Veterans Affairs Canada | Anciens Combattants Canada

LIFE AFTER SERVICE STUDIES (LASS) SECONDARY ANALYSIS
(2011 SERIES - RELEASE 8)

Suicide Ideation and Attempt Findings in the Survey on Transition to Civilian Life: Descriptive Analysis

Jim Thompson MD CCFP(EM) FCFP, Medical Advisor
Jill Sweet MSc, Statistician
Alain Poirier Senior Statistics Officer
Linda VanTil DVM MSc, Epidemiologist

Research Directorate
Veterans Affairs Canada
Charlottetown PE Canada
E-mail: research-recherche@vac-acc.gc.ca

30 November 2011

Thompson JM, Sweet J, Poirier A, VanTil L. Suicide ideation and attempt findings in the Survey on Transition to Civilian Life: Descriptive Analysis. Veterans Affairs Canada Technical Report. 30 November 2011;39 p.

Contents

Suicide Ideation and Attempt Findings in the Survey on Transition to Civilian Life

Executive Summary

Objectives. The objectives of this analysis of the suicidal ideation (thoughts) and attempt data collected in the *Survey on Transition to Civilian Life* (STCL) were to better understand suicidality in Canadian Forces (CF) Regular Force personnel who released during 1998-2007, determine where they sought help, and identify factors associated with suicidality in Veterans.

Background. This analysis was conducted to explore the suicidality findings in more detail at the request of the VAC Mental Health Directorate, and VAC staff working on transformation. CF military personnel and Royal Canadian Mounted Police (RCMP) members have increasingly been exposed to operational stresses associated with health problems and suicidality. In 2010, VAC developed a Canadian Veteran-specific pathways framework for suicide prevention (Thompson et al 2011) and used it to conduct a comprehensive review of suicide prevention activities (VAC 2010). The VAC working group noted that more research was required to better understand and prevent suicides among Veterans. Also in 2010, the VAC Research Directorate and the DND Director General Military Personnel Research and Analysis conducted a survey of CF Regular Force Veterans called the *Survey on Transition to Civilian Life* (STCL). The survey included questions about suicide ideation (thoughts) and attempts.

Methods. STCL was a computer-assisted telephone survey of Canadian Forces (CF) Regular Force Veterans who released from service during 1998-2007 and were not serving at the time of the survey in 2010, or were not living in an institution, Territory or other nation. The survey sampled 3,354 of 32,015 former CF Regular Force personnel, and had a response rate of 71% (84% for VAC clients, 59% for non-clients). Of respondents, 94% (3,154) agreed to share their findings with VAC and DND. This report is a descriptive analysis of the weighted population estimates of those who had suicidal thoughts and attempts. Statistical significance was assessed by comparing 95% confidence intervals. Searches for published research studies of suicide ideation and attempt rates in civilian and military populations were conducted using computerized citation databases, and in consultation with a professional librarian.

Findings and Implications. The *Survey on Transition to Civilian Life* painted a representative picture of suicidal ideation and attempts in former CF Regular Force personnel who released during 1998-2007.

Finding	Implications
1,830 (95% confidence interval 1,587-2,082; 6%, 5-7%) of these Veterans had suicidal ideation in the past 12 months. This was similar to an estimate for the general Canadian population made by researchers a decade earlier (4.0%).	The number with recent active suicidal thinking reinforces the importance of supporting suicide prevention activities among Veterans.
One in ten VAC clients overall had suicidal ideation in the prior 12 months: one in 6 of those participating in NVC programs, and one in 11 of those receiving disability pensions.	This finding is not surprising: higher rates of suicidal thoughts are more common in persons with health and social problems, and Veterans seek assistance from VAC with such problems.
Fewer non-client Veterans had12-month suicidal ideation (4%; 3-5%) within 3-13 years after leaving service.	Veterans who were not participating in VAC programs could benefit from suicide prevention activities.

Finding	Implications
A third (34%) who thought about or attempted suicide did not seek help from a health professional. Men were less likely to have sought help than women. Non-clients were less likely to have sought help than VAC clients.	Support additional help seeking and find out why so many do not seek help. Reluctance to seek help is common in all persons with mental health problems.
Veterans most commonly sought help for suicidal thinking and attempts from psychologists, psychiatrists and family physicians/general practitioners, in that order. Some sought help from a variety of other health professionals.	This finding emphasizes the importance of multidisciplinary care and communication and collaboration among VAC case managers and health professionals.
While suicide can occur in any subgroup of Veterans, 12-month ideation occurred more often in those with these factors: • Being widowed, separated or divorced. • Rank group Corporal, Master Corporal, Leading Seaman, Master Seaman. • 10-19 years of service. • Release year 2003. • Medical release. • Fair or poor perceived well-being. • Extreme or quite a bit of life stress. • Low quality of life due to physical or mental health. • Chronic physical health conditions. • Mental health conditions. • Comorbid physical and mental health conditions. • Having all three of a musculoskeletal condition, chronic pain/discomfort and a mental health condition. • Disability. • Low social support. • Very/somewhat weak sense of community belonging. • Low mastery. • Very/moderately difficult adjustment to civilian life. • Dissatisfaction with financial situation.	This finding confirms the suicide prevention pathways model for Veterans developed by VAC in 2010, which added pathways through physical and social factors in addition to the usual mental health pathway. The “risk factor” approach to suicide prevention is less effective than understanding individual pathways that people follow to suicide. The variety of characteristics supports VAC’s individualized biopsychosocial approach to caring for Veterans and other clients. At the same time, these findings also assist in identifying subgroups that might be more vulnerable to suicide, enabling resource targeting. Some of these associations could be due to chance and confounding, so an inferential regression analysis is being conducted to find out which characteristics independently predicted having 12- month suicidal ideation in these Veterans.
Among those with 12-month suicidal ideation: • 11% had none of the physical or mental health conditions asked in the survey. • 24% had none of the four mental health conditions. • 80% had at least one of the chronic physical health conditions. • Two thirds (67%) had both physical and mental health conditions.	It is important to include physical health conditions as well as mental health conditions in suicide prevention activities. These findings further support the pathways approach to suicide prevention, rather than a focus on risk factors.

Interpretation Guidance

- Use caution in interpreting factors associated with 12-month suicidal ideation: any individual is at some risk of suicide. Risk factors can be useful in population health planning when they are used to inform mitigation of suicide pathways, but cannot be relied on to assess an individual's suicidality.
- Use caution in generalizing these findings to all Veterans, because the survey included only former Regular Force personnel who released during 1998-2007.
- The survey might not be representative of all members of the respondents' originating age and era cohorts because (1) the survey did not include those who were still serving or had re-enrolled in the CF, or those living in institutions, the Territories or out of the country; and (2) the response rate for non-clients (66% of the population) was 59%.
- Proportions were not adjusted for age, sex and other confounders so as to allow direct comparison between subgroups. In tables where 95% confidence intervals for estimates are not shown, they are available.
- STCL was a point-in-time, cross-sectional survey, therefore no conclusion can be drawn about (a) whether military service played a role in causing suicidality, and (b) the effect of VAC programs, services and benefits.

Suicide Ideation and Attempt Findings in the Survey on Transition to Civilian Life

Introduction

Suicide is a terrible tragedy, and an important public health problem among still-serving and former military and police personnel, as it is for all Canadians. Particularly with the tempo of operations since the 1990s, Canadian Forces (CF) military personnel and Royal Canadian Mounted Police (RCMP) members have been increasingly exposed to operational stresses that can lead to physical and mental health problems, social problems and suicidality. The wars in Iraq and Afghanistan have renewed public and media concern about suicide among serving and former military personnel in Canada and around the world. A recent study found that suicide rates were higher among released CF personnel than the general Canadian population (Statistics Canada 2011).

In 2010, VAC developed an evidence-informed Canadian Veteran-specific pathways-based framework for suicide prevention (Thompson et al 2011) and used it to conduct a comprehensive review of VAC's suicide prevention activities (VAC 2010). The VAC working group noted that more research was required to better understand and prevent suicides among Veterans. In 2010, the VAC Research Directorate and the DND Director General Military Personnel Research and Analysis conducted a survey of CF Regular Forces Veterans who released during 1998-2007 called the *Survey on Transition to Civilian Life* (STCL). STCL included questions about suicide ideation (thoughts) and attempts. An initial analysis was published in January 2011 (Thompson et al 2011).

This additional analysis of the STCL suicidal ideation and attempt data was conducted at the request of both the VAC Mental Health Directorate and VAC staff working on transformation, to support suicide prevention in Veterans.

Research Questions

1. How common were suicide ideation and attempts among CF Regular Forces personnel who released during 1998-2007?
2. How often and where did Veterans with suicidal ideation and attempts seek help?
3. What factors seem to be associated with suicidal ideation in this population?

Method

Methodology and initial analysis of the 2010 *Survey on Transition to Civilian Life* are described elsewhere (MacLean et al 2010, Thompson et al 2011). STCL was a computer-assisted telephone survey conducted by Statistics Canada. The survey sampled 3,354 of 32,015 former CF Regular Force personnel who released from service during 1998-2007 and were not serving in the CF, living in institutions, the northern Territories or out of Canada. The survey used a stratified random sampling design with three subgroups to allow for oversampling VAC clients. The groups were: Veterans receiving New Veterans Charter benefits, programs and services through VAC (NVC clients), Veterans receiving disability benefits (DP clients) and Veterans not receiving VAC benefits, programs and services (non-clients). STCL had a response rate of 71% (84% for VAC clients, 59% for non-clients). Of respondents, 94% (3,154) agreed to share their findings with VAC and DND.

The survey instrument collected self-reported information on health, disability and determinants

of health, using questions largely derived from national Canadian population health surveys (MacLean et al 2010). STCL included a series of questions on suicide ideation and attempts (Table 1).

Table 1. Suicide thought (ideation) and attempt questions asked in the STCL.

STCL Survey Questions	Coverage
Have you ever seriously considered committing suicide or taking your own life?	Asked of everyone who responded to the survey.
Has this happened in the past 12 months?	Asked of those who did not say "no" when asked if they had seriously considered committing suicide or taking their own life.
Have you ever attempted to commit suicide or tried taking your own life?	Asked of those who did not say "no" when asked if they had seriously considered committing suicide or taking their own life.
Did this happen in the past 12 months?	Asked those did not say "no" when asked if they had considered suicide, and, of those, the ones who said "yes" when asked if they had ever attempted suicide.
Did you see or talk to a health professional following your attempt or consideration to commit suicide?	Asked of those who did not say "no" when asked if they had seriously considered committing suicide or taking their own life.
Whom did you see or talk to? Mark all that apply. • Family doctor or general practitioner • Psychiatrist • Psychologist • Nurse • Social worker or counsellor • Religious or spiritual advisor such as a priest, chaplain or rabbi • Teacher or guidance counsellor • Other	Asked of those who did not say "no" when asked if they had considered suicide and, of those, the ones who said "yes" when asked if they had talked to a health professional.

Weighted population estimates were calculated using individual sampling weights provided by Statistics Canada (MacLean et al 2010, Thompson et al 2011). Ninety-five percent confidence intervals were calculated using STATA. Weighted estimates for samples less than 30 are identified in the tables. In calculating mean SF-12 summary scores and 95% confidence intervals, respondent sampling weightings provided by Statistics Canada were applied to individuals' scores.

Literature searches were conducted over a two-year period to review world peer-reviewed

scientific literature for estimates of suicide ideation and attempt rates in civilian, military and Veteran populations using a variety of computerized citation databases. A professional librarian was consulted to conduct literature searches for military, police and Veteran populations (Thompson and Ruggles 2010, Thompson et al 2010). Additional searches were conducted by Research Directorate staff during STCL planning and initial analysis. Bibliographies of found references were also searched.

Findings

Of 32,015 former CF Regular Force personnel who released during 1998-2007 and comprised the STCL study population, 21,247 or 66% were not VAC clients, and 10,768 or 34% were VAC clients (Thompson et al 2011).

Suicidal Ideation

Twelve-month suicidal ideation is a better measure of the risk for currently active suicidality than lifetime ideation. The survey found that 1,830 or 6% of CF Regular Force Veterans who released during 1998-2007 had suicidal ideation in the 12 months prior to the survey (Table 2). Twelve-month suicidal ideation was much more common among VAC clients than those not receiving benefits from VAC: 10% of all VAC clients, one in six NVC clients (16%), and just over one in eleven DP clients (9%), compared to 4% of non-clients.

The small difference between proportions of men (6%) and women (7%) with 12-month suicidal ideation was not statistically significant. The difference between sexes was more marked for lifetime suicidal ideation (17% for men and 25% for women) and was statistically significant. Sample sizes were too low to estimate 12-month ideation rates for women for the three subgroups (Table 3).

Suicide Attempts

Suicide attempts were much less common than ideation: 1% had 12-month attempts and 6% had lifetime attempts (3). Too few reported attempts to estimate 12-month attempt rates for the three subgroups. Paralleling the findings on ideation, lifetime attempt rates were significantly higher for VAC clients (14% NVC, 8% DP) than non-clients (4%).

Table 2.Suicidal ideation (thoughts).

Indicator	Weighted Population Estimates (95% Confidence Intervals)			
	NVC Clients	DP Clients	Non-Clients	Total
Suicide Ideation 12 Months - Male	340 (279-409) 16% (13-19%)	609 (493-740) 8% (7-10%)	612 (445-835) 3% (2-5%)	1560(1337-1811) 6% (5-7%)
Suicide Ideation 12 Months - Female	x	X	x	270 (188-386) 7.2% (5-10%)
Suicide Ideation 12 Months - Total	401 (335-477) 16% (14-19%)	695 (572-842) 9% (7-10%)	734 (545-965) 4% (3-5%)	1830 (1587-2082) 6% (5-7%)
Suicide Ideation Lifetime - Male	856 (769-945) 40% (36-44%)	1811 (1622-2007) 25% (22-28%)	2028 (1712-2400) 11% (9-13%)	4695 (4304-5086) 17% (15-18%)
Suicide Ideation Lifetime - Female	127 (54-161) 42% (32-54%)	288 (220-366) 33% (25-42%)	518 (379-693) 20% (15-27%)	932 (764-1119) 25% (20-30%)
Suicide Ideation Lifetime - Total	983 (780-1079) 40% (36-44%)	2099 (1903-2320) 26% (23-28%)	2546 (2207-2949) 12% (10-14%)	5628 (5215-6073) 18% (16-19%)

Note: x – Unreliable estimates, sample size < 30.

Table 3. Suicide attempts.

Indicator	Suicide Attempts Weighted Population Estimates (95% Confidence Intervals)			
	NVC Clients	DP Clients	Non-Clients	Total
Suicide Attempts Past 12 Months	x	x	x	315 (221-473) 1% (1-2%)
Suicide Attempts Lifetime	349 (285-420) 14% (12-17%)	645 (531-792) 8% (7-10%)	750 (563-979) 4% (2-5%)	1745 (1491-2031) 6% (5-6%)

Note: x – Unreliable estimates, sample size < 30.

Help-Seeking

The majority (65%) who thought about or attempted suicide saw a health professional (Table 4). This means that a significant number (35%) reported they did not seek help.

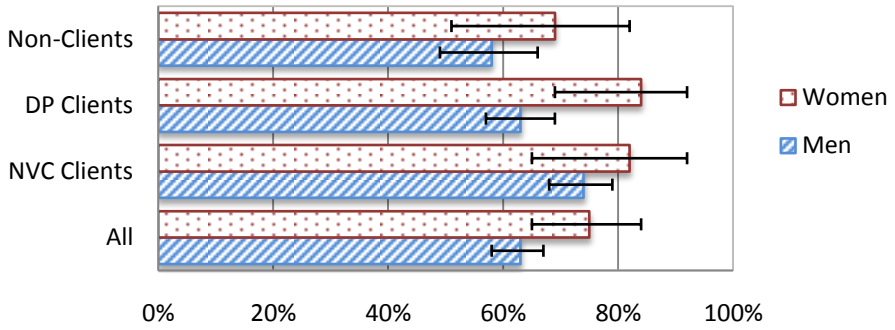
More VAC clients sought help than non-clients as did more women than men, but these trends were not statistically significant except that NVC clients who were men were significantly more likely than non-client men to seek help (confidence intervals better appreciated in Figure 1).

Table 4. Help-seeking following suicide ideation or attempts. Affirmative responses to "Did you see or talk to a health professional following your attempt or consideration to commit suicide?"

	Help-Seeking Following Suicide Ideation or Attempts Weighted Population Estimates (95% Confidence Intervals)			
	NVC Clients	**DP Clients**	**Non-Clients**	**Total**
Men	74% (68-79%)	63% (57-69%)	58% (49-66%)	63% (58-67%)
Women	*	84% (69-92%)	*	75% (65-84%)
Total	75% (70-80%)	66% (60-71%)	60% (52-67%)	65% (61-69%)

*Sample size < 30.

Figure 1. Help-seeking following suicide ideation or attempts (Table 4 presented graphically). Affirmative responses to "Did you see or talk to a health professional following your attempt or consideration to commit suicide?"



Weighted population estimate of those with 12-month suicidal Ideation who sought help (95% confidence intervals)
(Sample sizes < 30 for women non-clients and NVC clients)

All three client-groups sought help most often from psychologists, psychiatrists, and family physicians/general practitioners (FP/GPs) in that order (Table 5). Differences were statistically significant only for FP/GPs relative to either psychologists or psychiatrists for NVC and DP clients. Too few reported seeking help from social workers or counsellors, nurses, religious or spiritual advisors, teachers or guidance counsellors and other persons to produce reliable population estimates. Sample sizes for women were too small to allow statistical comparisons with men.

The trend toward non-clients being less likely to report seeing psychologists and psychiatrists for suicidal ideation or attempts than VAC clients was not statistically significant.

Table 5. Sources of help sought for suicidal ideation and attempts.
Respondents were asked "*Did you consult someone following your attempt or consideration to commit suicide?*" and asked to choose one or more provider type. Weighted population estimates.

	NVC Clients		
	Male %	Female %	Total (%) and 95% confidence interval)
Psychologist	66	61*	65 (58-72)
Psychiatrist	61	61*	61 (54-68)
FP/GP**	39	43*	40 (33-47)
Nurse	16*	29*	18(13-24)
SW***/Counsellor	25	29*	26 (20-32)
Religious/Spiritual	8*	7*	8*
Teacher/Guidance	2*	4*	2*
Other Person	6*	0*	5*

	DP Clients		
	Male %	Female %	Total (%) and 95% confidence interval)
Psychologist	62	61*	62 (55-69)
Psychiatrist	60	69*	62 (55-68)
FP/GP	46	53*	47 (41-54)
Nurse	13*	19*	14*
SW/Counsellor	28	31*	29 (23-35)
Religious/Spiritual	10*	6*	9*
Teacher/Guidance	2*	0*	1*
Other Person	5*	14*	7*

	Non-Client Veterans		
	Male %	Female %	Total (%) and 95% confidence interval)
Psychologist	50	42*	48 (38-58)
Psychiatrist	47	50*	47 (38-58)
FP/GP	47	50*	48 (38-58)
Nurse	14*	21*	15*
SW/Counsellor	29*	25*	28*
Religious/Spiritual	10*	13*	10*
Teacher/Guidance	0*	4*	1*
Other Person	12*	4*	10*

*Sample size < 30.
**FP/GP = family physician or general practitioner. The term used in the interview was "family doctor or general practitioner".
***Social Worker.

Characteristics of Respondents Reporting 12-Month Suicidal Ideation

Possible Risk and protective Factors in Suicidal Ideation

Appendix Table 1 shows that the prevalence of 12-month suicidal ideation varied between sociodemographic, military, health, disability and determinants of health factors. Hypotheses about possible risk or protective factors for 12-month suicidal ideation were developed by using 95% confidence intervals to determine whether factor prevalences were significantly different from the overall prevalence of 5.8% (95% C.I. 5.0-6.6%) of the study population, (Figures 2 and 3). Table 6 shows rank categories used in this report. The results of this procedure are shown in Table 7.

Table 6. Rank category terminology used in this report.

Rank Category Terminology Used in this Report	Original LASS Rank Category Terminology*	Canadian Forces Ranks
Officer 2	Senior Officer	Major, Lieutenant Colonel, Colonel, General, Lieutenant Commander, Commander, Captain (N), Commodore, Admiral
Officer 1	Junior Officer	Second Lieutenant, Lieutenant, Captain, Acting Sublieutenant, Sublieutenant, Lieutenant (N)
Officer Cadet	Cadet	Officer Cadet, Naval Cadet
NCM 3	Senior NCM	Sergeant , Warrant Officer, Master Warrant Officer, Chief Warrant Officer, Petty Officer First and Second Class, Chief Petty Officer First and Second Classes
NCM 2	Junior NCM	Corporal, Master Corporal, Leading Seaman, Master Seaman
NCM 1	Private	Private, Able Seaman
NCM Recruit	Recruit	Private (Recruit), Private (Training), Ordinary Seaman

*Thompson et al 2011.

Figure 2. Prevalences of 12-month suicidal ideation for sociodemographic and military factors.

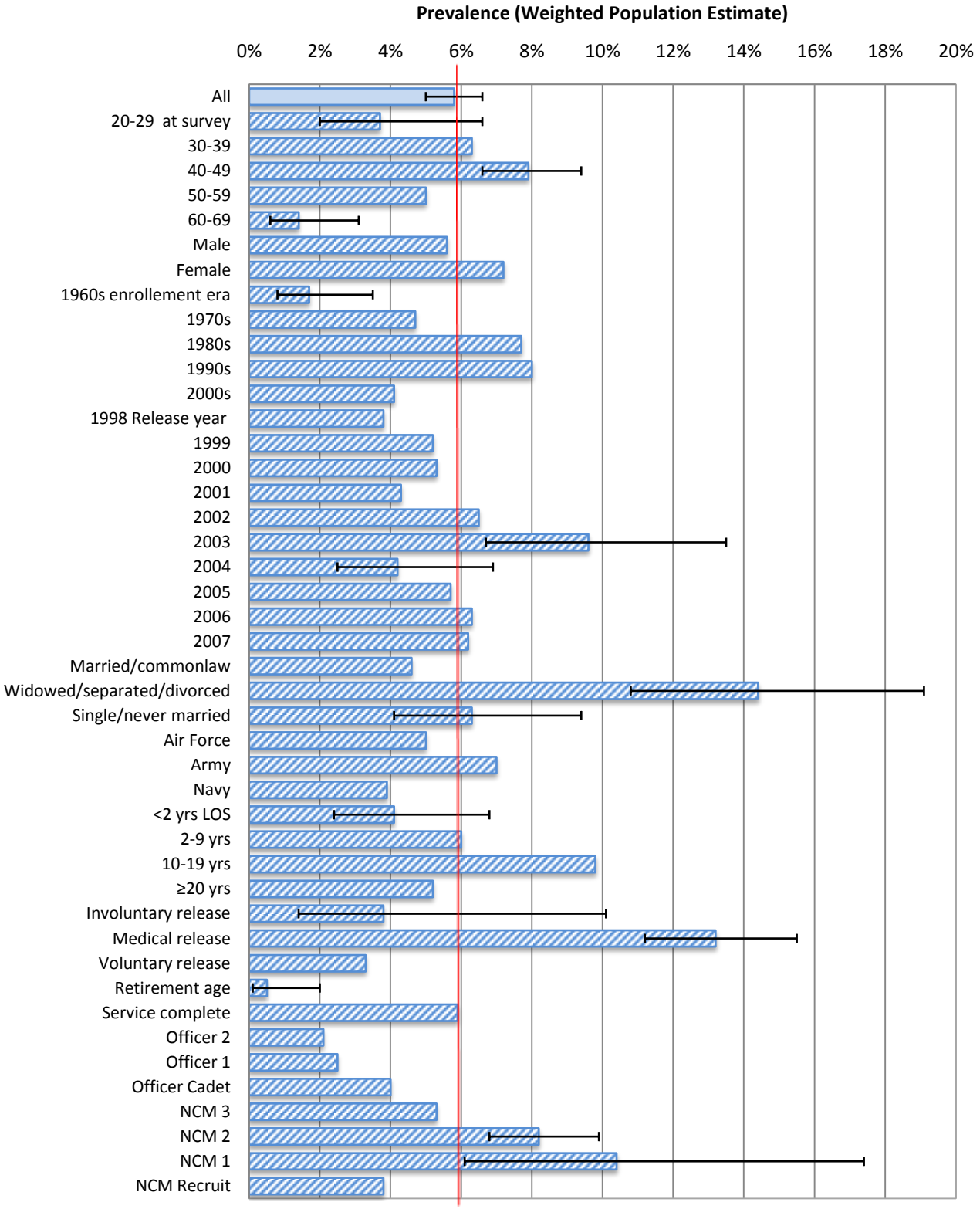


Figure 3. Prevalences of 12-month suicidal ideation for health, disability and determinants of health factors.

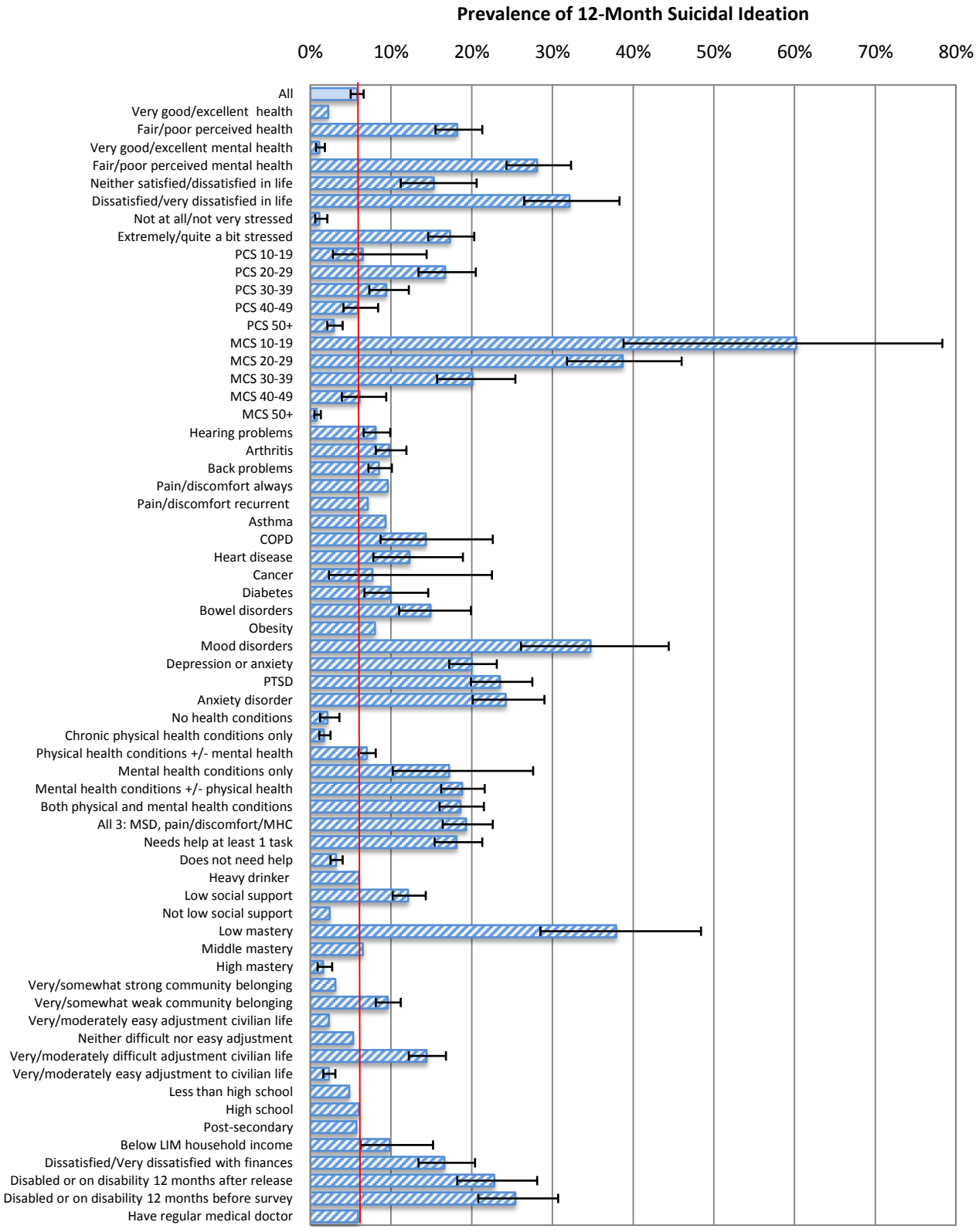


Table 7. Possible risk and protective factors for 12-month suicidal ideation. Blank cells identify prevalences that were not significantly different from the whole study population prevalence comparing 95% confidence intervals.

Variable	Possible Risk Factors	Possible Protective Factors
Sociodemographics		
Age at survey		60-69 years
Sex		
Marital status at survey	Widowed/separated/divorced	
Military Factors		
Rank	Rank group: Corporal, Master Corporal, Leading Seaman, Master Seaman.	Officers
Years of service	10-19 years	
Service branch		
Enrollment era		1960s
Deployments		
Release year	2003	
Release type	Medical release	Voluntary release, Retirement age
Health		
Well being	Fair/poor perceived health Fair/poor perceived mental health Neither satisfied nor dissatisfied with life Dissatisfied/very dissatisfied with life	Very good/excellent perceived health Very good/excellent perceived mental health
Stress in life	Extremely/quite a bit	Not at all/not very
SF-12 Quality of life	PCS 20-29 MCS 10-19, 20-29, 30-39	PCS above norm (≥ 50) MCS above norm (≥ 50)
Chronic physical health conditions	Arthritis, back problems, pain/discomfort always, bowel disorders, COPD, heart disease, diabetes and obesity	Having no chronic physical health conditions Having only chronic physical health conditions and no mental health conditions
Mental health conditions	Anxiety disorders, PTSD, depression/anxiety, and mood disorders	Having no mental health conditions
Comorbidity	Having both a physical and a mental health condition, Having all three of musculoskeletal disorder plus pain/discomfort plus a mental health condition.	
Disability		
Participation and activity limitation	Needs help with at least one task	Does not need help with at least one task

Variable	Possible Risk Factors	Possible Protective Factors
Determinants of Health		
Heavy drinking		
Education		
Social support	Low	Not low
Sense of community belonging	Very/somewhat weak	Very/somewhat strong
Mastery	Low	High
Adjustment to civilian life	Very/moderately difficult	Very/moderately easy
Household income (LIM)		
Satisfaction with financial situation	Dissatisfied/very dissatisfied	
Main activity within 12 months after release	Being disabled or on disability	
Main activity within 12 months prior to survey	Being disabled or on disability	
Health system		

Physical and Mental Health Conditions

STCL asked respondents about mental[1] health and chronic physical[2] health conditions diagnosed by a health professional. Twelve-month suicidal ideation occurred in those with no health conditions asked about in the survey and with either chronic physical health conditions, or mental health conditions, or both (Tables 7-8).

Among those with 12-month suicidal ideation (Table 8), a tenth (11%) had none of the chronic physical or mental health conditions; a fifth (20%) had none of the chronic physical health conditions; and a quarter (24%) had none of the mental health conditions (Table 8). A tenth (9%) had one or more of the mental health conditions and none of the chronic physical health conditions; while about 1 in 8 (13%) had one or more of the chronic physical health conditions and none of the mental health conditions. The differences between these proportions were not statistically significant. Among those with 12-month suicidal ideation, the majority (67%) had both physical and mental health conditions. Chronic pain is caused largely by physical health disorders, and can be a significant dimension of the mental health of those who experience it. More than two-thirds of those with 12-month suicidal ideation had pain or discomfort always (68%) or recurring (69%).

Among the STCL study population as a whole (Table 9) the prevalence of 12-month suicidal ideation was 2% for those with no health conditions, 2% for those with only chronic physical health conditions, 17% for those with only mental health conditions; and 20% for those with both

[1] Mental health conditions: Depression or anxiety, anxiety disorder, mood disorder or PTSD.

[2] Physical health conditions: Hearing problems, arthritis, back problems, asthma, COPD, diabetes, cancer, bowel disorders, stomach ulcers, high blood pressure, heart disease, effects of stroke, pain or discomfort and obesity were asked of all respondents but pain or discomfort and obesity were not included in the "physical health conditions" proportions in this section of the report.

physical and mental health conditions (latter two not significantly different).

Table 8. Characteristics of those with 12-month suicidal ideation.
Example: among those with 12-month suicidal ideation, 13% had only one or more chronic physical health conditions.

- 11%* (7-17%) had none of the physical[A] or mental health conditions[B].
- 20% (14-27%) had no physical health conditions.
- 24% (18-32%) had no mental health conditions.
- 9%* (5-15%) had one or more of the mental health conditions[B] only, and none of the physical health conditions.
- 13%* (9-20%) had one or more of the chronic physical health conditions[A] only, and none of the mental health conditions.
- 53% (46-60%) had all three of: a musculoskeletal condition[C], and pain or discomfort, and a mental health condition[B].
- 67% (60-73%) had both mental health and chronic physical conditions.
- 68% (61-74%) had pain or discomfort always.
- 69% (61-76%) had pain or discomfort recurring.
- 76% (69-82%) had mental health conditions with or without chronic physical health conditions.
- 80% (73-86%) had chronic physical health conditions with or without chronic mental health conditions.

Notes:

A – Hearing loss, arthritis, back problems, asthma, COPD, diabetes, cancer, bowel disorders, stomach ulcers, high blood pressure, heart disease and effects of stroke (not pain/discomfort or obesity).

B – Depression or anxiety, anxiety disorder, mood disorder or PTSD.

*Sample size < 30.

C – Back problems or arthritis.

Table 9. Prevalence of 12-month suicidal ideation for combinations of health conditions.
Example: among those who only had one or more chronic physical health condition, 2% had suicidal ideation.

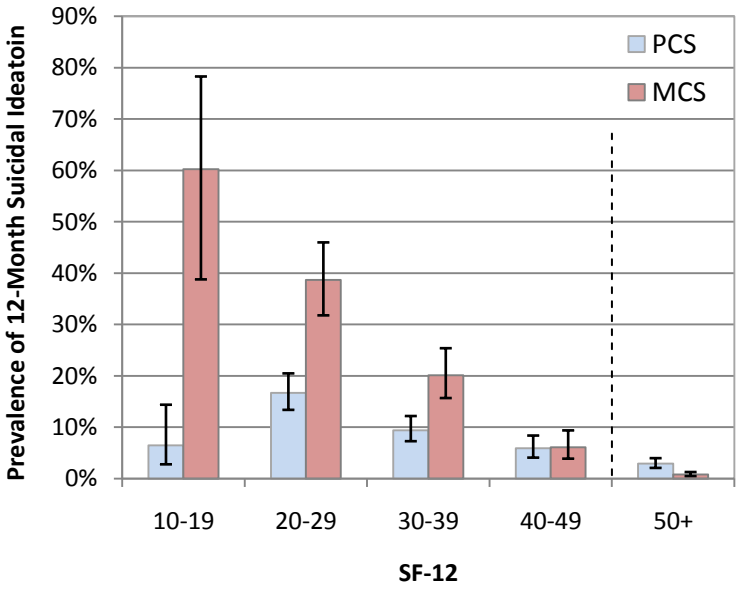
Combination of health conditions	Prevalence of 12- month suicidal Ideation (95% Confidence Interval)
No health conditions	2% (1-4%)*
Chronic physical health conditions only	2% (1-3%)*
Chronic physical health conditions[A] with or without mental health conditions[B]	7% (6-8%)
Mental health conditions only	17% (10-28%)*
Mental health conditions with or without chronic physical health conditions	18% (16-22%)*
Both chronic physical health and mental health conditions	19% (16-22%)
Comorbidity of: a musculoskeletal condition, and pain and discomfort, and a mental health condition.	20% (17-23%)

*Sample size < 30.

SF-12 Findings. The QualityMetrics SF-12® Short Form Health Survey offers additional clues about the relative contribution of physical and mental health conditions to suicidal ideation. The PCS and MCS summary scores represent the contribution of physical health (PCS) and mental health (MCS) to quality of life, including well-being and functional health. Higher scores are better, and scores below 50 are below the norm for the reference population (1998 US general population). Owing to the way responses are scored to produce the summary scores, an SF-12 score of 20 means that almost 100% of the general population has better health-related well-being and function, 30 means 98% and 40 means 84%.

MCS was strongly negatively associated with the prevalence of 12-month suicidal ideation (Figure 4). There was also a weaker negative association of PCS with the prevalence of 12-month suicidal ideation. Put another way, the presence of low well-being and poorer function associated with mental health disorders could be a stronger influence on 12-month suicidal ideation than physical health disorders. Since the two occur together as comorbidity often and physical health conditions are much more common than mental health conditions in this population (Thompson et al 2011), it is not clear whether physical health independently predicts suicidal ideation. This hypothesis is being tested in further analysis.

Figure 4. Prevalence of 12-month suicidal ideation for physical health (PCS) and mental health (MCS) SF-12 summary scores.
Scores below 50 represent below average health-related well-being and function.



Discussion

The *Survey on Transition to Civilian Life* found that 12-month suicidal ideation was not uncommon among CF Regular Forces personnel who released during 1998-2007 and was more common among VAC clients, meaning those receiving programs, services and benefits from VAC. The finding that 12-month suicide ideation rates were greater for VAC clients than non-client Veterans is not unexpected, because subpopulations with chronic health conditions are at higher risk of suicidality, such as Veterans receiving care in U.S. Veterans Health

Administration facilities (Blough et al 2009). The VAC client population is more comparable to other populations undergoing treatment for health issues than to the general population, because Veterans come to VAC for assistance with chronic health and disability issues. VAC clients have chronic health conditions significantly more often than the general population (Thompson et al 2011, Asmundson 2000).

Risk Factors and Vulnerable Subgroups. Although any individual is at some risk of suicide when stressed or dealing with health issues, it can be useful to identify and target resources for subgroups who are more vulnerable. This descriptive study identified a number of health, disability and determinants of health characteristics of CF Regular Force Veterans who released from service during 1998-2007 that appear to be risk factors for recently active suicidal ideation in this population. This descriptive study was not able to determine which factors independently predict 12-month suicidal ideation. Inferential regression modeling is under way to clarify the relationships between factors in suicidal ideation for this population of Veterans.

Beyond Risk Factors: Suicide Pathways. Modern thinking about suicide prevention has evolved beyond risk factors to suicide pathways (e.g., Mann et al 2005, Scott et al 2010). Not everyone with a mental illness becomes suicidal, and some who suicide appear not to have had a psychiatric illness, which led Mann (2002, 2005) to propose the pathways concept. Mental health conditions are strongly correlated with suicide; however no study has demonstrated that mental conditions alone predict suicidality. The finding that a quarter (24%) of the STCL Veterans who had 12-month suicidal ideation had none of the mental health conditions included in this survey is consistent with the research literature: a significant minority who complete suicide had no diagnosed psychiatric conditions (eg, Mann et al 2000 and 2005, and studies reviewed by Thompson et al 2011).

Role of Physical Health. This descriptive analysis suggests 12-month suicidal ideation occurs in the setting of chronic physical health conditions with and without comorbidity of mental health conditions, which is consistent with emerging evidence. Researchers have only recently begun to focus on the role of physical health conditions in suicidality (MacLean et al 2011). Physical health increases risk of suicidal ideation in Canadians with mood disorders (Ratcliffe et al 2008, MacLean et al 2011). Physical health is an independent predictor of suicidality risk (Scott et al 2010, MacLean et al 2011), as is disability associated with physical health (Russell et al 2009). Physical health conditions far outnumber psychiatric conditions among medical conditions entitled for disability benefits (Pedlar and Thompson 2011). Pain is produced by physical health conditions, but is an important dimension of mental health and vice-versa. In an analysis of the general population data from Canadian Community Health Survey 2002, Ratcliffe et al. (2008) found that chronic pain was a predictor of suicidal ideation and suicide attempts independent of Axis I mental disorders and sociodemographics. Physical health conditions were not studied. The initial STCL analysis demonstrated that chronic physical health conditions and chronic pain/distress were considerably more common in this group of Veterans than mental health conditions, but that comorbidity was common (Thompson et al 2011). It is therefore important to determine the role that physical health plays in suicidality.

Social Factors. In this descriptive study, several social determinants of health were associated with higher proportions of suicidal ideation. Sareen et al. (2011) found that in the U.S. general population low household income was associated with suicide attempts and a reduction in household income with increased risk of incident mental disorders. McMillan et al. (2010) found a strong negative correlation between income and suicidal ideation in U.S. non-Hispanic whites. Stressful life event is a common entry factor in suicide pathways (Mann et al 2005), and difficulties with social determinants of health are associated with life stress. Sareen et al (2010)

found in a review of the literature that in some studies there were higher levels of postdeployment distress after peacekeeping missions, noting that such distress was associated with higher levels of combat exposure. They found evidence of negative correlation of distress symptoms with postdeployment social supports.

In developing the suicide prevention framework for Veterans Affairs Canada, Thompson et al (2011) adapted the pathway frameworks suggested by Mann et al (2005) for civilians and Zamorski (2010) for serving military personnel to Canadian military Veterans, adding physical and social health pathways to the framework (Thompson et al 2011). STCL data provide an opportunity to test this modification. The descriptive analysis reported here suggests that physical and social dimensions are important in 12-month suicidal ideation in Veterans. If confirmed in the inferential regression modelling that is underway, this finding would support VAC's biopsychosocial approach to optimizing health (physical, mental and social well being with and without disorders) and minimizing disability as a means of preventing suicide in Veterans, as well as confirming the suicide pathways modification.

Help Seeking. Suicide is a very private, episodic experience, which makes help-seeking by individuals with suicidal feelings an important dimension of suicide prevention. In this study, about a third did not seek help for their suicidal ideation or attempts. In their analysis of data for serving military personnel from the 2002 Canadian Community Health Survey CF Supplement, Fikretoglu et al. (2007) found that a third with PTSD criteria did not seek help from a health professional for mental health problems. They found that mental health indicators, gender, marital status and rank predicted treatment seeking, and identified a number of barriers in those who did not, including lack of recognition of need for assistance (Fikretoglu et al 2008). Sareen et al. (2010) examined the same data, finding the strongest and most consistent correlates of perceived need were long-term disability, suicidal ideation, female gender and regular versus reserve force service.

Since 2002, DND, CF and VAC have introduced programs to encourage help seeking for mental health problems.VAC clients more often sought help for suicidal ideation and attempts than non-clients, but reasons for this are not clear. Several hypotheses can be considered. VAC clients tend to have long standing chronic health problems, so they might be more prepared to seek help than non-clients who might have less experience with health problems. Fikretoglu et al (2007) found that treatment seeking was correlated with factors such as cumulative trauma exposure and degree of PTSD symptom interference. This finding could also indicate that Veterans engaged with DND, CF and VAC programs and services are more likely to seek help, or have easier access to health professionals.

Collaboration and Communication. Psychologists, psychiatrists, family physicians and general practitioners were the top choices for those seeking help with suicidal thoughts or attempts. Many also sought help from nurses, social workers and counsellors. The VAC suicide prevention working group identified the importance of collaboration and communication between service providers in suicide prevention (Thompson et al 2010, VAC 2010). The findings of this study reinforce the importance of collaboration and communications among providers caring for physical health and social problems as well as mental health conditions.

Comparisons of Rates with Other Studies. The literature searches found studies that yielded estimates of suicide ideation and attempt rates for comparison with the STCL findings (Appendix 3). No published contemporary national comparators for suicidal ideation and suicide attempts were found that could be adjusted to the STCL data for direct comparison. Suicidal ideation and attempt data from the 2008 Canadian Community Health Surveys (CCHS) were

regional only, and so were not nationally representative.

The prevalence of 12-month ideation in this survey (5.8%) was similar to the unadjusted 4.0% prevalence for the Canadian general population found a decade earlier in CCHS 2002 (Belik et al 2010), but the two proportions are not directly comparable for many reasons. The estimates are a decade apart, and suicidality prevalence has changed in Canada over time. The proportions are from two different surveys using different methodologies, and were from two populations with different mixes of age, gender, regional representation, occupations, and other potential confounders, so it cannot be concluded that such a small absolute difference (1.8%) is real. The STCL estimate for suicide attempts (1.0%) is also similar to the general population estimate for 2002 (0.6%, Belik et al 2010).

Women. Other Canadian population health studies have demonstrated differences in suicidal ideation and behaviour between men and women. Only 12% of the STCL study population was women, reducing the power of the study to detect differences between men and women for factors like help-seeking. This is indicated by the wide confidence intervals for population estimates for women, and by the unreliability of some estimates owing to sample sizes less than 30. The priority in the STCL design was to stratify for client types. Future Veteran population health studies should consider stratifying for women.

These findings support ongoing suicide prevention efforts by VAC, other agencies and health care providers serving Veterans and their families. The findings will be useful to VAC as it transforms to support Veterans in this era, providing evidence to inform programs, policy and services. While it is generally agreed that even best efforts to prevent suicide are not successful for all individuals, suicide prevention research underway in Canada and around the world is expected to find solutions that will reduce suicide rates among Veterans and all Canadians.

References

APA. Practice Guideline for the Assessment and Treatment of Patients with Suicidal Behaviors. American Psychiatric Association. 2003;184 p. http://www.psychiatryonline.com/content.aspx?aID=56057&searchStr=suicide#56057 Viewed 04 September 2009.

Belik SL, Stein MB, Asmundson GJ, Sareen J. Relation between traumatic events and suicide attempts in Canadian military personnel. Can J Psychiatry. 2009 Feb;54(2):93-104.

Belik S, Stein MB, Asmundson GJG, Sareen J. Are Canadian soldiers more likely to have suicidal ideation and suicide attempts than Canadian civilians? Amr J Epi October 2010;9 p.

Bernal M, Haro JM, Bernert S, Brugha T, de Graaf R, Bruffaerts R, Lépine JP, de Girolamo G, Vilagut G, Gasquet I, Torres JV, Kovess V, Heider D, Neeleman J, Kessler R, Alonso J; ESEMED/MHEDEA Investigators. Risk factors for suicidality in Europe: results from the ESEMED study. J Affect Disord. 2007 Aug;101(1-3):27-34. Epub 2006 Oct 30.

Blackmore ER, Munce S, Weller I, Zagorski B, Stansfeld SA, Stewart DE, Caine ED, Conwell Y. Psychosocial and clinical correlates of suicidal acts: results from a national population survey. Br J Psychiatry. 2008 Apr;192(4):279-84.

Blough D, Hubbard S, McFarland LV, Reiber GE. Suicide prevention activities in VA.US Department of Veterans Affairs. Health Services Research and Development Service. Research Highlights December 2009;3 p. http://www.hsrd.research.va.gov/publications/forum/dec09/dec09-4.cfm

CFHS. Suicide in the Canadian Forces. Canadian Forces Health Services, Ottawa. Backgrounder. BG 08.009 - November 17, 2009;5 p.

Cheung AH, Dewa CS. Canadian Community Health Survey: Major Depressive Disorder and Suicidality in Adolescents. Healthcare Policy. 2006;2(2):76-89.

Fairweather-Schmidt AK, Anstey KJ, Salim A, Rodgers B. Baseline factors predictive of serious suicidality at follow-up: findings focusing on age and gender from a community-based study. BMC Psychiatry. 2010 Jun 9;10:41.

Fikretoglu D, Brunet A, Guay S, Pedlar D. Mental health treatment seeking by military members with posttraumatic stress disorder: findings on rates, characteristics, and predictors from a nationally representative Canadian military sample. Can J Psychiatry. 2007 Feb.;52(2):103–110.

Fuller-Thomson E, Sawyer J. Lifetime prevalence of suicidal ideation in a representative sample of Canadians with Type 1 diabetes Volume 83, Issue 1, Pages e9-e11 (January 2009). published online 15 December 2008.

GoC. The Human Face of Mental Health and Mental Illness in Canada. Government of Canada. Ottawa. 2006;203 p.

Holley HL, Arboleda-Flórez J, Love EJ. Lifetime Prevalence of Prior Suicide Attempts in a Remanded Population and Relationship to Current Mental Illness. Int J Offender Ther Comp Criminol September 1995 vol. 39 no. 3 191-209.

MacLean J, Kinley DJ, Jacobi F, Bolton JM, Sareen J.The relationship between physical conditions and suicidal behavior among those with mood disorders. J Affect Disord. 2011 Apr;130(1-2):245-50.

MacLean MB, Van Til L, Thompson JM, Pedlar D, Poirier A, Adams J, Hartigan S, Sudom K. Life After Service Study: Data Collection Methodology for The Income Study and The Transition to Civilian Life Survey. Veterans Affairs Canada Research Directorate Technical Report. April 29 2010a: p79.

McMillan KA, Enns MW, Asmundson GJG, Sareen J. The association between income and distress, mental disorders, and suicidal ideation and attempts: findings from the collaborative psychiatric epidemiology surveys. J. Clin. Psychiatry. 2010 Sep.;71(9):1168–1175.

Mann JJ. A current perspective of suicide and attempted suicide. Ann Intern Med. 2002 Feb 19;136(4):302-11.

Mann JJ, Apter A, Bertolote J, Beautrais A, Currier D, Haas A, Hegerl U, Lonnqvist J, Malone K, Marusic A, Mehlum L, Patton G, Phillips M, Rutz W, Rihmer Z, Schmidtke A, Shaffer D, Silverman M, Takahashi Y, Varnik A, Wasserman D, Yip P, Hendin H. Suicide prevention strategies: a systematic review. JAMA. 2005 Oct 26;294(16):2064-74.

Pagura J, Fotti S, Katz LY, Sareen J, Swampy Cree Suicide Prevention Team. Help seeking and perceived need for mental health care among individuals in Canada with suicidal behaviors. Psychiatr Serv. 2009 Jul.;60(7):943–949.
Nock MK, Borges G, Bromet EJ, Alonso J, Angermeyer M, Beautrais A, et al. Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. Br.J.Psychiatry 2008 Feb;192(2):98-105.

Pedlar DJ, Thompson JM. Research in the life courses of Canadian military Veterans and their families. In: A. Aiken & S.A.H. Bélanger (Eds.): Shaping the Future, Military and Veteran Health Research. Canadian Defence Academy Press. Kingston, Ontario. In press.

Ratcliffe GE, Enns MW, Belik SL, Sareen J. Chronic pain conditions and suicidal ideation and suicide attempts: an epidemiologic perspective. Clin J Pain. 2008 Mar-Apr;24(3):204-10.

Russell D, Turner RJ, Joiner TE. Physical disability and suicidal ideation: a community-based study of risk/protective factors for suicidal thoughts. Suicide Life Threat Behav. 2009 Aug;39(4):440-51.

Sakinofsky I. The epidemiology of suicide in Canada. Leenaars AAA (editor). Suicide in Canada. University of Toronto Press. Toronto. 1998; 86 p.

Sakinofsky I, Webster G. Major risk factors for non-fatal suicidality in the community. 18th Congress of the International Association for Suicide Prevention and Crisis Intervention (IASP), Venice, Italy, 5 June 1995.

Sareen J, Afifi TO, McMillan KA, Asmundson GJG. Relationship between household income and mental disorders: findings from a population-based longitudinal study. Arch. Gen. Psychiatry. 2011 Apr.;68(4):419–427.

Sareen J, Belik S-L, Stein MB, Asmundson GJG. Correlates of perceived need for mental health care among active military personnel. Psychiatr Serv. 2010 Jan.;61(1):50–57.

Sareen J, Stein MB, Thoresen S, Belik S-L, Zamorski M, Asmundson GJ. Is peacekeeping peaceful? A systematic review. Can J Psychiatry. 2010 Jul.;55(7):464–472.

Scocco P, de Girolamo G, Vilagut G, Alonso J. Prevalence of suicide ideation, plans, and attempts and related risk factors in Italy: results from the European Study on the Epidemiology of Mental Disorders--World Mental Health study. Compr. Psychiatry 2008 Jan-Feb;49(1):13-21.

Scott KM, Hwang I, Chiu WT, Kessler RC, Sampson NA, Angermeyer M, Beautrais A, Borges G, Bruffaerts R, de Graaf R, Florescu S, Fukao A, Haro JM, Hu C, Kovess V, Levinson D, Posada-Villa J, Scocco P, Nock MK.Chronic physical conditions and their association with first onset of suicidal behavior in the world mental health surveys. Psychosom Med. 2010 Sep;72(7):712-9. Epub 2010 May 24.

Snarr JD, Heyman RE, Slep AM. Recent suicidal ideation and suicide attempts in a large-scale survey of the U.S. Air Force: prevalences and demographic risk factors. Suicide Life Threat Behav. 2010 Dec;40(6):544-52.

Statistics Canada. Canadian Forces Cancer and Mortality Study: Causes of Death. Minister of Industry. Ottawa. Catalogue no. 82-584-X. May 2011;13 p.

Thompson JM, MacLean MB, Van Til L, Sudom K, Sweet J, Poirier A, Adams J, Horton V, Campbell C, Pedlar D. Survey on Transition to Civilian Life: Report on Regular Force Veterans. Research Directorate, Veterans Affairs Canada, Charlottetown, and Director General Military Personnel Research and Analysis, Department of National Defence, Ottawa. 04 January 2011:103 p.

Thompson JM, Pranger T, Ross D, Morrison M. Suicide Prevention at Veterans Affairs Canada: Framework. Veterans Affairs Canada. Suicide Prevention Approach Working Group, National Mental Health Directorate Technical Report. 02 September 2010;71 p.

Thompson JM, Ruggles T. Suicide Prevention Literature Search: Serving and Former Police Officers. Veterans Affairs Canada Research Directorate Data Report. 25 March 2010;88 p.

Thompson JM, Ruggles T, Pranger T, Ross D, Morrison M. Suicide Prevention Literature Search: Military Veterans. Suicide Prevention Approach Working Group. Veterans Affairs Canada Research Directorate Data Report. 26 March 2010;1,496 p.

VAC Suicide Prevention Approach Working Group. Suicide Prevention at Veterans Affairs Canada: Activities and Recommendations. Veterans Affairs Canada. National Mental Health Directorate Technical Report.31 August 2010; 37 p.

Weissman MM, Bland RC, Canino GJ, Greenwald S, Hwu HG, Joyce PR, Karam EG, Lee CK, Lellouch J, Lepine JP, Newman SC, Rubio-Stipec M, Wells JE, Wickramaratne PJ, Wittchen HU, Yeh EK. Prevalence of suicide ideation and suicide attempts in nine countries. Psychol Med. 1999 Jan;29(1):9-17.

Zamorski M. Report of the Canadian Forces Expert Panel on Suicide Prevention. Department of National Defence/Canadian Forces. Ottawa. 2010 January;80 p.

Appendix Table 1. Prevalences of 12-month suicidal ideation for characteristics of the study population.

Variable	Category	12-Month Suicidal Ideation (% of STCL Population)		
		Yes	No	Total
STCL Population Totals		5.8	94.2	100.0
Client Status	NVC Clients	16.3	83.7	100.0
	DP Clients	8.5	91.5	100.0
	Non-Clients	3.5	96.5	100.0
Age groups by age at release from service	≤ 19 Years	0.0*	100.0	100.0
	20-29	4.8*	95.2	100.0
	30-39	8.2	91.8	100.0
	40-49	6.9	93.1	100.0
	50-59	2.7*	97.3	100.0
	60-69	0.0*	100.0*	100.0
Age groups by age at survey	≤ 19 Years	0.0*	0.0*	100.0
	20-29	3.7*	96.3	100.0
	30-39	6.3	93.7	100.0
	40-49	8.0	92.0	100.0
	50-59	5.0	95.0	100.0
	60-69	1.4*	98.6	100.0
Gender	Male	5.6	94.4	100.0
	Female	7.2	92.8	100.0
Enrollment Era	1960s	1.7*	98.3	100.0
	1970s	4.7	95.3	100.0
	1980s	7.7	92.3	100.0
	1990s	8.0	92.0	100.0
	2000s	4.1*	95.9	100.0
Release Year	1998	3.8	96.2	100.0
	1999	5.2	94.8	100.0
	2000	5.3	94.7	100.0
	2001	4.3	95.7	100.0
	2002	6.5	93.5	100.0
	2003	9.6	90.4	100.0
	2004	4.2	95.8	100.0
	2005	5.7	94.3	100.0
	2006	6.3	93.7	100.0
	2007	6.2	93.8	100.0
Marital status time of survey	Married/Commonlaw	4.6	95.4	100.0
	Widowed/Separated/Divorced	17.8*	82.2	100.0
	Single/Never married	7.8	92.2	100.0
Service Branch	Air Force	5.0	95.0	100.0
	Army	7.0	93.0	100.0
	Navy	3.9*	96.1	100.0

Variable	Category	12-Month Suicidal Ideation (% of STCL Population)		
		Yes	No	Total
STCL Population Totals		5.8	94.2	100.0
Length of Service	< 2 years	4.1*	95.9	100.0
	2 to 9 years	6.0*	94.0	100.0
	10 to 19 years	9.8	90.2	100.0
	≥ 20 years	5.2	94.8	100.0
Release Type[B]	Involuntary	3.8*	96.2	100.0
	Medical	13.4	86.6	100.0
	Voluntary	3.3	96.7	100.0
	Retirement Age	0.5*	99.5	100.0
	Service Complete	5.9*	94.1	100.0
Deployment 30+ days anywhere	Yes	6.4	93.6	100.0
	No	4.6	95.4	100.0
Deployment outside Canada	0	6.0*	94.0	100.0
	1	5.6	94.4	100.0
	2	7.4	92.6	100.0
	3 or more	6.4	93.6	100.0
Rank[B]	Officer 2	2.1*	97.9	100.0
	Officer 1	2.5*	97.5	100.0
	Officer Cadet	4.0*	96.0	100.0
	NCM 3	5.3	94.7	100.0
	NCM 2	8.3	91.7	100.0
	NCM 1	10.4*	89.6	100.0
	NCM Recruit	3.8*	96.2	100.0
Perceived Health	Very good or excellent	2.2	97.8	100.0
	Good	5.0	95.0	100.0
	Fair or poor	18.6	81.4	100.0
Perceived mental health	Very good or excellent	1.1*	98.9	100.0
	Good	5.3	94.7	100.0
	Fair or poor	28.9	71.1	100.0
Satisfaction with Life	Satisfied or very satisfied	2.6	97.4	100.0
	Neither satisfied nor dissatisfied	15.4	84.6	100.0
	Dissatisfied or very dissatisfied	32.3	66.7	100.0
Stress in your life	Not at all or not very stressful	1.1*	98.9	100.0
	A bit stressful	3.8	96.2	100.0
	Extremely or quite a bit stressful	17.5	82.5	100.0
SF-12 Quality of Life PCS (Physical)	SF-12 0-9	0.0*	0.0	0.0
	SF-12 10-19	6.8*	93.2	100.0
	SF-12 20-29	17.0	83.0	100.0
	SF-12 30-39	9.5	90.5	100.0
	SF-12 40-49	5.9	94.1	100.0
	SF-12 50+	2.9	97.1	100.0

Variable	Category	12-Month Suicidal Ideation (% of STCL Population)		
		Yes	No	Total
STCL Population Totals		5.8	94.2	100.0
SF-12 Quality of Life MCS (Mental)	SF-12 0-9	0.0*	0.0	0.0
	SF-12 10-19	61.1*	38.9	100.0
	SF-12 20-29	40.5	59.5	100.0
	SF-12 30-39	20.4	79.6	100.0
	SF-12 40-49	6.1*	93.9	100.0
	SF-12 50+	0.8*	99.2	100.0
Chronic Health Conditions	***No Conditions***	***2.1****	***97.9***	100.0
	Physical, All	***7.0***	***93.0***	100.0
	Hearing Problems	8.2	91.8	100.0
	Arthritis	9.9	90.1	100.0
	Back problems	8.6	91.4	100.0
	Pain/discomfort always	9.6	90.4	100.0
	Pain/discomfort reoccur	7.1	92.9	100.0
	Asthma	9.3*	90.7	100.0
	COPD	14.3*	85.7	100.0
	Diabetes	10.1*	89.9	100.0
	Cancer	7.8*	92.2	100.0
	Bowel disorders	15.1	84.9	100.0
	Obesity	8.0	92.0	100.0
	Mental, All	***18.8***	***81.2***	100.0
	Mood disorders	35.8	64.2	100.0
	Depression or Anxiety	20.4	79.6	100.0
	PTSD	24.0	76.0	100.0
	Anxiety Disorder	24.9	75.1	100.0
Comorbidity	Physical & Mental Health	19.0	81.0	100.0
	Triad: MSD & Pain or Discomfort & Mental Health	19.8	80.2	100.0
Disability: Participation and Activity Limitation	Needs help at least one task	18.5	81.5	100.0
	Does not need help	3.2	96.8	100.0
Heavy drinker	≥ 5 drinks one occasion, ≥ 12 times a year	6.0	94.0	100.0
Social Support	Low	12.2	87.8	100.0
	Not low	2.4	97.6	100.0
Mastery	Low	38.6	61.4	100.0
	Middle	6.5	93.5	100.0
	High	1.6*	98.4	100.0
Sense of Community Belonging	Very or somewhat strong	3.1	96.9	100.0
	Very or somewhat weak	9.6	90.4	100.0
Adjustment to Civilian Life	Very or moderately easy	2.3	97.7	100.0
	Neither difficult nor easy	5.3*	94.7	100.0
	Very or moderately difficult	14.6	85.4	100.0

Variable	Category	12-Month Suicidal Ideation (% of STCL Population)		
		Yes	No	Total
STCL Population Totals		5.8	94.2	100.0
Education at time of survey	Less than high school	4.8*	95.2	100.0
	High school	6.0	94.0	100.0
	Post-secondary	5.7	94.3	100.0
Income	Below Low Income Measure	9.9*	90.1	100.0
Satisfaction with Financial Situation	Satisfied or very satisfied	2.9	97.1	100.0
	Neither satisfied nor dissatisfied	9.3	90.7	100.0
	Dissatisfied or very dissatisfied	16.9	83.1	100.0
Main activity 12 months after release	Worked in the Reserve Force	2.6*	97.4	100.0
	Worked at job/ran business	4.5	95.5	100.0
	Retired not looking for work	5.1*	94.9	100.0
	Attended school or training	3.9*	96.1	100.0
	Looked for work	5.1*	94.9	100.0
	Cared/nurtured family	8.4*	91.6	100.0
	Disabled or on disability	23.3	76.7	100.0
	Other	6.0*	94.0	100.0
Main activity 12 months before survey	Worked in the Reserve Force	0.0*	100.0*	100.0
	Worked at job/ran business	4.6	95.4	100.0
	Retired not looking for work	3.2*	96.8	100.0
	Attended school or training	6.9*	93.1	100.0
	Looked for work	2.9*	97.1	100.0
	Cared/nurtured family	1.8*	98.2	100.0
	Disabled or on disability	25.9	74.1	100.0
	Other	5.9*	94.1	100.0
Health System	Prescription Drug Insurance	5.8	94.2	100.0
	Dental Insurance	5.5	94.5	100.0
	Eye Glasses Insurance	5.6	94.4	100.0
	Regular Medical Doctor	5.9	94.1	100.0

Notes: A – Excluded unknown category.
B – Rank categories: See Table 6.
*Sample size < 30.

Appendix Table 2. Twelve-month suicidal ideation frequency distributions within variables.

For example, 40.1% of those with 12-month suicidal ideation were non-clients, whereas 68.2% of those who did not have 12-month suicidal ideation were non-clients. Similarly, 60.0% of those with 12-month suicidal ideation had back problems, compared to 38.7% of those who did not have 12-month suicidal ideation.

Variable	Category	12-Month Suicidal Ideation (%)		
		Yes	No	Total
Client Status	NVC Clients	21.9	6.9	7.8
	DP Clients	38.0	24.9	25.7
	Non-Clients	40.1	68.2	66.6
	Total	*100.0*	*100.0*	*100.0*
Age groups by age at release from service	≤ 19 Years	0.0*	4.2	4.0
	20-29	20.6*	25.0	24.8
	30-39	30.9	21.3	21.8
	40-49	42.0	34.8	35.2
	50-59	6.4*	14.5	14.0
	60-69	0.0*	0.3*	0.3*
	Total	*100.0*	*100.0*	*100.0*
Age groups by age at survey	≤ 19 Years	0.0*	0.0*	0.0*
	20-29	10.2*	16.1	15.8
	30-39	20.3	18.4	18.5
	40-49	46.4	32.8	33.6
	50-59	21.2	24.4	24.2
	60-69	1.9*	8.3	7.9
	Total	*100.0*	*100.0*	*100.0*
Gender	Male	85.3	88.4	88.2
	Female	14.7	11.6	11.8
	Total	*100.0*	*100.0*	*100.0*
Enrollment Era	1960s	2.3*	7.9	7.6
	1970s	19.9	24.6	24.3
	1980s	41.8	30.8	31.5
	1990s	20.5	14.3	14.7
	2000s	15.5*	22.3	21.9
	Total	*100.0*	*100.0*	*100.0*
Release Year	1998	6.2*	9.5	9.3
	1999	7.9*	8.9	8.8
	2000	8.3*	9.1	9.1
	2001	6.0*	8.1	8.0
	2002	10.2*	9.0	9.1
	2003	15.4	8.9	9.3
	2004	7.1*	9.9	9.8
	2005	10.4*	10.5	10.5
	2006	14.1	12.7	12.8
	2007	14.3	13.3	13.4
	Total	*100.0*	*100.0*	*100.0*

Variable	Category	12-Month Suicidal Ideation (%)		
		Yes	No	Total
Marital status time of survey	Married/Commonlaw	60.1	76.5	75.6
	Widowed/Separated/Divorced	23.2	8.4	9.2
	Single/Never married	16.7	15.1	15.2
	Total	*100.0*	*100.0*	*100.0*
Service Branch	Air Force	27.2	31.3	31.0
	Army	58.9	48.2	48.8
	Navy	10.7*	16.1	15.7
	Total	*100.0*	*100.0*	*100.0*
Length of Service	< 2 years	12.4*	17.9	17.6
	2 to 9 years	17.1*	16.5	16.5
	10 to 19 years	22.4	12.6	13.1
	≥ 20 years	48.0	53.1	52.8
	Total	*100.0*	*100.0*	*100.0*
Release Type[B]	Involuntary	3.0*	4.7	4.6
	Medical	56.4	22.2	24.2
	Voluntary	32.8	58.6	57.1
	Retirement Age	0.6*	7.4	7.0
	Service Complete	7.2*	7.0	7.0
	Total	*100.0*	*100.0*	*100.0*
Deployment 30+ days anywhere	Yes	71.9	64.5	64.9
	No	28.1	35.5	35.1
	Total	*100.0*	*100.0*	*100.0*
Deployment outside Canada	0	7.8*	8.2	8.1
	1	20.1	22.8	22.6
	2	21.1	18.0	18.2
	3 or more	51.0	51.0	51.0
	Total	*100.0*	*100.0*	*100.0*
Rank[B]	Officer 2	3.0*	8.4	8.1
	Officer 1	3.4*	8.2	7.9
	Officer Cadet	3.2*	4.7	4.6
	NCM 3	25.9	28.4	28.2
	NCM 2	43.2	29.3	30.1
	NCM 1	11.8*	6.2	6.5
	NCM Recruit	9.6*	14.9	14.6
	Total	*100.0*	*100.0*	*100.0*
Perceived Health	Very good or excellent	21.2	58.2	56.1
	Good	22.9	26.8	26.6
	Fair or poor	55.9	15.0	17.4
	Total	*100.0*	*100.0*	*100.0*
Perceived mental health	Very good or excellent	12.8*	70.2	66.9
	Good	17.6	19.3	19.2
	Fair or poor	69.6	10.5	13.9
	Total	*100.0*	*100.0*	*100.0*

Variable	Category	12-Month Suicidal Ideation (%)		
		Yes	No	Total
Satisfaction with Life	Satisfied or very satisfied	38.6	87.9	85.0
	Neither satisfied nor dissatisfied	22.0	7.3	8.2
	Dissatisfied or very dissatisfied	39.4	4.8	6.8
	Total	*100.0*	*100.0*	*100.0*
Stress in your life	Not at all or not very stressful	7.3*	38.6	36.9
	A bit stressful	28.3	42.9	42.1
	Extremely or quite a bit stressful	64.5	18.5	21.1
	Total	*100.0*	*100.0*	*100.0*
SF-12 Quality of Life PCS (Physical)	SF-12 0-9	0.0*	0.0*	0.0
	SF-12 10-19	1.8*	1.5	1.5
	SF-12 20-29	27.7	8.3	9.4
	SF-12 30-39	23.4	13.7	14.2
	SF-12 40-49	18.9	18.3	18.3
	SF-12 50+	28.2	58.3	56.5
	Total	*100.0*	*100.0*	*100.0*
SF-12 Quality of Life MCS (Mental)	SF-12 0-9	0.0*	0.0*	0.0
	SF-12 10-19	8.5*	0.3*	0.8
	SF-12 20-29	37.2	3.3	5.3
	SF-12 30-39	30.4	7.2	8.6
	SF-12 40-49	13.4*	12.6	12.6
	SF-12 50+	10.5*	76.5	72.7
	Total	*100.0*	*100.0*	*100.0*
Chronic Health Conditions	***No Conditions***	***10.9****	***31.9***	***30.7***
	Physical, All	***80.1***	***65.4***	***66.3***
	Hearing Problems	39.4	26.9	27.6
	Arthritis	40.2	22.4	23.4
	Back problems	60.0	38.7	39.9
	Pain/discomfort always	68.0	39.1	40.8
	Pain/discomfort reoccur	69.1	55.1	55.9
	Asthma	9.3*	5.5	5.8
	COPD	7.5*	3.0	3.3
	Diabetes	9.6*	5.2	5.4
	Cancer	1.6*	1.1	1.2
	Bowel disorders	18.0	6.1	6.8
	Obesity	38.7	27.6	28.3
	Mental, All	***75.8***	***20.1***	***23.3***
	Mood disorders*	19.8	2.2	3.2
	Depression or Anxiety	72.2	16.9	20.0
	PTSD	45.4	8.7	10.8
	Anxiety Disorder	42.8	7.8	9.8

Variable	Category	12-Month Suicidal Ideation (%)		
		Yes	No	Total
Comorbidity	Physical & Mental Health	66.9	17.4	20.3
	Triad: MSD & Pain or Discomfort & Mental Health	53.4	13.2	15.6
Disability: Participation and Activity Limitation	Needs help at least one task	54.0	14.6	16.9
	Does not need help	46.0	85.4	83.1
	Total	*100.0*	*100.0*	*100.0*
Heavy drinker	≥ 5 drinks one occasion, ≥ 12 times a year	27.1	25.5	25.6
Social Support	Low	70.8	30.4	32.6
	Not low	29.2	69.6	67.4
	Total	*100.0*	*100.0*	*100.0*
Mastery	Low	13.9	1.3	2.0
	Middle	77.5	66.8	67.4
	High	8.6*	31.9	30.5
	Total	*100.0*	*100.0*	*100.0*
Sense of Community Belonging	Very or somewhat strong	31.7	60.7	59.1
	Very or somewhat weak	68.3	39.3	40.9
Adjustment to Civilian Life	Very or moderately easy	24.5	64.4	62.1
	Neither difficult nor easy	11.8*	12.9	12.8
	Very or moderately difficult	63.7	22.7	25.0
	Total	*100.0*	*100.0*	*100.0*
Education at time of survey	Less than high school	5.6*	6.8	6.8
	High school	42.4	40.6	40.7
	Post-secondary	52.0	52.7	52.6
	Total	*100.0*	*100.0*	*100.0*
Income	Below Low Income Measure	11.0*	5.9	6.2
Satisfaction with Financial Situation	Satisfied or very satisfied	37.1	75.6	73.4
	Neither satisfied nor dissatisfied	18.7	11.1	11.5
	Dissatisfied or very dissatisfied	42.2	13.3	15.1
	Total	100.0	100.0	100.0
Main activity 12 months after release	Worked in the Reserve Force	1.6*	3.8	3.7
	Worked at job/ran business	41.7	53.6	52.9
	Retired not looking for work	9.0*	10.4	10.3
	Attended school or training	10.2*	15.3	15.0
	Looked for work	6.7*	7.7	7.7
	Cared/nurtured family	2.5*	1.7	1.7
	Disabled or on disability	25.8	5.2	6.4
	Other	2.5*	2.4	2.4
	Total	*100.0*	*100.0*	*100.0*

Variable	Category	12-Month Suicidal Ideation (%)		
		Yes	No	Total
Main activity 12 months before survey	Worked in the Reserve Force	0.0*	0.8*	0.7*
	Worked at job/ran business	59.8	75.6	74.7
	Retired not looking for work	5.1*	9.3	9.1
	Attended school or training	4.5*	3.7	3.7
	Looked for work	1.2*	2.5	2.4
	Cared/nurtured family	0.6*	2.0	1.9
	Disabled or on disability	27.3	4.7	6.0
	Other	1.5*	1.4	1.5
	Total	*100.0*	*100.0*	*100.0*
Health System	Prescription Drug Insurance	91.7	92.1	92.0
	Dental Insurance	83.1	87.3	87.0
	Eye Glasses Insurance	83.3	84.5	84.5
	Regular Medical Doctor	83.8	81.8	81.9

Notes: A – Excluded unknown category.
B – Rank categories: See Table 6.
*Sample size < 30.

Appendix 3. Suicide ideation and attempt rates published from other studies.

Suicidal ideation and attempt rate estimates and comparisons between them are limited by heterogeneity in definitions, methodologies and populations studied.

Suicidal ideation is more common than suicide attempts, which in turn are more common than completed suicide.

- In the general US population, one study estimated 5.6% ideation, 0.7% attempts and 0.01% suicides (10.7/100,000) per year (APA 2003).
- In a major European study, the lifetime prevalence was 7.8% for ideation and 1.3% for attempts (Bernal et al 2007).
- In a large, 17-nation interview study of 84,850 adults, Nock et al (2008) found that the lifetime prevalence of suicidal ideation, plans and attempts was 9.2%, and that 60% of transitions from ideation to plan and attempt occurred in the first year after ideation onset.
- In Italy, the lifetime prevalence of suicide ideation, plans, and attempts was 3.0%, 0.7%, and 0.5%, respectively (Scocco et al 2008).

Belik et al (2009) used data from the CF Mental Health Supplement to the Canadian Community Health Survey to study suicide attempts. They found the prevalence of lifetime suicide attempts for currently active Canadian military men and women was 2.2% and 5.6%. They found that sexual and other interpersonal traumas were significantly associated with suicide attempts in both and women after adjusting for sociodemographics and mental disorders, and that the number of traumatic events was positively associated with increased risk of suicide attempts.

Appendix Table 3. Rates of suicidal ideation and suicide attempts in other studies.
NOTE: Readers are cautioned that these rates are not standardized to the rates found in this survey for confounders such as age, gender, region, income, health status, definitions, methods of calculation and other factors, and so they cannot be compared directly to the STCL findings.

Reference	Nation	Population Studied	Suicidal Ideation	Suicide Attempt	Comments
GoC 2006	Canada	General population aged 15^{+} years in 10 provinces	Lifetime: 13.4% (males 12.3%, females 14.4%) 12-Month: 3.6% (males 3.6%, females 3.8%%)	Lifetime: 3.1% (males 2.0%, females 4.2%) 12-Month: 0.5% (males 0.4%, females 0.6%)	CCHS 1.2 Mental Health and Well-being (2002), n = 36,984. Used CIDI.
Blackmore et al 2008	Canada	General population aged 15^{+} years in 10 provinces	--	12-month: 0.6%	CCHS 1.2 Mental Health and Well-being (2002),
CFHS 2004	Canada	Serving CF personnel nationally	Lifetime 8% 12-Month 3%	Lifetime < 1%	Health and Lifestyle Information Survey 2004. Questions were slightly different from CCHS, and not asked in the same location of the interview. Lifetime ideation higher in Francophones, highest in the sea element (11%), and lowest in the land element (7%).

Reference	Nation	Population Studied	Suicidal Ideation	Suicide Attempt	Comments
CFHS[3]	Canada	Serving CF personnel nationally	Lifetime 15.7% 12-Month 4.2% (General population standardized to CF: Lifetime 14.8% 12-Month 3.9% differences not statistically significant)	---	CF Mental Health Supplement to CCHS 1.2 in 2002.
Belik et al 2009	Canada	Serving CF personnel nationally	--	Lifetime: Men 2.2% Women 5.6% I ordered this paper	CF Mental Health Supplement to CCHS 1.2 in 2002. Number of sexual and interpersonal traumatic events experienced was positively associated with increased risk of suicide attempts.
Belik et al 2010	Canada	General Population and Serving CF personnel nationally	General population: 12-month 4.0%; Serving CF: 12- month 3.8%; difference not significant.	General population: 12-month 0.6%; Serving CF: 12- month 0.2%; difference was significant.	CCHS 1.2 and CF Mental Health Supplement to CCHS 1.2 in 2002.
Weissman et al 1999	Canada (Edmonton), US, Puerto Rico, Germany, New Zealand, Lebanon, Taiwan, Korea	General population	Lifetime: Ranged from 2.1% (Beirut) to 18.5% (Christchurch). Edmonton: 11.3% (SE = 0.6%)	Lifetime: Ranged from 0.7% (Beirut) to 5.9% (Puerto Rico). Edmonton: 3.9% (SE = 0.4%)	Summarized independent studies from nine nations, using similar survey instruments; DIS and CIDI: “Did you ever feel so low you thought of committing suicide?” “Have you ever attempted suicide?” Not all national findings, rather they had to use community/regional studies for Canada and some others.

[3] http://www.forces.gc.ca/health-sante/pub/rpt/mh-sm/MH-SM-TB1-eng.asp and related pages, viewed 27 July 2010.

Reference	Nation	Population Studied	Suicidal Ideation	Suicide Attempt	Comments
Holley et al 1995	Canada	1,151 remanded inmates in Calgary age 17+ years, 94% < age 44 years	--	Lifetime: 20.7% of males 34.0% of females	After age-gender standardization, remandees were11.2 times more likely to have lifetime history of suicide attempts than the general population in Edmonton (Chi-square test significant, $p < 0.001$).
Cheung and Dewa 2006	Canada	Adolescents aged 15-18 years in general population	Owing to small sample size, combined ideation and attempts into "suicidality": Lifetime 13.5% (Males 8.8%, Females 18.4%)		Adolescent respondents to Canadian Community Health Survey 1.2 Mental Health and Well-being. Found regional differences across Canada.
Sakinofsky 1998	Canada	Various Canadian regions	(See paper)	(See paper)	Reviewed Canadian suicide statistics for 1926 to 1994, through the Great Depression, World War II, and the post-war years.
Sakinofsky and Webster 1995	Canada	Ontario general population	Lifetime10.7% 12-month 3.4%	Lifetime 3.3% 12-month 0.4%	Ontario Mental Health Supplement to a national population health survey; used CIDI.
Statistics Canada (CANSIM)	Canada	Canada, Nunavut general population age 15+		12-month 3.2%	CCHS 2008 – results not summarized in a publication.
Fuller-Thomson and Sawyer 2008	Canada	Quebec, Ontario, Saskatchewan, Alberta	Lifetime: 9.4% in those without Type 1 diabetes (82,675) 15.0% in those with Type 1 diabetes (190)	--	These four provinces purchased suicidal ideation questions in CCHS 3.1 (2005). Age-sex adjusted odds ratio of suicidal ideation 1.61 (95% CI 1.08-2.42) for those with Type I diabetes compared to those without.

Reference	Nation	Population Studied	Suicidal Ideation	Suicide Attempt	Comments
APA 2003	US	General population	5.6%	0.7%	
Bernal et al 2007	Belgium, France, Germany, Italy, Netherlands, Spain	General population age 17^{+} years, 31,425 individuals	7.8%	1.3%	Used Composite International Diagnostic Instrument (CIDI) developed for international comparisons of clinical diagnoses.
Nock et al 2008	17 nations worldwide, excluding Canada	Adult general population	Lifetime, cross-national: 9.2% (SE=0.1)	Lifetime, cross-national: 2.7% (SE=0.1)	WHO World Mental Health Survey; CIDI. Substantial variation between nations: 3.0-15.9% for ideation; 0.5-5.0% for attempts.
Scocco et al 2008	Italy	General population, adult	Lifetime 3.0%	Lifetime 0.5%	National random stratified multistage cluster survey.
Fairweather-Schmidt et al 2010	U.K.	General population	12-month: 8.2% first survey 1999-2001, 6.1% second survey 2003-6.	12-month: 0.8% first survey 1999-2001, 0.5% second survey 2003-6.	Greater risk: females 20-29 never married or diagnosed with physical illness, males 40-49 unemployed, females 60-69 with depression.
Fairweather-Schmidt et al 2010	Australia	General population, not national	8.2% 1999-2001 6.1% 2003-2006	0.8% 1999-2001 0.5% 2003-2006	20-year longitudinal Personality and Total Health Through Life project (PATH).
Snarr et al 2010	U.S. Air Force	Serving personnel	12-month: 3% males, 5.5% females	8.7% of those with ideation reported attempts	Demographic factors predicting ideation: female, low rank, unmarried men; predicting attempts: low rank men, Hispanic women.