations and mobile devices (Haight et al., 2014); however, future research should assess willingness to use e-technology based services in Canadian military samples. The current results also suggest that CAF Regular Forces personnel continue to utilize in-person professional mental health care services, despite having access to publically available mental health information via the Internet. Accordingly, within a military context, Internet-based mental health programs and services may be most appropriate as adjuncts rather than substitutes for professional mental health care.

A second implication of the current results is that web-based psychoeducation resources about a range of mental health related symptoms may be particularly beneficial to CAF personnel and their families. Indeed, in the current sample, most Regular Forces personnel who used the Internet for mental health related problems specifically sought out information about their symptoms. Providing that perceived lack of accuracy can be an important barrier to trust of information accessed over the Internet (Ek et al., 2013; Zulman et al., 2011), the usefulness and reach of web-based resources for CAF personnel and their families may be broadened by ensuring credible military and mental health institutions are involved in the development of such resources (e.g., Operational Stress Injury Resource for Caregivers; Veterans Affairs Canada, CFMWS, & Royal Ottawa Mental Health Care Group, 2016). Future research examining perceived credibility of

Internet-based mental health information by CAF personnel would help clarify the potential utility of such resources for increasing access to mental health care in a Canadian military context.

CHAPTER 5: General Discussion and Implications

Research demonstrates a rise in the mental health needs of military personnel, veterans, and their families following Canada's missions in Afghanistan (Fikretoglu et al., 2016; see Thompson et al., 2016 for review). Research also indicates that not all military personnel with a mental health need will readily seek mental health care (e.g., Zamorski & Boulos, 2014). An important body of literature has focused on identifying barriers to seeking professional mental health care in military personnel; but, relatively less is known about facilitators of care seeking. The three studies described above were designed within the context of ongoing developments of the CAF mental health care system (DND, 2013). The studies were informed by the basic tenants of Andersen's (1995, 2008) Behavioral Model of Health Services Use (i.e., predisposing, enabling, need factors) and had two overarching goals: 1) to examine the potential role of social support as an enabling factor for mental health care seeking behaviors; and 2) to explore patterns of use for paraprofessional forms of care within a broader mental health care access framework.

All three studies supported the relevance of Andersen's (1995, 2008) model for understanding mental health care seeking patterns within a military context. Predisposing and need factors were associated with professional and paraprofessional mental health service use, as well as perceived need for care. Congruent with Andersen's (1995) framework and previous literature (e.g., Fikretoglu et al., 2008; Fikretoglu et al., 2009), need factors generally demonstrated the strongest association. Moreover, predisposing factors were less consistently related to utilization of paraprofessional services such as the OSISS peer support program or Internet resources. Within a Canadian military

context, income was unrelated to any mental health service use or perceived need for care variables, further supporting claims of a universal Canadian military health care system (Lewis, 2015).

In terms of specific results, seeking support from various social groups was positively related to professional mental health service use and perceived need for care, suggesting that social networks may act as a potent enabling factor to mental health service use. A second result was that seeking help from the OSISS peer support program was strongly related to professional mental health service use and perceived need for care; however, OSISS had a limited reach and appeared to be primarily utilized by military personnel with PTSD. Finally, the Internet was more readily accessed than other paraprofessional mental health care services (e.g., OSISS, self-help groups). Few potential barriers to Internet use were identified; nevertheless, the Internet remained less commonly sought out than professional mental health services. Internet use for mental health related activities held a positive association with both professional mental health service use and perceived need for care, highlighting the potential utility of the Internet as a mechanism to increase mental health care access within the CAF.

General findings from the three studies described above may help inform future revisions to Andersen's model (1995, 2008) and the development of novel theoretical models of health service use. Factors related to an individual's social context (e.g., structure, relationships) appear to have a substantial impact on mental health care seeking behaviors relative to other factors traditionally discussed in Andersen's model (1995, 2008). Future revisions to the model could benefit from explicitly incorporating an enabling/impeding "social relationship" variable that would reflect the quality of an

individual's interactions with their social network. Alternatively, the social milieu could be more readily emphasized as an overarching framework in which individual and organizational factors reciprocally interact. Within the current studies, peer support programs and the Internet were identified as paraprofessional mental health services. There were different associations between individual characteristics and paraprofessional mental health service use when compared to professional mental health service use. Accordingly, theoretical models may benefit from explicitly adding and delineating paraprofessional health services as health behaviour outcomes. Such delineations should allow for a more refined understanding of care seeking behaviours based on the type of service delivery. Finally, results of the current studies suggest care-seeking behaviours may occur for multiple types of services simultaneously. The explicit inclusion of both professional and paraprofessional health services within theoretical models should facilitate future research designed to: 1) examine interactive relationship between different means of care; and 2) to examine the association between individual characteristics and health care seeking behaviours.

5.1. General limitations

The use of a complex survey methodology including a recent nationally representative sample of CAF Regular Forces personnel and validated structured diagnostic interviews facilitates direct application of results from all three studies to future CAF mental health care programming. Nonetheless, four considerations should be noted when interpreting and translating results from the current studies or designing new research programs. First, the 2013 CFMHS primarily targeted active duty CAF personnel and did not include a nationally representative sample of CAF Reserve Force members

or CAF veterans. Results from the studies may not be generalizable to CAF Reserve Forces or veterans and to military populations outside of Canada.

Second, the data used for the studies was self-reported and retrospective. The accuracy of the information provided by participants may have been compromised, especially in regards to recollection of potentially traumatic experiences. Evidence does not suggest biased recall of self-reported adverse childhood experiences (see Hardt & Rutter, 2004 for review; Hardt, Vellaisamy, & Schoon, 2010), but there has been ongoing debate regarding distortions of self-reported combat exposure and PTSD symptoms in US samples (e.g., Dohrenwend et al., 2006; Marx et al., 2012; McNally & Frueh, 2013). No empirical evidence to date indicates falsification of combat exposure and PTSD in a Canadian military context but misrepresentation of trauma experiences and mental health symptoms remains possible.

Third, the studies identified potential mechanisms by which access to mental health care may be increased but the cross-sectional data precludes the establishment of causal inferences. Longitudinal research would be required to confirm temporality of the relationships. Andersen's (2008) most recent model posits health service use as dynamic, recursive, and involving ongoing reciprocal relationships between individual characteristics (i.e., predisposing, enabling/impeding, need) and health behaviours. Accordingly, clarifying relationships amongst different components of the model might be more critical than identifying temporal patterns of association between components of the model.

Finally, Andersen's Behavioural Model of Health Services Use (1995, 2008) informed all three studies. The model has been extensively researched, refined, and

validated in the literature (e.g., Andersen 1995, 2008); however, alternative theoretical frameworks could have been used to explore recent mental health care seeking patterns in the CAF. Ajzen's (1985) Theory of Planned Behaviour may have provided a more comprehensive explanation of the psychological processes underlying the relationship between social support and professional care seeking. Contrary to Andersen (1995), Ajzen (1985) specifically delineates social pressure as a determinant of behaviours. Nonetheless, the Ajzen (1985) model does not directly capture mental health need factors or structural barriers to care. Similarly, Leventhal and colleagues' (1984) Self-Regulatory Model might have provided a more in depth examination of illness perception processes underlying the relationship between mental health needs and service use; nevertheless, the model does not explicitly account for structural barriers or social support as determinants of care seeking.

The Behavioural Model of Health Services Use was ultimately selected for four reasons. First, the 2013 CFMHS more readily assessed constructs from Andersen's (1995) model. Second, the model captured a broader repertoire of potential determinants of care seeking and was developed within a population health context, contrary to some of the other models available in the literature. Third, Andersen's (1995) model appeared more easily applicable to all three studies. Finally, Andersen's (1995) model has been extensively studied in previous civilian and military samples (e.g., Elhai et al., 2004; Fikretoglu et al., 2006; Fikretoglu et al., 2009; Sareen, Cox, et al., 2007; Sareen et al., 2010), which facilitated comparisons with the current studies' findings. Future research would benefit from further exploring CAF mental health care seeking patterns within the context of alternative theoretical frameworks.

5.2. Conclusion

The three current studies suggest that social networks have the potential to enable professional mental health care seeking behaviours amongst military personnel.

Developing psychoeducational programs and resources for family members or co-workers and supervisors may be particularly helpful to increase access to care given the close proximity of these social groups to military personnel with a mental health need.

Relatedly, the OSISS program incorporates both military peers and family members and has the potential to be an effective adjunct to professional mental health care. That said, the three current studies indicate military personnel who make use of OSISS are scarce and alternative paraprofessional mental health resources may be needed. The three current studies highlight that the Internet may be the most effective mean of delivering paraprofessional mental health resources in the CAF. Military personnel and their families appeared most interested in accessing comprehensive psychoeducation resources on mental health symptoms and available treatment options. Incorporating personal stories of recovery within Internet resources may help capture the peer support component sought out by military personnel who make use of peer support groups or Internet discussion forums. Additional research will be needed to evaluate and refine Internet resources currently available within the CAF. Research will also be needed to develop and refine programs designed to increase mental health care access for both military personnel and their social networks (e.g., OSISS, Road to Mental Readiness).

The three current studies provide general directions for the implementation of various mental health initiatives within the CAF. The studies may also help inform the development of military mental health care strategies internationally. Future research

would benefit from evaluating the generalizability of the current results to major military organizations outside of Canada.

References

- Afifi, T. O., Taillieu, T., Zamorski, M. A., Turner, S., Cheung, K., & Sareen, J. (2016). Association of child abuse exposure with suicidal ideation, suicidal plans, and suicide attempts in military personnel and the general population in Canada. *JAMA Psychiatry, 73*, 229-238. doi:10.1001/jamapsychiatry.2015.2732
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhland & J. Beckman (Eds.), *Action-control: From cognitions to behavior* (pp. 11-39). Heiderlberg, Germany: Springer.
- Albert, M., Becker, T., McCrone, P., & Thornicroft, G. (1998). Social networks and mental health service utilization – A literature review. *International Journal of Social Psychiatry, 44*, 248-266. doi:10.1177/002076409804400402
- Alonso, J., Angermeyer, M. C., Bernet, S., Bruffaerts, R., Brugha, T. S., Bryson, H., ... Vollebergh, W. A. (2004). Use of mental health services in Europe: Results from the European Study of the Epidemiology of Mental Disorders (ESEMeD) project. *Acta Psychiatrica Scandinavica, 109*(Suppl 420), 21-27.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th ed. revised). Washington, DC: Author.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- Amstadter, A. B., Broman-Fulks, J., Zinzow, H., Ruggiero, K. J., & Cercone, J. (2009). Internet based interventions for traumatic stress-related mental health problems:

A review and suggestion for future research. *Clinical Psychology Review*, 29, 410-420. doi:10.1016/j.cpr.2009.04.001

Andersen, R. M. (1968). *Behavioral Model of Families' Use of Health Services*.

Research Series No. 25. Chicago, IL: Center for Health Administration Studies, University of Chicago.

Andersen, R. M. (1995). Revisiting the Behavioral Model and access to medical care:

Does it matter? *Journal of Health and Social Behaviour*, 36, 1-10.

doi:10.2307/2137284

Andersen, R. M. (2008). National Health Surveys and the Behavioral Model of Health

Services Use. *Medical Care*, 46, 647-653. doi:10.1097/MLR.0b013e31817a835d

Andersen, R. & Davidson, P. (2001). Improving access to care in America: Individual

and contextual indicators. In: R. Andersen, T. Rice, & J. Kominski (Eds.),

Changing the U.S. health care system: Key issues in health services policy and management (pp.3-31). San Francisco, CA: Jossey-Bass.

Andersen, R. M., Kravits, J., & Andersen, O. W. (Eds.). (1975). *Equity in health*

services: Empirical analyses in social policy. Boston, MA: Ballinger Publishing Company.

Andersen, R., & Newman, J. F. (1973). Societal and individual determinants of medical

care utilization in the United States. *Milbank Quarterly*, 83, 1-28.

doi:10.1111/j.1468-0009.2005.00428.x

Andrews, G., Cuijpers, P., Craske, M. G., McEvoy, P., & Titov, N. (2010). Computer

therapy for the anxiety and depressive disorders is effective, acceptable and

practical health care: A meta-analysis. *Plos One*, 5, e13196.

doi:10.1371/journal.pone.0013196

Asmundson, G. J. G., Stein, M. B., & McCreary, D. R. (2002). Posttraumatic stress disorder symptoms influence health status of deployed peacekeepers and nondeployed military personnel. *Journal of Nervous Disease*, 190, 807-815.
doi:10.1097/00005053-200212000-00002

Asmundson, G. J. G., & Taylor, S. (2006). PTSD and chronic pain: Cognitive-behavioral perspectives and practical implications. In G. Young, A. W. Kane, & K. Nicholsons (Eds.), *Causality: Psychological knowledge and evidence in court* (pp. 225-241). New York, NY: Springer.

Atkinson, N. L., Saperstein, S. L., & Pleis, J. (2009). Using the Internet for health-related activities: Findings from a national probability sample. *Journal of Medical Internet Research*, 11, e4. doi:10.2196/jmir.1035

Babitsch, B., Gohl, D., & von Lengerke, T. (2012). Re-revisiting Andersen's Behavioral Model of Health Services Use: A systematic review of studies from 1998-2011. *Psychosocial Medicine*, 9, Epub Doc11. doi:10.3205/psm000089

Baker, L., Wagner, T. H., Singer, S., & Bundorf, M. K. (2003). Use of the Internet and e-mail for health care information: Results from a national survey. *JAMA*, 289, 2400-2406. doi:10.1001/jama.289.18.2400

Barber, J. A., Rosenheck, R. A., Armstrong, M., & Resnick, S. G. (2008). Monitoring the dissemination of peer support in the VA healthcare system. *Community Mental Health Journal*, 44, 433-441. doi:10.1007/s10597-008-9146-7

- Bebbington, P. E., Brugha, T. S., Meltzer, H., Jenkins, R., Ceresa, C., Farrell, M., & Lewis, G. (2000). Neurotic disorders and the receipt of psychiatric treatment. *Psychological Medicine, 30*, 1369-1376. doi:10.1017/S0033291799002974
- Belik, S. L., Stein, M. B., Asmundson, G. J., & Sareen, J. (2009). Relation between traumatic events and suicide attempts in Canadian military personnel. *Canadian Journal of Psychiatry, 54*, 93-104. doi:10.1037/e517302011-196
- Blais, R. K., Renshaw, K. D., & Jakupcak, M. (2014). Posttraumatic stress and stigma in active-duty service members relate to lower likelihood of seeking support. *Journal of Traumatic Stress, 27*, 116-119. doi:10.1002/jts.21888
- Blaisure, K. R., Saathoff-Wells, T., Pereira, A., Wadsworth, S. M., & Dombro, A. L. (2012). *Serving military families in the 21st century*. Routledge.
- Bland, R. C., Newman, S. C., & Orn, H. (1997). Help-seeking for psychiatric disorders. *Canadian Journal of Psychiatry, 42*(9), 935-942.
- Blom, M. M., Zarit, S. H., Groot Zwaafink, R. B. M., Cuijpers, P., & Pot, A. M. (2015). Effectiveness of a Internet intervention for family caregivers of people with dementia: Results of a randomized controlled trial. *PlosOne, 10*, e0116622. doi:10.1371/journal.pone.0116622
- Bor, J., Basu, S., Coutts, A., McKee, M., & Stuckler, D. (2013). Alcohol use during the great recession of 2008-2009. *Alcohol and Alcoholism, 48*, 343-348. doi:10.1093/alcalc/agt2002
- Borah, E., Daggett, P., Adler, E., Banister, J., MacDonald, A., & Stevens-Manser, S. (2015). *Assessment of Texas veterans mental health program, final report*.

Austin, TX: Texas Institute for Excellence in Mental Health, Center for Social Work Research, University of Texas.

- Boulos, D., & Zamorski, M. A. (2013). Deployment-related mental disorders among Canadian Forces personnel deployed in support of the mission in Afghanistan, 2001-2008. *Canadian Medical Association Journal, 185*, 545-552.
doi:10.1503/cmaj.122120
- Boulos, D., & Zamorski, M. A. (2015). Do shorter delays to care and mental health system renewal translate into better occupational outcome after mental disorder diagnosis in a cohort of Canadian military personnel who returned from an Afghanistan deployment? *British Medical Journal, 5*, e008591.
doi:10.1136/bmjopen-2015-008591
- Boulos, D., & Zamorski, M. A. (2016a). Contribution of the mission in Afghanistan to the burden of past-year mental disorders in Canadian Armed Forces Personnel, 2013. *Canadian Journal of Psychiatry, 61*, 64S-76S. doi:
10.1177/0706743716628857
- Boulos, D., & Zamorski, M. A. (2016b). Delay to mental healthcare in a cohort of Canadian Armed Forces personnel with deployment-related mental disorders, 2002-2011: a retrospective cohort study. *British Medical Journal, 6*, e012384.
doi:10.1136/bmjopen-2016-012384
- Boyle, M. H., Offord, D. R., Campbell, D., Catlin, G., Goering, P., Lin, E., & Racine, Y. A. (1996). Mental health supplement to the Ontario Health Survey: Methodology. *Canadian Journal of Psychiatry, 41*(9), 549-558.

- Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology, 68*, 748-766. doi:10.1037/0022-006X.68.5.748
- Brief, D. J., Rubin, A., Keane, T. M., Enggasser, J. L., Roy, M., Helmuth, E., ... Rosenbloom, D. (2013). Web intervention for OEF/OIF veterans with problem drinking and PTSD symptoms: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 81*, 890-900. doi:10.1037/a0033697
- Broadhead, W. E., Gelhbach, S. H., deGruy, F. V., & Kaplan, B. H. (1989). Functional versus structural social support and health care utilization in a family medicine outpatient practice. *Medical Care, 27*, 221-233. doi:10.1097/00005650-198903000-00001
- Caddick, N., Phoenix, C., & Smith, B. (2015). Collective stories and well-being: Using a dialogical narrative approach to understand peer relationships among combat veterans experiencing post-traumatic stress disorder. *Journal of Health Psychology, 20*, 286-299. doi:10.1177/1359105314566612
- Canadian Forces Moral and Welfare Services (2017). *Operational Stress Injury Social Support (OSISS)*. Retrieved from:
[https://www.cfmws.com/en/AboutUs/DCSM/OSISS/Pages/Operational-Stress-Injury-Social-Support-\(OSISS\).aspx](https://www.cfmws.com/en/AboutUs/DCSM/OSISS/Pages/Operational-Stress-Injury-Social-Support-(OSISS).aspx)
- Canadian Museum of History (2015). *Canada and the First World War: Life at the front – trench conditions*. Retrieved from:
<http://www.warmuseum.ca/firstworldwar/history/life-at-the-front/trench-conditions/shellshock/>

- Cernvall, M., Carlbring, P., Ljungman, L., Ljungman, G., & von Essen, L. (2015). Internet-based guided self-help for parents of children on cancer treatment: A randomized controlled trial. *Psycho-Oncology*, *24*, 1152-1158. doi:10.1002/pon.3788
- Chapman, P. L., Elnitsky, C., Pitts, B., Figley, C., Thurman, R. M., & Unwin, B. (2014a). Mental health, help seeking, and stigma and barriers to care among 3- and 12-month postdeployed and never deployed U.S. Army Combat Medics. *Military Medicine*, *179*, 55-62. doi:10.7205/MILMED-D-12-00367
- Chapman, P. L., Elnitsky, C., Thurman, R. M., Pitts, B., Figley, C., & Unwin, B. (2014b). Posttraumatic stress, depression, stigma, and barriers to care among U.S. Army healthcare providers. *Traumatology*, *20*, 19-23. doi:10.1037/h0099376
- Charuvastra, A., & Cloitre, M. (2008). Social bonds and posttraumatic stress disorder. *Annual Review of Psychology*, *59*, 301-328. doi:10.1146/annurev.psych.58.110405.085650
- Chen, A. W., Kazanjian, A., & Wong, U. (2007). Why do Chinese Canadians not consult mental health services: Health status, language or culture? *Transcultural psychiatry*, *46*, 623-641. doi:10.1177/1363461509351374
- Chinman, M., Lucksted, A., Gresen, R., Davis, M., Losonczy, M., Sussner, B., & Martone, L. (2008). Early experiences of employing consumer-providers in the VA. *Psychiatric Services*, *59*, 1315-1321. doi:10.1176/appi.ps.59.11.1315
- Cicila, L. N., Georgia, E. J., & Doss, B. D. (2014). Incorporating Internet-based interventions into couple therapy: Available resources and recommended uses.

Australian and New Zealand Journal of Family Therapy, 35, 414-430.

doi:10.1002/anzf.1077

Clatworthy, J., Bowskill, R., Rank, T., Parham, R., & Horne, R. (2007). Adherence to medication in bipolar disorder: A qualitative study exploring the role of patients' beliefs about the condition and its treatment. *Bipolar Disorders*, 9, 656-664.

doi:10.1111/j.1399-5618.2007.00434.x

Clement, S., Schauman, O., Graham, T., Maggioni, F., Evans-Lacko, S., Bezborodovs, C., ... Thornicroft, G. (2015). What is the impact of mental health-related stigma on help seeking? A systematic review of quantitative and qualitative studies.

Psychological Medicine, 45, 11-27. doi:10.1017/S0033291714000129

Cohen, S. (2004). Social relationships and health. *American Psychologist*, 59, 676-684.

doi:10.1037/0003-066X.59.8.676

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis.

Psychological Bulletin, 98, 310-357. doi:10.1037/0033-2909.98.2.310

Cozza, S. J., Haskins, R., & Lerner, R. M. (2013). Keeping the promise: Maintaining the health of military and veteran families and children. *The Future of Children*, 1-6.

Cramm, H., Tam-Seto, L., Norris, D., Eichler, M., & Smith-Evans, K. (2016). The impact of parental operational stress injury on child mental health and well-being: A scoping review. *Military Behavioral Health*, 4, 334-344.

doi:10.1080/21635781.2016.1181582

Cuijpers, P., van Straten, A., Smit, F., Mihalopoulos, C., & Beekman, A. (2008).

Preventing the onset of depressive disorders: A meta-analytic review of

psychological interventions. *American Journal of Psychiatry*, *165*, 1272-1280.
doi: 10.1176/appi.ajp.2008.07091422

Daigle, P. (2012). *Fortitude under fatigue: Assessing the delivery of care for Operational Stress Injuries that Canadian Forces members need and deserve* (Special Ombudsman Report to the Minister of National Defence). Ottawa, ON: National Defence and Canadian Forces.

Davidson, L, Ballamy, C., Guy, K., & Miller, R. (2012). Peer support among persons with severe mental illnesses: A review of evidence and experience. *World Psychiatry*, *11*, 123-128. doi:10.1016/j.wpsyc.2012.05.009

Davidson, L., Chinman, M., Kloos, B., Weingarten, R., Stayner, D., & Jacob, K. (1999). Peer support among individuals with severe mental illness: A review of the evidence. *Clinical Psychology: Science and Practice*, *6*, 165-187.
doi:10.1093/clipsy/6.2.165

DeAndrea, D. C., & Anthony, J. C. (2013). Online peer support for mental health problems in the United States: 2004-2010. *Psychological Medicine*, *43*, 2277-2288. doi:10.1017/S0033291713000172

Dear, B. F., Titov, N., Schwencke, G., Andrews, G., Johnston, L., Craske, M. G., & McEvoy, P. (2011). An open trial of a brief transdiagnostic internet treatment for anxiety and depression. *Behaviour Research and Therapy*, *49*, 830-837.
doi:10.1016/j.brat.2011.09.007

Dekel, R., & Monson, C. M. (2010). Military-related post-traumatic stress disorder and family relations: Current knowledge and future directions. *Aggression and Violent Behavior*, *15*, 303-309. doi:10.1016/j.avb.2010.03.001

- Demaerschalk, M. F., & Vanden Boer, L. E. (2013). The influence of municipal characteristics on the use of informal home care and home care services by the elderly Flemish. *The European Journal of Public Health, 23*, 241-246.
doi:10.1093/eurpub/cks068
- Department of National Defense (2004-2010).
- Department of National Defense (2013). *Surgeon General's Mental Health Strategy: Canadian Forces Health Services Group – An evolution of excellence*. Ottawa, ON: National Defence. Retrieved from: <http://www.forces.gc.ca/en/about-reports-pubs-health/surg-gen-mental-health-strategy-toc.page>
- Department of National Defense & Veterans Affairs Canada (2005). *Interdepartmental evaluation of the OSSIS peer support network* (report no. 1258-138). Ottawa, ON: Chief of Review Services. Retrieved from <http://www.crs-csex.forces.gc.ca/reports-rapports/pdf/2005/P0585-eng.pdf>
- Dhingra, S. S., Zack, M., Strine, T., Pearson, W. S., & Balluz, L. (2010). Determining prevalence and correlates of psychiatric treatment with Andersen's Behavioral Model of Health Services Use. *Psychiatric Services, 61*, 524-528.
doi:10.1176/appi.ps.61.5.524
- Dohrenwend, B. P., Turner, J. B., Turse, N. A., Adams, B. G., Koenen, K. C., & Marshall, R. (2006). The psychological risks of Vietnam for U.S. veterans: A revisit with new data and methods. *Science, 313*, 979-982.
doi:10.1126/science.1128944
- Drapalski, A. L., Milford, J., Goldberg, R. W., Brown, C. H., & Dixon, L. B. (2008). Perceived barriers to medical care and mental health care among veterans with

serious mental illness. *Psychiatric Services*, 59, 921-924.

doi:10.1176/appi.ps.59.8.921

Eaton, K. M., Hoge, C. W., Messer, S. C., Whitt, A. A., Cabrera, O. A., McGurk, D., ...

Castro, C. A. (2008). Prevalence of mental health problems, treatment need, and barriers to care among primary care-seeking spouses of military service members involved in Iraq and Afghanistan deployments. *Military Medicine*, 173, 1051-

1056. doi:10.7205/MILMED.173.11.1051

Ek, S., Ericksson-Backa, K., & Niemelä, R. (2013). Use of and trust in health

information on the Internet: A nationwide eight-year follow-up survey.

Informatics for Health and Social Care, 38, 236-245.

doi:10.3109/17538157.2013.764305

Elhai, J. D., & Ford, J. D. (2007). Correlates of mental health service use intensity in the

National Comorbidity Survey and National Comorbidity Survey Replication.

Psychiatric Services, 58, 1108-1115. doi:10.1176/appi.ps.58.8.1108

Elhai, J. D., Patrick, S. L., Anderson, S., Simons, J. S., & Frueh, C. (2006). Gender and

trauma-related predictors of use of mental health treatment services among

primary care patients. *Psychiatric Services*, 57, 1505-1509.

doi:10.1176/appi.ps.57.10.1505

Elhai, J. D., Reeves, A. N., & Frueh, B. C. (2004). Predictors of mental health and

medical service use in veterans presenting with combat-related posttraumatic stress disorder. *Psychological services*, 1, 111-119. doi:10.1037/1541-

1559.1.2.111

- Engel, C. C., Litz, B., Magruder, K. M., Harper, E., Gore, K., Stein, N., & Yeager, D. (2015). Delivery of self training and education for stressful situations (DESTRESS-PC) : A randomized trial of nurse assisted online self-management for PTSD in primary care. *General Hospital Psychiatry, 37*, 323-328. doi :10.1016/j.genhosppsy.2015.04.007
- Erbes, C. R., Stinson, R., Kuhn, E., Polusny, M., Urban, J., Hoffman, J., ... Thorp, S. R. (2014). Access, utilization, and interest in mHealth applications among veterans receiving outpatient care for PTSD. *Military Medicine, 179*, 1218-1222. doi:10.7205/MILMED-D-14-00014
- Erickson, J., Kinley, D. J., Afifi, T. O., Zamorski, M. A., Pietrzak, R. H., Stein, M. B., & Sareen, J. (2015). Epidemiology of generalized anxiety disorder in Canadian military personnel. *Journal of military, veteran and family health, 1*, 26-36. doi:10.3138/jmvfh.2014-01
- Fetzner, M. G., Abrams, M. P., & Asmundson, G. J. G. (2013). Symptoms of posttraumatic stress disorder and depression in relation to alcohol-use and alcohol-related problems among Canadian Forces veterans. *Canadian Journal of Psychiatry, 58*(7), 417-425.
- Fetzner, M. G., & Asmundson, G. J. G. (2015). Aerobic exercise reduces symptoms of posttraumatic stress disorder: A randomized controlled trial. *Cognitive Behaviour Therapy, 44*, 301-313. doi:10.1080/16506073.2014.916745
- Fikretoglu, D., Brunet, A., Schmitz, N., & Guay, S. (2006). Posttraumatic stress disorder and treatment seeking in a nationally representative Canadian military sample. *Journal of Traumatic Stress, 19*, 847-858. doi:10.1002/jts.20164

- Fikretoglu, D., Elhai, J. D., Liu, A., Richardson, J. D., & Pedlar, D. J. (2009). Predictors of likelihood and intensity of past-year mental health service use in an active Canadian military sample. *Psychiatric Services, 60*, 358-366.
doi:10.1176/appi.ps.60.3.358
- Fikretoglu, D., Guay, S., Pedlar, D., & Brunet, A. (2008). Twelve month use of mental health services in a nationally representative, active military sample. *Medical Care, 46*, 217-223. doi:10.1002/jts.20164
- Fikretoglu, D., Liu, A., Pedlar, D., & Brunet, A. (2010). Patterns and predictors of treatment delay for mental disorders in a nationally representative, active Canadian military sample. *Medical Care, 48*, 10-17.
doi:10.1097/MLR.0b013e3181bd4bf9
- Fikretoglu, D., Liu, A., Zamorski, M. A., & Jetly, R. (2016). Perceived need for and perceived sufficiency of mental health care in the Canadian Armed Forces. *Canadian Journal of Psychiatry, 61*, 36S-45S. doi:10.1177/0706743716628855
- Fortney, J. C., Burgess, J. F. Jr., Bosworth, H. B., Booth, B. M., & Kaboli, P. J. (2011). A re-conceptualization of access for 21st century healthcare. *Journal of General Internal Medicine, 26*, 639-647. doi:10.1007/s11606-011-1806-6
- Fox, S., Rainie, L., & Horrigan, J. (2006). The Online Health Care Revolution: How the web helps Americans take better care of themselves. Washington, DC: Pew Internet & American Life Project; November 2000.
- Fuller-Thomson, E., Battiston, M., Gadalla, T. M., & Brennenstuhl, S. (2014). Bouncing back: Remission from depression in a 12-year panel study of representative

- Canadian community sample. *Social Psychiatry Psychiatric Epidemiology*, *49*, 903-910. doi:10.1007/s00127-013-0814-8
- Garber, B., Zamorski, M., A., & Jetly, R. (2012). Mental health of Canadian Forces members while on deployment to Afghanistan. *Canadian Journal of Psychiatry*, *57*(12), 736-744
- Godin, G., & Kok, G. (1996). The theory of planned behavior: A review of its applications to health-related behaviors. *American Journal of Health Promotion*, *11*, 87-98. doi:10.4278/0890-1171-11.2.87
- Goss Gilroy, Inc. (1998).
- Gould, M., Adler, A., Zamorski, M., Castro, C., Hanily, N., Steele, N., ... Greenberg, N. (2010). Do stigma and other perceived barriers to mental health care differ across Armed Forces? *Journal of the Royal Society of Medicine*, *103*, 148-156. doi:10.1258/jrsm.2010.090426
- Gourash, N. (1978). Help-seeking: A review of the literature. *American Journal of Community Psychology*, *6*, 413-423. doi:10.1007/BF00941418
- Greenberg, N., Langston, V., Everitt, B., Iversen, A., Fear, N. T., Jones, N., & Wessely, S. (2010). A cluster randomized controlled trial to determine the efficacy of Trauma Risk Management (TRiM) in a military population. *Journal of Traumatic Stress*, *23*, 430-436. doi:10.1002/jts.20538
- Greene-Shortridge, T. M., Britt, T. W., & Andrew, C. (2007). The stigma of mental health problems in the military. *Military Medicine*, *172*(2), 157-161. doi:10.7205/MILMED.172.2.157

- Grenier, S., Darte, K., Heber, A., & Richardson, D. (2007). The Operational Stress Injury Social Support Program: A peer support program in collaboration between the Canadian Forces and Veterans Affairs Canada (pp. 261-293). In C. R. Figley & W. P. Nash (Eds.), *Combat stress injury: Theory, Research, and management*. New York, NY: Routledge.
- Grubaugh, A. L., Gros, K. S., Davidson, T. M., Frueh, B. C., & Ruggiero, K. J. (2014). Providers' perspectives regarding the feasibility and utility of an Internet-based mental health intervention for veterans. *Psychological Trauma: Theory, Research, Practice, and Policy*, *6*, 624-631. doi:10.1037/a0035772
- Guay, S., Billette, V., & Marchand, A. (2006). Exploring the links between posttraumatic stress disorder and social support: Processes and potential research avenues. *Journal of Traumatic Stress*, *19*, 327-338. doi:10.1002/jts.20124
- Haber, M. G., Cohen, J. L., Lucas, T., & Baltes, B. B. (2007). The relationship between self-reported received and perceived social support: A meta-analytic review. *American Journal of Community Psychology*, *39*, 133-144. doi:10.1007/s10464-007-9100-9
- Hadjistavropoulos, H. D., Pugh, N. E., Nugent, M. M., Hesser, H., Andersson, G., Ivanov, M., ... Klein, B. (2014). Therapist-assisted Internet-delivered cognitive behavior therapy for depression and anxiety: Translating evidence into clinical practice. *Journal of Anxiety Disorders*, *28*, 884-893. doi:10.1016/j.janxdis.2014.09.018

- Haight, M., Quan-Haase, A., & Corbett, B. A. (2014). Revisiting the digital divide in Canada: The impact of demographic factors on access to the internet, level of online activity, and social networking site usage. *Information, Communication & Society, 17*, 503-519. doi:10.1080/1369118X.2014.891633
- Hardt, J., & Rutter, M. (2004). Validity of adult retrospective reports of adverse childhood experiences: Review of the evidence. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 45*, 260-273. doi:10.1111/j.1469-7610.2004.00218.x
- Hardt, J., Vellaisamy, P., & Schoon, I. (2010). Sequelae of prospective versus retrospective reports of adverse childhood experiences. *Psychological Reports, 107*, 425-440. doi:10.2466/02.04.09.10.16.21.PR0.107.5.425-440
- Harpaz-Rotem, I., Rosenheck, R. A., Pietrzak, R. H., & Southwick, S. M. (2014). Determinants of prospective engagement in mental health treatment among symptomatic Iraq/Afghanistan veterans. *The Journal of Nervous and Mental Disease, 202*, 97-104. doi:10.1097/NMD.0000000000000078
- Hasking, P., Lyvers, M., & Carlopio, C. (2011). The relationship between coping strategies, alcohol expectancies, drinking motives and drinking behaviour. *Addictive Behaviours, 36*, 479-487. doi:10.1016/j.addbeh.2011.01.014
- Hatch, S. L., Harvey, S. B., Dandeker, C., Burdett, H., Greenberg, N., Fear, N. T., & Wessely, S. (2013). Life in and after the Armed Forces: Social networks and mental health in the UK military. *Sociology of Health & Illness, 35*, 1045-1064. doi:10.1111/1467-9566.12022

- Helen-Maria, V., Lesage, A., Adair, C., & Boyer, R. (2005). Service use for mental health reasons: Cross-provincial differences in rates, determinants, and equity of access. *Canadian Journal of Psychiatry, 50*(10), 614-619.
- Hesse, B. W., Nelson, D. E., Kreps, G. L., Croyle, R. T., Arora, N. J., Rimer, B. K., & Viswanath, K. (2005). Trust and sources of health information. The impact of the Internet and its implications for health care providers: Findings from the first health information national trends survey. *Archives of Internal Medicine, 165*, 2618-2624. doi:10.1001/archinte.165.22.2618
- Hoge, C. W. (2011). Interventions for war-related posttraumatic stress disorder: Meeting veterans where they are. *JAMA, 306*, 549-551. doi:10.1001/jama.2011.1096
- Hoge, C. W., Castro, C., Messer, S. C., McGurk, D., Cotting, D. I., & Koffman, R. L. (2004). Combat duty in Iraq and Afghanistan, mental health problems and barriers to care. *New England Journal of Medicine, 351*, 13-22. doi:10.1056/NEJMoa040603
- Hom, M. A., Stanley, I. H., Schneider, M. E., & Joiner Jr., T. E. (2017). A systematic review of help-seeking and mental health service utilization among military service members. *Clinical Psychology Review, 53*, 59-78. doi:10.1016/j.cpr.2017.01.008
- Hosmer, D. W., & Lemeshow, S. (2000). Applied logistic regression. New York, NY: Wiley.
- Hundt, N. E., Robinson, A., Arney, J., Stanley, M. A., & Cully, J. A. (2015). Veterans' perspectives on benefits and drawbacks of peer support for posttraumatic stress disorder. *Military Medicine, 180*, 851-856. doi:10.7205/MILMED-D-14-00536

- Figley, C. R., & Nash, W. P. (Ed.) (2007). *Combat stress injury: Theory, research, and management*. New York, NY: Routledge.
- Ivarsson, D., Blom, M., Hesser, H., Carlbring, P., Enderby, P., Nordberg, R., & Andersson, G. (2014). Guided internet-delivered cognitive behavior therapy for post-traumatic stress disorder: A randomized controlled trial. *Internet Interventions, 1*, 33-40. doi:10.1016/j.invent.2014.03.002
- Iversen, A., Dyson, C., Smith, N., Greenberg, N., Walwyn, R., Unwin, C., ... Wessely, S. (2005). "Goodbye and good luck": The mental health needs and treatment experiences of British ex-service personnel. *The British Journal of Psychiatry, 186*, 480-486. doi:10.1192/bjp.186.6.480
- Jain, S., McLean, C., Adler, E. P., Lindley, S. E., Ruzek, J. I., & Rosen, C. S. (2013). Does the integration of peers into the treatment of adults with posttraumatic stress disorder improve access to mental health care? A literature review and conceptual model. *Journal of Traumatic Stress Disorder Treatment, 2*, 3-12. doi:10.4172/2324-8947.1000109
- Jakupcak, M., Vannoy, S., Imel, Z., Cook, J. W., Fontana, A., Rosenheck, R., & McFall, M. (2010). Does PTSD moderate the relationship between social support and suicide risk in Iraq and Afghanistan War Veterans seeking mental health treatment?. *Depression and Anxiety, 27*, 1001-1005. doi:10.1002/da.20722
- Janz, N. K., & Becker, M. H. (1984). The Health Belief Model: A decade later. *Health Education Quarterly, 11*, 1-47. doi:10.1177/1090198118401100101
- Jennings, K. (2014). *The role of social support in treatment seeking and treatment retention in the military: Examining the function and source of support* (Master's

thesis). Retrieved from

http://tigerprints.clemson.edu/cgi/viewcontent.cgi?article=3008&context=all_theses

- Jones, N., Roberts, P., & Greenberg, N. (2003). Peer-group risk assessment: A post-traumatic management strategy for hierarchical organizations. *Occupational Medicine*, *53*, 469-475. doi:10.1093/occmed/kqg093
- Kalckreuth, S., Trefflich, F., & Rummel-Kluge, C. (2014). Mental health related Internet use among psychiatric patients: a cross-sectional analysis. *BMC Psychiatry*, *14*, 368. doi:10.1186/s12888-014-0368-7
- Katz, S. J., Kessler, R. C., Frank, R. G., Leaf, P., Lin, E., & Edlund, M. (1997). The use of outpatient mental health services in the United States and Ontario: The impact of mental morbidity and perceived need for care. *American Journal of Public Health*, *87*, 1136-1143. doi:10.2105/AJPH.87.7.1136
- Kauer, S. D., Mangan, C., & Sanci, L. A. (2014). Do online mental health services improve help-seeking for young people? A systematic review. *Journal of Medical Internet Research*, *16*, e66. doi:10.2196/jmir.3103
- Keane, T. M., Scott, W. O., Chavoya, G. A., Lamparski, D. M., & Fairbank, J. M. (1985). Social support in Vietnam veterans with posttraumatic stress disorder: A comparative analysis. *Journal of Consulting and Clinical Psychology*, *53*, 95-102. doi:10.1037/0022-006X.53.1.95
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K. R., ... Wang, P. S. (2003). The Epidemiology of Major Depressive Disorder: Results

- from the National Comorbidity Survey Replication (NCS-R). *JAMA*, 289, 3095-3105. doi:10.1001/jama.289.23.3095
- Kessler, R. C., Chiu, W. T., Demler, O., & Walters, E. E. (2005). Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62, 617-627. doi:10.1001/archpsyc.62.6.617
- Kessler, R. C., Olfson, M., & Berglund, P. A. (1998). Patterns and predictors of treatment contact after first onset of psychiatric disorders. *American Journal of Psychiatry*, 155(1), 62-69.
- Kessler, R. C., & Ustun, T. B. (2004). The World Mental Health (WMH) Survey Initiative version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *International Journal of Methods in Psychiatric Research*, 13, 93-121. doi:10.1002/mpr.168
- Kessler, R. C., Wittchen, H. U., Abelson, J. M., McGonagle, K. A., Schwarz, N., Kendler, K. S., ... Zhao, S. (1997). Methodological studies of the Composite International Diagnostic Interview (CIDI) in the US National Comorbidity Survey (NCS). *The International Journal of Methods in Psychiatric Research*, 7, 33-55. doi:10.1002/mpr.33
- Kessler, R. C., Zhao, S., Katz, S. J., Kouzis, A. C. Frank, R. G., Edlund, M., & Leaf, P. (1999). Past-year use of outpatient services for psychiatric problems in the National Comorbidity Survey, *The American Journal of Psychiatry*, 156, 115-123. doi:10.1176/ajp.156.1.115

- Killgore, W. D. S., Cotting, D. I., Thomas, J. L., Cox, A. L., McGurk, D., Vo, A. H., ... Hoge, C. W. (2008). Post-combat invincibility: Violent combat experiences are associated with increased risk-taking propensity following deployment. *Journal of Psychiatric Research, 42*, 1112-1121. doi:10.1016/j.jpsychires.2008.01.001
- Kim, P. Y., Toblin, R. L., Riviere, L. A., Kok, B. C., Grossman, S. H., & Wilk, J. E. (2016). Provider and nonprovider sources of mental health help in the military and the effects of stigma, negative attitudes, and organizational barriers to care. *Psychiatric Services, 67*, 221-226. doi:10.1176/appi.ps.201400519
- King, L. A., King, D. W., Fairbank, J. A., Keane, T. M., & Adams, G. A. (1998). Resilience-recovery factors in post-traumatic stress disorder among female and male Vietnam veterans: Hardiness, postwar social support, and additional stressful life events. *Journal of Personality and Social Psychology, 74*, 420-434. doi:10.1037/0022-3514.74.2.420
- Knaevelsrud, C., Brand, J., Lange, A., Ruwaard, J., & Wagner, B. (2015). Web-based psychotherapy for posttraumatic stress disorder in war-traumatized arab patients: Randomized controlled trial. *Journal of Medical Internet Research, 17*, e71. doi:10.2196/jmir.3582
- Kouzis, A. C., & Eaton, W. W. (1998). Absence of social networks, social support and health services utilization. *Psychological Medicine, 28*, 1301-1310. doi:10.1017/S0033291798007454
- Kubany, E. S., Haynes, S. N., Leisen, M. B., Owens, J. A., Kaplan, A. S., Watson, S., & Burns, K. (2000). Development and preliminary validation of a brief broad-

- spectrum measure of trauma exposure: The Traumatic Life Events Questionnaire. *Psychological Assessment*, 12, 210-224. doi:10.1037/1040-3590.12.2.210
- Laffaye, C., Cavella, S., Drescher, K., & Rosen, C. (2008). Relationships among PTSD symptoms, social support, and support source in veterans with chronic PTSD. *Journal of Traumatic Stress*, 21, 394-401. doi:10.1002/jts.20348
- Lawlor-Savage, L., & Prentice, J. (2014). Digital cognitive behaviour therapy (CBT) in Canada: Ethical considerations. *Canadian Psychology*, 55, 231-239. doi:10.1037/a0037861
- Leclerc, E., Mansur, R. B., & Brietzke, E. (2013). Determinants of adherence to treatment in bipolar disorder: A comprehensive review. *Journal of Affective Disorders*, 149, 247-252. doi:10.1016/j.jad.2013.01.036
- Lehavot, K., Der-Martirosian, C., Simpson, T. L., Shipherd, J. C., & Washington, D. L. (2013). The role of military social support in understanding the relationship between PTSD, physical health, and health care utilization in women veterans. *Journal of Traumatic Stress*, 26, 772-775. doi:10.1002/jts.21859
- Leung, D., & De Sousa, L. (2002). A vision and mission for peer support-stakeholder perspectives. *International Journal of Psychosocial Rehabilitation*, 7, 5-12.
- Leventhal, H., Nerenz, D. R., & Steele, D. J. (1984). Illness representations and coping with health threats. In A. Baum, S. E., Taylor, & J. E. Singer (Eds.). *Handbook of psychology and health, volume IV: Social psychological aspects of health* (pp.219-252). Hillsdale, NJ: Erlbaum.

- Lewis, S. (2015). A system in name only – access, variation, and reform in Canada’s provinces. *New England Journal of Medicine*, 372, 497-500.
doi:10.1056/NEJMp1414409
- Lewis, S. F., Resnick, H. S., Ruggiero, K. J., Smith, D. W., Kilpatrick, D. G., Best, C. L., & Saunders, B. E. (2005). Assault, psychiatric diagnoses, and socio-demographic variables in relation to help-seeking behavior in a national sample of women. *Journal of Traumatic Stress*, 18, 97-105. doi:10.1002/jts.20012
- Litz, B. T. (2008). Early intervention for trauma: Where are we and where do we need to go? A commentary. *Journal of Traumatic Stress*, 21, 503-506.
doi:10.1002/jts.20373
- MacLaren, Roy (1978). *Canadians on the Nile, 1882-1898: being the adventures of the voyageurs on the Karthoum Relief Expedition and other exploits*. Vancouver, BC: UBC Press
- Maguen, S., Madden, E., Cohen, B. E., Bertenthal, D., & Seal, K. H. (2012). Time to treatment among veterans of conflict in Iraq and Afghanistan with psychiatric diagnoses. *Psychiatric Services*, 63, 1206-1212. doi:10.1176/appi.ps.201200051
- Marx, B. P., Jackson, P. P., Schnurr, M., Murdoch, N. A., Sayer, T. M., Keane, M. J., ... Speroff, T. (2012). The reality of malingered PTSD among veterans: reply to McNally and Frueh. *Journal of Traumatic Stress*, 25, 457-460.
doi:10.1002/jts.21714
- Maulik, P. K., Eaton, W. W., & Bradshaw, C. P. (2009). The role of social network and support in mental health service use: Findings from the Baltimore ECA study. *Psychiatric Services*, 60, 1222-1229. doi:10.1176/appi.ps.60.9.1222

- Maulik, P. K., Eaton, W. W., & Bradshaw, C. P. (2011). The effect of social networks and social support on mental health services use, following a life event, among the Baltimore Epidemiologic Catchment Area cohort. *Journal of Behavioral Health Services & Research, 38*, 29-50. doi:10.1007/s11414-009-9205-z
- McFarlane, A. C. (2009). Military deployment: the impact on children and family adjustment and the need for care. *Current Opinion in Psychiatry, 22*, 369-373. doi:10.1097/YCO.0b013e32832c9064
- McKibben, J., Fullerton, C. S., Gray, C. L., Kessler, R. C., Stein, M. B., & Ursano, R. J. (2013). Mental health service utilization in the U.S. Army. *Psychiatric Services, 64*, 347-353. doi:10.1176/appi.ps.000602012
- McNally, R. J., & Frueh, B. C. (2013). Why are Iraq and Afghanistan war veterans seeking PTSD disability compensation at unprecedented rates? *Journal of Anxiety Disorders, 27*, 520-526. doi:10.1016/j.janxdis.2013.07.002
- Meadows, G., Burgess, P., Bobevski, I., Fossey, E., Harvey, C., & Liaw, S. T. (2002). Perceived need for mental health care: Influence of diagnosis, demography and disability. *Psychological Medicine, 32*, 299-309. doi:10.1017/S0033291701004913
- Meadows, G., Burgess, P., Fossey, E., & Harvey, C. (2000). Perceived need for mental health care: Findings from the Australian National Survey of Mental Health and Well-being. *Psychological Medicine, 30*, 645-656. doi:10.1017/S0033291179900207X
- Meadows, G., Harvey, C., Fossey, E., & Burgess, P. (2000). Assessing perceived need for mental health care in a community survey: Development of the Perceived

Need for Care Questionnaire (PNCQ). *Social Psychiatry and Psychiatric Epidemiology*, 35, 427-435. doi:10.1007/s0011270050260

Mental Health Commission of Canada (2017). MHCC Strategic Plan 2017-2022.

Retrieved from <http://www.mentalhealthcommission.ca/English/mhcc-strategic-plan-2017-2022>

Milliken, C. S., Auchterlonie, J. L., & Hoge, C. W. (2007). Longitudinal assessment of mental health problems among active and reserve component soldiers returning from the Iraq war. *JAMA*, 298, 2141-2148. doi:10.1001/jama.298.18.2141

Milburn, N. G., & Lightfoot, M. (2013). Adolescents in wartime U.S. military families: A developmental perspective on challenges and resources. *Clinical Child and Family Psychology Review*, 16, 266-277. doi:10.1007/s10567-013-0144-0

Ministry of Health, Premiers Council on health, wellbeing and social justice (1990).

Ontario Health Survey, Mental Health Supplement. Toronto, ON: Government of Ontario: Ministry of Health and Long-term Care.

Money, N., Moore, M., Brown, D., Kasper, K., Roeder, J., Bartone, P., & Bates, M. (2011). Identification of best practices in peer support: White paper. Defense Centers of Excellence For Psychological Health & Traumatic Brain Injury.

Retrieved from

http://www.dcoe.mil/content/Navigation/Documents/Best_Practices_Identified_for_Peer_Support_Programs_Jan_2011.pdf

Mood Disorders Ottawa (2011). *Mood Disorders Ottawa-Celebrating the past, present and beginning the next 25 years*. Retrieved online from

<http://www.mooodisordersottawa.ca/Book-MDO%20Celebrating%2025%20Years.pdf>

- Moore, B. A., & Barnett, J. E. (Eds.) (2013). *Military Psychologists' Desk Reference*. New York, NY: Oxford University Press.
- Morgan, J. K., Hourani, L., Lane, M. E., & Tueller, S. (2016). Help-seeking behaviors among active-duty military personnel: Utilization of chaplains and other mental health service providers. *Journal of Health Care Chaplaincy*, 22, 102-117. doi:10.1080/08854726.2016.1171598
- Mota, N. P., Medved, M., Wang, J. L., Asmundson, G. J., G., Whitney, D., & Sareen, J. (2012). Stress and mental disorders in female military personnel: Comparisons between the sexes in a male dominated profession. *Journal of Psychiatric Research*, 46, 159-167. doi:10.1016/j.jpsychires.2011.09.014
- Murphy, D., Hunt, E., Luzon, O., & Greenberg, N. (2014). Exploring positive pathways to care for members of the UK Armed Forces receiving treatment for PTSD: A qualitative study. *European Journal of Psychotraumatology*, 5, 5-9. doi:10.3402/ejpt.v5.21759
- Nelson, C. B., Abraham, K. M., Walters, H., Pfeiffer, P. N., & Valenstein, M. (2014). Integration of peer support and computer-based CBT for veterans with depression. *Computers in Human Behavior*, 31, 57-64. doi:10.1016/j.chb.2013.10.012
- Nichols, J. L. (2015). Reaching those who are difficult to reach: Exploring online interventions for survivors of military sexual trauma. *Journal of Military and Government Counselling*, 3(1), 2-24.

- O'Donnell, M., Lau, W., Tipping, S. Holmes, A. C. N., Ellen, S., Judson, R., ... Forbes, D. (2012). Stepped early psychological intervention for posttraumatic stress disorder, other anxiety disorders, and depression following serious injury. *Journal of Traumatic Stress, 25*, 125-133. doi:10.1002/jts.21677
- Olthuis, J. V., Wozney, L., Asmundson, G. J. G., Cramm, H., Lingley-Pottie, P., & McGrath, P. J. (2016). Distance-delivered interventions for PTSD: A systematic review and meta-analysis. *Journal of Anxiety Disorders, 44*, 9-26. doi:10.1016/j.janxdis.2016.09.010
- Osterberg, L., & Blaschke, T. (2005). Adherence to medication. *The New England Journal of Medicine, 353*, 487-497. doi:10.1056/NEJMra050100
- Parslow, R. A., & Jorm, A. F. (2000). Who uses mental health services in Australia? An analysis of data from the National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry, 34*, 997-1008. doi:10.1080/000486700276
- Pearson, C., Zamorski, M., & Janz, T. (2014). *Mental health of the Canadian Armed Forces* (Report No. 82-624-X). Ottawa, ON: Statistics Canada.
- Penchansky, R., & Thomas, J. W. (1981). The concept of access: Definition and relationship to consumer satisfaction. *Medical Care, 19*(2), 127-140.
- Pescosolido, B. A., Gardner, C. B., & Lubell, K. M. (1998). How people get into mental health services: Stories of choice, coercion and "muddling through" from "first-timers". *Social Science & Medicine, 46*, 275-286. doi:10.1016/S02277-9536(97)00160-3

- Petrie, K. J., Broadbent, E., & Kydd, R. (2009). Illness perceptions in mental health: Issues and potential applications. *Journal of Mental Health, 17*, 559-564.
doi:10.1080/09638230802523047
- Pfeiffer, P. N., Blow, A. J., Miller, E., Forman, J., Dalack, G. W., & Valenstein, M. (2012). Peers and peer-based interventions in supporting reintegration and mental health among National Guard soldiers: A qualitative study. *Military Medicine, 177*, 1471-1476. doi:10.7205/milmed-d-12-00115
- Pietrzak, R. H., Johnson, D. C., Goldstein, M. B., Malley, J. C., Rivers, A. J., Morgan, C. A., & Southwick, S. M. (2010). Psychosocial buffers of traumatic stress, depressive symptoms, and psychosocial difficulties in veterans of Operations Enduring Freedom and Iraqi Freedom: The role of resilience, unit support, and postdeployment social support. *Journal of Affective Disorders, 120*, 188-192.
doi:10.1016/j.jad.2009.04.015
- Platt, J., Keyes, K. M., & Koenen, K. C. (2014). Size of the social network versus quality of social support: Which is more protective against PTSD? *Social psychiatry and psychiatric epidemiology, 49*, 1279-1286. doi:10.1007/s00127-013-0798-4
- Platt, J. M., Lowe, S. R., Galea, S., Norris, F. H., & Koenen, K. C. (2016). A longitudinal study of the bidirectional relationship between social support and posttraumatic stress following a natural disaster. *Journal of Traumatic Stress, 29*, 205-213. doi:10.1002/jts.22092
- Portes, A., Kyle, D., & Eaton, W. W. (1992). Mental illness and help-seeking behavior among Mariel Cuban and Haitian refugees in South Florida. *Journal of Health and Social Behavior, 33*, 283-298. doi:10.2307/2137309

- Possemato, K., Pratt, A., Barrie, K., & Ouimette, P. (2015). Family functioning in recent combat veterans with posttraumatic stress disorder and alcohol misuse. *Traumatology, 21*, 267-272. doi:10.1037/trm0000037
- Powell, J., & Clarke, A. (2006). Internet information-seeking in mental health. *British Journal of Psychiatry, 189*, 273-277. doi:10.1192/bjp.bp.105.017319
- Price, M., Yuen, E. K., Goetter, E. M., Herbert, J. D., Forman, E. M., Acierno, R., & Ruggiero, K. J. (2014). mHealth: A mechanism to deliver more accessible, more effective mental health care. *Clinical Psychology Psychotherapy, 21*, 427-436. doi:10.1002/cpp.1855
- Pury, C. L. S., Britt, T. W., Zinzow, H. M., & Raymond, M. A. (2013). Blended courage: Moral and psychological courage elements in mental health treatment seeking by active duty military personnel. *The Journal of Positive Psychology, 9*, 30-41. doi:10.1080/17439760.2013.831466
- Quartana, P. J., Wilk, J. E., Thomas, J. L., Bray, R. M., Rae Olmstead, K. L., Brown, J. M., ... Hoge, C. W. (2014). Trends in mental health services utilization and stigma in US soldiers from 2002 to 2011. *American Journal of Public Health, 104*, 1671-1679. doi:10.2105/AJPH.2014.301971
- Record, E. J., Medoff, D. R., Dixon, L. B., Klingaman, E. A., Park, S. G., Hack, S., ... Kreyenbuhl, J. (2015). Access to and use of the Internet by veterans with serious mental illness. *Community Mental Health Journal*. Advance online publication. doi:10.1007/s10597-015-9868-2

- Reedy, A. R., & Kobayashi, R. (2015). National Guard service members' perceptions of informal and formal supports: An exploratory study. *Journal of Social Work in Disability & Rehabilitation, 14*, 110-123. doi:10.1080/1536710X.2015.1014534
- Repper, J., & Carter, T. (2011). A review of the literature on peer support in mental health services. *Journal of Mental Health, 20*, 392-411.
doi:10.3109/09638237.2011.583947
- Resnik, L., Ekerholm, S., Johnson, E. E., Ellison, M. L., & O'Toole, T. P. (2016). Which homeless veterans benefit from a peer mentor and how? *Journal of Clinical Psychology*. Advanced online publication. doi:10.1002/jclp.22407
- Richardson, J. D., Darte, K., Grenier, S., English, A., & Sharpe, J. (2008). Operational Stress Injury Social Support: A Canadian innovation in professional peer support. *Canadian Military Journal, 9*(1), 57-64
- Ricketts, T. C., & Goldsmith, L. J. (2005). Access in health services research: The battle of the frameworks. *Nursing Outlook, 53*, 274-280. doi:10.1016/j.outlook.2005.06.007
- Rolland-Harris, E., Whitehead, J., Metheson, H., & Zamorski, M. A (2014). 2015 Report on suicide mortality in the Canadian Armed Forces (1995 to 2014). Ottawa, ON: National Defence and the Canadian Armed Forces, 2015. Retrieved from: <http://www.forces.gc.ca/en/about-reports-pubs-health/report-on-suicide-mortality-caf-2015.page>
- Rosser, B. A., McCracken, L. M., Velleman, S. C., Boichat, C., & Eccleston, C. (2011). Concerns about medication and medication adherence in patients with chronic

pain recruited from general practice. *Pain*, *152*, 1201-1205.

doi:10.1016/j.pain.2011.01.053

Roy-Byrne, P. P., Davidson, K., Kessler, R. C., Asmundson, G. J. G., Goodwin, R. D., & Kubzansky, L. (2008). Anxiety disorders and comorbid medical illness. *General Hospital Psychiatry*, *30*, 208-225. doi:10.1016/j.genhosppsych.2007.12.006

Ruggiero, K. J., Davidson, T. M., McCauley, J., Stauffacher Gros, K., Welsh, K., Price, M., ... Amstadter, A. B. (2015). Bounce Back Now! Protocol of a population-based randomized controlled trial to examine the efficacy of a Web-based intervention with disaster-affected families. *Contemporary Clinical Trials*, *40*, 138-149. doi:10.1016/j.cct.2014.11.018

Russell, D. W., Whalen, R. J., Riviere, L. A., Clarke-Walper, K., Bliese, P.D., Keller, D. D., ... Thomas, J. L. (2014). Embedded behavioral health providers: An assessment with the Army National Guard. *Psychological Services*, *11*, 265-272. doi:10.1037/a0037005

Rusu, C., Zamorski, M. A., Boulos, D., & Garber, B. G. (2016). Prevalence comparison of past-year mental disorders and suicidal behaviours in the Canadian Armed Forces and the Canadian general population. *Canadian Journal of Psychiatry*, *61*, 46S-55S. doi:10.1177/0706743716628856

Ruzek, J. I., Hoffman, J., Ciulla, R., Prins, A., Kuhn, E., & Gahm, G. (2011). Bringing Internet-based education and intervention into mental health practice: Afterdeployment.org. *European Journal of Psychotraumatology*, *2*, 245-247. doi:10.3402/ejpt.v2i0.7278

- Sareen, J., Afifi, T. O., Taillieu, T., Cheung, K., Turner, S., Bolton, S-L., ... Zamorski, M. A. (2016). Trends in suicidal behaviour and use of mental health services in Canadian military and civilian populations. *Canadian Medical Association Journal, 188*, E261-E267. doi:10.1503/cmaj.151047
- Sareen, J., Belik, S-L., Affifi, T. O., Asmundson, G. J. G., Cox, B. J., & Stein, M. B. (2008). Canadian military personnel's population attributable fractions of mental disorders and mental health service use associated with combat and peacekeeping operations. *American Journal of Public Health, 98*, 2191-2198. doi:10.2105/AJPH.2008.134205
- Sareen, J., Belik, S-L., Stein, M. B., & Asmundson, G. J. G. (2010). Correlates of perceived need for mental health care among active military personnel. *Psychiatric Services, 61*, 50-57. doi:10.1176/appi.ps.61.1.50
- Sareen, J., Cox, B. J., Afifi, T. O., de Graaf, R., Asmundson, G. J. G., ten Have, M., & Stein, M. B. (2005). Anxiety disorders and risk for suicidal ideation and suicide attempts: A population-based longitudinal study of adults. *Archives of General Psychiatry, 62*, 1249-1257. doi: 10.1001/archpsyc.62.11.1249
- Sareen, J., Cox, B. J., Afifi, T. O., Stein, M. B., Belik, S-L., Meadows, G., & Asmundson, G. J. G. (2007). Combat and peacekeeping operations in relation to prevalence of mental disorders and perceived need for mental health care: Findings from a large representative sample of military personnel. *Archives of General Psychiatry, 64*, 843-852. doi:10.1001/archpsyc.64.7.843
- Sareen, J., Henriksen, C. A., Bolton, S-L., Afifi, T. O., Stein, M. B., & Asmundson, G. J. G. (2013). Adverse childhood experiences in relation to mood and anxiety

disorders in a population-based sample of active military personnel.

Psychological Medicine, 43, 73-84. doi:10.1017/S003329171200102X

Sareen, J., Jagdeo, A., Cox, B. J., Clara, I., ten Have, M., Belik, S-L., ... Stein, M. B.

(2007). Perceived barriers to mental health service utilization in the United

States, Ontario, and the Netherlands. *Psychiatric Services*, 58, 357-364.

doi:10.1176/appi.ps.58.3.357

Sayer, N. A., Friedemann-Sanchez, G., Spont, M., Murdoch, M., Parker, L. E., Chiros,

C., & Rosenheck, R. (2009). A qualitative study of determinants of PTSD

treatment initiation in veterans. *Psychiatry*, 72, 238-255.

doi:10.1521/psyc.2009.72.3.238

Schousboe, J. T., Davidson, M. L., Dowd, B., Thiede Call, K., Johnson, P., & Kane, R.

L. (2011). Predictors of patients perceived need for medication to prevent

fracture. *Medical Care*, 49, 273-280. doi:10.1097/MLR.0b013e318202915e

Shallcross, S. L., Arbisi, P. A., Polusny, M. A., Kramer, M. D., & Erbes, C. R. (2016).

Social causation versus social erosion: Comparisons of causal models for

relations between support and PTSD symptoms. *Journal of Traumatic Stress*, 29,

167-175. doi:10.1002/jts.22086

Sharp, M-L., Fear, N. T., Rona, R. J., Wessely, S., Greenberg, N. Jones, N., & Goodwin,

L. (2015). Stigma as a barrier to seeking health care among military personnel

with mental health problems. *Epidemiologic Reviews*, 37, 144-162.

doi:10.1093/epirev/mxu012

- Shinseki, E. K. (2009). *Shinseki delivers "State of VA" message to Congress*. Washington, DC. Retrieved from: <http://www.prnewswire.com/news-releases/shinseki-delivers-state-of-va-message-to-congress-64211207.html>
- Siddiqi, A., Zuberi, D., & Nguyen, Q. C. (2009). The role of health insurance in explaining immigrant versus non-immigrant disparities in access to health care: Comparing the United States to Canada. *Social Science & Medicine*, *69*, 1452-1459. doi:10.1016/j.socscimed.2009.08.030
- Sloan, D. M., Gallagher, M. W., Feinstein, B. A., Lee, D. J., & Pruneau, G. M. (2011). Efficacy of telehealth treatments for posttraumatic stress-related symptoms: A meta-analysis. *Cognitive Behaviour Therapy*, *40*, 111-125. doi:10.1080/16506073.2010.550058
- Smyth, N., Siriwardhana, C., Hotopf, M., & Hatch, S. L. (2014). Social networks, social support and psychiatric symptoms: social determinants and associations within multicultural community population. *Social Psychiatry Psychiatric Epidemiology*, *50*, 1111-1120. doi:10.1007/s00127-014-0943-8
- Soares, A., Biasoli, I., Scheliga, A., Baptista, R. L., Brabo, E. P., Morais, J. C., ... Spector, N. (2013). Association of social network and social support with health-related quality of life and fatigue in long-term survivors of Hodgkin lymphoma. *Supportive Care in Cancer: Official Journal of the Multinational Association of Supportive Care in Cancer*, *21*, 2153-2159. doi:10.1007/s00520-013-1775-x
- Solomon, P. (2004). Peer support/peer provided services underlying processes, benefits and critical ingredients. *Psychiatric Rehabilitation Journal*, *27*, 392-401. doi:10.2975/27.2004.392.401

- Spence, J., Titov, N., Johnston, L., Jones, M. P., Dear, B. F., & Solley, K. (2014). Internet-based trauma-focused cognitive behavioural therapy for PTSD with and without exposure components: A randomized controlled trial. *Journal of Affective Disorders, 162*, 73-80. doi:10.1016/j.jad.2014.03.009
- Spoont, M. R., Nelson, D. B., Murdoch, M., Rector, T., Sayer, N. A., Nugent, S., & Westermeyer, J. (2014). Impact of treatment beliefs and social network encouragement on initiation of care by VA service users with PTSD. *Psychiatric Services, 65*, 654-662. doi:10.1176/appi.ps.201200324
- Sripada, R. K., Bohnert, A. S. B., Teo, A. R., Levine, D. S., Pfeiffer, P. N., Bowersox, N. W., ... Valenstein, M. (2015). Social networks, mental health problems, and mental health service utilization in OEF/OIF National Guard veterans. *Social Psychiatry Psychiatric Epidemiology, 50*, 1367-1378. doi:10.1007/s00127-015-1078-2
- Sripada, R. K., Pfeiffer, P. N., Rauch, S. A., & Bohnert, K. M. (2015). Social support and mental health treatment among persons with PTSD: Results of a nationally representative survey. *Psychiatric Services, 66*, 65-71. doi:10.1176/appi.ps.201400029
- Statistics Canada (2004). *Canadian Forces Supplement to the Canadian Community Health Survey Cycle 1.2-Mental Health and Well-being*.
- Statistics Canada (2014). *Canadian Forces Mental Health Survey (CFMHS)*.
- Statistics Canada (2015). *Ontario Child Health Study (OCHS)*.
- Steele, L., Dewa, C., & Lee, K. (2007). Socioeconomic status and self-reported barriers to mental health service use. *Canadian Journal of Psychiatry, 52*(3), 201-206.

- Stinson, F. S., Grant, B. F., Dawson, D. A., Ruan, J., Huang, B., & Saha, T. (2005). Comorbidity between DSM-IV alcohol and specific drug use disorders in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Drug and Alcohol Dependence, 80*, 105-116. doi:10.1016/j.drugalcdep.2005.03.009
- Sudom, K., Zamorski, M., & Garber, B. (2012). Stigma and barriers to mental health care in deployed Canadian Forces personnel. *Military Psychology, 24*, 414-431. doi:10.1080/08995605.2012.697368
- Therrien, M. E., Richer, I., Lee, J. E. C., Watkins, K., & Zamorski, M. A. (2016). Family/household characteristics and positive mental health of Canadian military members: mediation through social support. *Journal of Military, Veteran and Family Health, 2*, 8-20. doi:10.3138/jmvfh.4017
- Thibodeau, M. A., Welch, P. G., Sareen, J., & Asmundson, G. J. G. (2013). Anxiety disorders are independently associated with suicide ideation and attempts: Propensity score matching in two epidemiological samples. *Depression and Anxiety, 30*, 947-954. doi:10.1002/da.22203
- Thompson, J. M., VanTil, L. D., Zamorski, M. A., Garber, B., Dursun, S., Fikretoglu, D., ... Pedlar, D. J. (2016). Mental health of Canadian Armed Forces veterans: review of population studies. *Journal of Military, Veteran and Family Health, 2*, 70-86. doi:10.3138/jmvfh.3258
- Tsai, J., Harpaz-Rotem, I., Pietrzak, R. H., & Southwick, S. M. (2012). The role of coping, resilience, and social support in mediating the relation between PTSD

and social functioning in veterans returning from Iraq and Afghanistan.

Psychiatry, 75, 135-149. doi:10.1521/psyc.2012.75.2.135

Tsai, J., & Rosenheck, R. A. (2012). Use of the internet and an online personal health record system by US veterans: Comparison of Veterans Affairs mental health service users and other veterans nationally. *Journal of the American Medical Informatics Association: JAMIA*, 19, 1089-1094. doi:10.1136/amiajnl-2012-000971

Vasiliadis, H-M., Lesage, A., Adair, C., & Boyer, R. (2005). Service use for mental health reasons: Cross-provincial differences in rates, determinants, and equity of access. *Canadian Journal of Psychiatry*, 50(10), 614-619.

Vasiliadis, H-M., Tempier, R., Lesage, A., & Kates, N. (2009). General practice and mental health care: Determinants of outpatient service use. *Canadian Journal of Psychiatry*, 54(7), 468-476.

Veterans Affairs Canada (2008). *Evaluation of the Operational Stress Injury (OSI) clinic network*. Retrieved from <http://www.veterans.gc.ca/eng/about-us/reports/departmental-audit-evaluation/2008-10-evaluation-osi-clinic-network#es>

Veterans Affairs Canada (2015). *OSI Connect*. Retrieved from <http://www.veterans.gc.ca/eng/stay-connected/mobile-app/osi-connect>

Veterans Affairs Canada, Canadian Forces Morale and Welfare Services, & Royal Ottawa Mental Health Care Group (2016). *Operational Stress Injury Resource for Caregivers*. Retrieved from

<http://www.veterans.gc.ca/eng/services/health/mental-health/understanding-mental-health/for-families>

- Vogt, D., Smith, B., Elwy, R., Martin, J., Schultz, M., Drainoni, M-L., & Eisen, S. (2011). Predeployment, deployment, and postdeployment risk factors for posttraumatic stress symptomatology in female and male OEF/OIF Veterans. *Journal of Abnormal Psychology, 120*, 819. doi:10.1037/a0024457
- Walker, D. I., Cardin, J-F., Chawla, N., Topp, D., Burton, T., & MacDermid Wadsworth, S. (2014). Effectiveness of a multimedia outreach kit for families of wounded veterans. *Disability and Health Journal, 7*, 216-225.
doi:10.1016/j.dhjo.2013.11.004
- Wallace, A. E., Weeks, W. B., Wang, S., Lee, A. F., & Kazis, L. E. (2006). Rural and urban disparities in health-related quality of life among veterans with psychiatric disorders. *Psychiatric Services, 57*, 851-856. doi:10.1176/appi.ps.57.6.851
- Wallston, B. S., Alagna, S. W., DeVillis, B. M., & DeVillis, R. F. (1983). Social support and physical health. *Health Psychology, 2*, 593-611. doi:10.1037/0278-6133.2.4.367
- Walsh, C. A., MacMillan, H. L., Trocmé, N., Jamieson, E., & Boyle, M. H. (2008). Measurement of victimization in adolescence: Development and validation of the Childhood Experiences of Violence Questionnaire. *Child Abuse & Neglect, 32*, 1037-1057. doi:10.1016/j.chiabu. 2008.05.003
- Wang, J. L. (2006). Perceived barriers to mental health service use among individuals with mental disorders in the Canadian general population. *Medical Care, 44*, 192-195. doi:10.1097/01.mlr.0000196954.67658.95

- Wang, J. L., Lane, M., & Olfson, M., Pincus, H. A., Wells, K. B., & Kessler, R. C. (2005). Twelve-month use of mental health services in the United States: Results from the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62, 629-640. doi:10.1001/archpsyc.62.6.629
- Wangelin, B. C., Szafranski, D. D., & Gros, D. F. (2016). Telehealth technologies in evidence-based psychotherapy. *Computer-assisted and web-based innovations in psychology* (pp.119-140). New York, NY: Elsevier.
- Watkins, K., Lee, J. C., & Zamorski, M. A. (2016). *Moderating Effect of Marital Status on the Association between Combat Exposure and Post-Deployment Mental Health in Canadian Military Personnel*. Manuscript revised and resubmitted for publication.
- Watkins, K., Sudom, K., & Zamorski, M. (2016). Association of combat experiences with post-traumatic stress disorder among Canadian military personnel deployed in support of the mission in Afghanistan. *Military Behavioral Health*, 4, 285-292. doi:10.1080/21635781.2016.1153538
- Weeks, M., Zamorski, M. A., Rusu, C., & Colman, I. (2017). Mental illness-related stigma in Canadian military and civilian populations: A comparison using population health survey data. *Psychiatric Services*, advance online publication. doi:10.1176/appi.ps.201600398
- Whealin, J. M., Jenchura, E. C., Wong, A. C., & Zulman, D. M. (2016). How veterans with post-traumatic stress disorder and comorbid health conditions utilize eHealth to manage their health care needs: A mixed-methods analysis. *Journal of Medical Internet Research*, 18, e280. doi:10.2196/jmir.5594

- Whealin, J. M., Seibert-Hatalsky, L. A., Willet Howell, J., & Tsai, J. (2015). E-mental health preferences of Veterans with and without probable posttraumatic stress disorder. *Journal of Rehabilitation Research & Development*, *52*, 725-738. doi:10.1682/JRRD.2014.04.0113
- Whybrow, D., Jones, N., & Greenberg, N. (2015). Promoting organizational well-being: A comprehensive review of Trauma Risk Management. *Occupational Medicine*, *65*, 331-336. doi:10.1093/occmed/kqv024
- Williams, R. M., Bambara, J., & Turner, A. P. (2012). A scoping study of one-to-one peer mentorship interventions and recommendations for application with veterans with postdeployment syndrome. *Journal of Head Trauma Rehabilitation*, *27*, 261-273. doi:10.1097/HTR.0b013e3182585cb6
- Wilson, J. A. B., Onorati, K., Mishkind, M., Reger, M. A., & Gahm, G. A. (2008). Soldier attitudes about technology-based approaches to mental health care. *CyberPsychology & Behavior*, *11*, 767-769. doi:10.1089/cpb.2008.0071
- World Health Organization (1992). *International Statistical Classification of Diseases, 10th Revision (ICD-10)*. Geneva, Switzerland: World Health Organization.
- World Health Organization (2004). *World Health Organization World Mental Health Composite International Diagnostic Interview (WHO WMH-CIDI)*. Geneva, Switzerland: World Health Organization.
- Younes, N. , Chollet, A., Menard, E., & Melchior, M. (2015). E-mental health care among young adults and help-seeking behaviors: A transversal study in a community sample. *Journal of Medical Internet Research*, *17*, e123. doi:10.2196/jmir.4254

Yuen, E. K., Gros, K., Welsh, K. E., McCauley, J., Resnick, H. S., Danielson, C. K., ...

Ruggiero, K. J. (2015). Development and preliminary testing of a web-based, self-help application for disaster-affected families. *Health Informatics Journal*. Advance online publication. doi:10.1177/1460458215579292

Zamorski, M. A. (2011). *Towards a broader conceptualization of need, stigma, and barriers to mental health care in military organizations: recent research findings from the Canadian Forces* (Report No. RTO-MP-HFM-205). Ottawa, ON: Canadian Forces Health Services.

Zamorski, M. A., Bennett, R. E., Boulos, D., Garber, B. G., Jetly, R., & Sareen, J. (2016). The 2013 Canadian Forces Mental Health Survey: Background and methods. *Canadian Journal of Psychiatry*, *61*, 10S-25S. doi:10.1177/0706743716632731

Zamorski, M. A., & Boulos, D. (2014). The impact of the military mission in Afghanistan on mental health in the Canadian Armed Forces: A summary of research findings. *European Journal of Psychotraumatology*, *5*, 23822. doi:10.3402/ejpt.v5.23822

Zamorski, M. A., Uppal, S., Boddam, R., & Gendron, F. (2006). The prevalence of mental health problems in the Canadian regular and reserve forces: Exploration of occupational risk factors. Poster presented at the American Psychiatric Association Meeting, Toronto, ON, May 24, 2006.

Zerach, G., Solomon, Z., Horesh, D., & Ein-Dor, T. (2013). Family cohesion and posttraumatic intrusion and avoidance among war veterans: a 20-year

longitudinal study. *Social Psychiatry and Psychiatric Epidemiology*, 48, 205-214.
doi:10.1007/s00127-012-0541-6

Zinzow, H. M., Britt, T. W., McFadden, A. C., Burnette, C. M., & Gillipsie, S. (2012). Connecting active duty and returning veterans to mental health treatment: Interventions and treatment adaptations that may reduce barriers to care. *Clinical Psychology Review*, 32, 741-753. doi:10.1016/j.cpr.2012.09.002

Zinzow, H. M., Britt, T. W., Pury, C. L. S., Raymond, M. A., McFadden, A. C., & Burnette, C. M. (2013). Barriers and facilitators of mental health treatment seeking among active duty army personnel. *Military Psychology*, 25, 5412-5435. doi:10.1037/mil0000015

Zivin, K., Myra Kim, H., McCarthy, J. F., Austin, K. L., Hoggatt, K. J., Walters, H., & Valenstein, M. (2007). Suicide mortality among individuals receiving treatment for depression in the Veterans Affairs health system: Associations with patient and treatment setting characteristics. *American Journal of Public Health*, 97, 2193-2198. doi:10.2105/AJPH.2007.115477

Zulman, D. M., Kirch, M., Zheng, K., & An, L. C. (2011). Trust in the Internet as a health resource among older adults: Analysis of data from a nationally representative survey. *Journal of Medical Internet Research*, 13, e19. doi:10.2196/jmir.1552

Zwikker, H. E., van Dulmen, S., den Broeder, A. A., van den Bemt, B. J., & van den Ende, C. H. (2014). Perceived need to take medication is associated with medication non-adherence in patients with rheumatoid arthritis. *Patient Preference and Adherence*, 8, 1635-1645. doi:10.2147/PPA.S66849

Appendix A. Canadian Forces Mental Health Survey (CFMHS)

The 2013 *Canadian Forces Mental Health Survey (CFMHS)* can be retrieved from the

Statistics Canada website at:

<http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5084>