Panic Attacks and Panic Disorder in a Population-Based Sample of Active Canadian Military Personnel

D. Jolene Kinley, MA; John R. Walker, PhD, C Psych; Corey S. Mackenzie, PhD, C Psych; and Jitender Sareen, MD, FRCPC

Background: The factors contributing to psychiatric problems among military personnel, particularly for panic, are unclear. The objective of this study was to examine the prevalence and correlates of panic disorder and panic attacks in the Canadian military.

Method: Statistics Canada and the Department of National Defense conducted the Canadian Community Health Survey-Canadian Forces Supplement in 2002 (May to December) with a representative sample of active Canadian military personnel (aged 16–54 years; N = 8,441; response rate, 81.5%). Comparisons were made between respondents with no past-year panic attacks, panic attacks without panic disorder, and panic disorder on measures of *DSM-IV* mental disorders, as well as validated measures of disability, distress, suicidal ideation, perceived need for mental health treatment, and mental health service use. Lifetime exposure to combat operations, witnessing of atrocities, and deployments were also assessed.

Results: Panic disorder and panic attacks were common in the military population, with past-year prevalence estimates of 1.8% and 7.0%, respectively. Both panic disorder and panic attacks were associated with increased odds of all mental disorders assessed, suicidal ideation, 2-week disability, and distress. Perceived need for mental health treatment and service use were common in individuals with panic attacks and panic disorder (perceived need: 46.3% for panic attacks, 89.6% for panic disorder; service use: 32.5% for panic attacks, 74.5% for panic disorder).

Conclusions: Panic attacks and panic disorder in the military are associated with outcomes that could be detrimental to well-being and work performance, and early detection of panic in this population could help reduce these negative outcomes.

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Corresponding author: *Jitender Sareen, MD, FRCPC, PZ-430 PsycHealth Centre, 771 Bannatyne Ave, Winnipeg, MB, Canada, R3E 3N4 (sareen@cc.umanitoba.ca).*

Panic disorder is serious and common. Lifetime prevalence estimates range from 2% to 5% in the general population,[1–3] and past-year prevalence estimates range from 1% to 3%.[1,4] These rates are relatively consistent across countries and cultures.[5] Panic disorder is associated with negative life events (eg, illness, bereavement, legal problems),[6] increased psychiatric and physical comorbidity,[4,7,8] and suicidal ideation and attempts.[4,9,10] Importantly, panic disorder is also associated with decreased quality of life.[6,11,12]

Panic attacks alone are not classified as a mental disorder but are common, with past-year prevalence rates of approximately 3%–6%[4,13,14] and lifetime prevalence estimates ranging from 6% to 23%.[1,13,15] Panic attacks have also been linked to higher rates of comorbidity,[13,16,17] suicidal ideation,[9,18] physical health problems,[8,19,20] disability, and unemployment.[1,11,14,21] Individuals with panic attacks have reduced quality of life, and there is evidence that these attacks may be a marker for more severe psychopathology.[13,22,23]

Within the military, mental health problems and exposure to trauma are associated with attrition[24] and physical health problems such as fibromyalgia, asthma, injuries, and cardiac and gastrointestinal diseases.[25,26] In a 10-year study of military personnel, all categories of mental disorders combined were a significant cause of hospitalization and accounted for a larger percentage of hospitalizations as the study went on.[27] Service members who were hospitalized for mental disorders had higher rates of attrition from military service than those hospitalized for any other type of illness. Mental disorders were involved in 13% of all hospitalizations and accounted for almost 25% of all inpatient bed days.[27] Symptoms of mental disorders, such as impaired concentration and memory, could negatively affect an individual's ability to do his or her job safely and effectively, which in the military could endanger that individual, his or her comrades, and civilians.[28]

During deployment, military personnel often experience traumatic events that could affect their mental health.[29,30] Deployment has been linked to increased distress,[31] confusion and tension,[32] physical diseases,[26] posttraumatic stress disorder (PTSD),[33–35] and increased perceived need for mental health care.[35] Combat exposure in particular is associated with higher rates of PTSD, depression, substance abuse, unemployment, job loss, divorce or separation, and spouse or partner abuse.[34] With PTSD, a positive dose-response relationship with combat experiences has been reported,[30,33,36] with increasing levels of combat experiences related to higher rates of PTSD.

Although mental disorders are common in the military and are strongly associated with combat exposure, there have been few studies examining panic disorder in military samples. The studies that have assessed panic disorder often consider it as one of a number of disorders and very little information on panic disorder is presented. Riddle et al[37] reported a past-month prevalence rate of 1% for panic disorder among the military. Individuals with a bachelor's degree or higher, combat specialists, reserve personnel, men, and

For Clinical Use

- Panic attacks and panic disorder are common in the military.
- Both panic attacks and panic disorder are associated with negative mental health outcomes.
- Increased screening for panic attacks in the military could reduce disability and distress in this population.

black individuals were less likely to have panic disorder.[37] Black et al[25] reported a current prevalence of panic disorder of 0.4%, with higher rates in regular personnel and Gulf War veterans.

Previous studies of panic disorder in the military populations did not use structured interviews with well-established reliability and validity[38] that have been used to assess mental disorders in recent epidemiologic studies in the general population.[39] They also did not assess the prevalence of panic attacks. We sought to overcome these limitations in previous research on panic in the military by using the Canadian Community Health Survey-Canadian Forces Supplement (CCHS-CFS), which surveyed a large representative sample of the Canadian military using the Comprehensive International Diagnostic Interview.[40] The survey includes a wide range of descriptive information including well-validated epidemiologic measures. One of the strengths of this survey is the inclusion of a validated measure of perceived need for mental health care and service use. Perceived need for mental health care and utilization of mental health care resources are low in both general population[41,42] and military samples.[35] Additional data on perceived need related to panic among military officers could help inform screening initiatives and decisions regarding the allocation of resources. The goal of this study was to evaluate the prevalence and correlates of panic attacks and panic disorder in the Canadian military.

METHOD

Survey

The current study is based on the CCHS-CFS, which was conducted by Statistics Canada and the Department of National Defense using a multistage sampling framework to allow for representativeness of the sample with respect to the Canadian military.[43] The first stage of sampling involved dividing the sample by regular versus reserve status, then stratifying by rank and sex. For males, the rank categories were junior (private, corporal, and master corporal), senior (sergeant, warrant officer, master warrant officer, and chief warrant officer), and officer (officer cadet, second lieutenant, lieutenant, captain, and major). The senior and officer groups were combined for females because of small cell sizes. The sample was further subdivided by region (Atlantic, Quebec, Ontario, and Prairies) and Canadian Forces environment (air, land, sea, and communications). Trained Statistics Canada interviewers collected data via face-to-face interviews in private on-base rooms between May 1 and December 31, 2002. Subjects were 16 to 54 years of age. The overall response rate was 81.5%, and the sample was made up of 5,155 regular force members (response rate, 79.5%) and 3,286 reserve force members (response rate, 83.5%).[43]

Measures

Mental disorders. Diagnoses were created using the World Mental Health Comprehensive International Diagnostic Interview (CIDI Version 2.1)[40] based on criteria from the *DSM-IV*.[44] The CIDI is a structured instrument designed for use by lay interviewers[45] that has high levels of reliability and consistency with clinician-based diagnoses of the *DSM-IV* disorders assessed in the CCHS-CFS.[38] The interviewers were trained according to World Mental Health standards. Training consisted of a 40-hour self-study module and self-administered tests, as well as a 3-day training workshop at the CIDI Training and Research Centre. Details of the methods of the World Mental Health CIDI[40] and the CCHS[46] have been published elsewhere. Diagnoses for the following past-year and lifetime mental disorders were assessed in the CCHS-CFS: major depressive disorder, panic disorder, social phobia, generalized anxiety disorder, and PTSD. Alcohol use disorders were assessed with the CIDI Short Form based on *DSM-IV* criteria, with 3 or more symptoms indicating alcohol dependence.[47] Substance use disorders were not assessed because substance use is prohibited by the military.[48]

Panic attacks and panic disorder. To assess panic attacks and panic disorder, respondents completed 2 screener questions: (1) "During your life, have you ever had an attack of fear or panic when all of a sudden you felt very frightened, anxious or uneasy?" and (2) "Have you ever had an attack when all of a sudden you became very uncomfortable, you either became short of breath, dizzy, nauseous or your heart pounded, or you thought that you might lose control, die or go crazy?" Respondents who positively endorsed either of these questions completed the panic disorder module. Panic attack and panic disorder assessments were based on the *DSM-IV* criteria.[44] For this survey, the criteria for panic attacks included discrete periods of intense fear or discomfort accompanied by 4 or more physiologic symptoms that develop abruptly and peak within 10 minutes of their onset. Individuals meeting criteria for panic disorder reported recurrent unexpected panic attacks followed by at least 1 month of worry about additional attacks, worry about the implications of the attacks, or a change in behavior related to the attacks. These groups are mutually exclusive so the panic attack group is made up of individuals meeting criteria for panic attacks that do not meet criteria for panic disorder.

Lifetime and 12-month prevalence rates were calculated for panic attacks and panic disorder. More detailed questions about the attacks were examined, including age at onset of

panic attacks, number of years with at least 1 attack, number of uncued panic attacks (lifetime and past year), and number of cued panic attacks (lifetime and past year). For number of uncued attacks, respondents were asked, "About how many attacks occurred unexpectedly, 'out of the blue'?" For cued attacks, respondents were asked, "About how many attacks occurred in situations where you were not in real danger, but where you had an unreasonably strong fear of the situations?"

Sheehan Disability Scale. The Sheehan Disability Scale[49] was used to assess role impairment specifically caused by the panic attacks. This measure consists of questions about home, work, school, social life, and personal relationship impairment. Responses were rated on a scale with the options of none (0), mild (1–3), moderate (4–6), severe (7–9), and very severe (10). Due to small cell sizes for certain ratings, these variables were dichotomized into not severe (0–6) and severe (7–10) impairment. For the overall disability score, we combined the different domains by taking the highest score across all questions, consistent with the method described by Kessler and colleagues.[1] Respondents completed the Sheehan Disability Scale only if they reported at least 1 uncued panic attack, so it was not possible to consider this variable in people without panic attacks.

To quantify the level of role impairment/disability, we considered the following question: "In the past 12 months, about how many days out of 365 were you totally unable to work or carry out your normal activities because of your attacks or the worry about the attacks?"

Sociodemographic and military variables. These included age (16–24, 25–34, 35–44, and 45+ years), sex, marital status (married, never married [single], or separated, widowed, or divorced), education (bachelors or more, any postsecondary, or high school or less), and income (≤ $39,999, $40,000–79,000, $80,000–119,000, $120,000+). Military variables included regular or reserve status, military rank (junior, senior, or officer), number of deployments (0, 1+), combat experience (yes or no), and witnessed atrocities (yes or no).

Suicidal ideation. Past-year suicidal ideation was assessed with the question, "Did you seriously think about committing suicide or taking your own life?" Suicide attempts were assessed, but cell sizes were too small to report.

Reduction of activity, 2-week disability, and distress. The survey asked if a long-term physical health condition, mental health condition, or health problem never, sometimes, or often reduced the amount or kind of activity currently (1) "at home," (2) "at school," (3) "at work," or (4) "in other activities, for example, transportation or leisure." Because of the skewed distribution of this variable, with 72.7% of the sample reporting "never" for all areas of functioning, we dichotomized this variable into no reduction or some reduction in any area as had been done previously.[35] Two-week disability was assessed by the question, "During that period did you stay in bed at all because of illness or injury, including any nights spent as a patient in a hospital?" The Kessler Psychological Distress Scale (K10)[50] assessed respondents' level of distress over the past month. Scores on the 10-item scale range from 0 to 40, with higher scores representing more psychological distress. We used 1 standard deviation above the mean as the cut point for high levels of psychological distress and dichotomized the variable into high versus normal levels of distress.

Perceived need for mental health treatment. The Perceived Need for Care Questionnaire[51] has demonstrated acceptable reliability and validity and has been previously used in clinical and epidemiologic samples.[41,51] This questionnaire assessed perceived need for or received help for problems with emotions, mental health, or use of alcohol or drugs in the past year in 5 areas: (1) information about mental health problems, (2) medication, (3) therapy or counseling, (4) social intervention (help for financial or housing problems), and (5) skills training (for employment issues or personal relationships). Due to disclosure issues with small cell sizes, we utilized an "any perceived needs" variable created by dichotomized responses from the 5 areas into any perceived need versus none.

Mental health service use. All respondents indicated whether they had seen or talked to a professional about their emotions, mental health, or use of alcohol or drugs in the past year. The types of professionals included a psychiatrist, family physician/general practitioner, other medical doctor (eg, cardiologist), psychologist, nurse/nurse practitioner/physician's assistant/medic, social worker/counselor/psychotherapist, spiritual advisor, or other professional (eg, acupuncturist, chiropractor). Respondents with panic attacks also reported on lifetime service use for their attacks. They indicated whether they ever saw or talked to a medical doctor or other professional about their attacks and whether they received treatment for the attacks that was helpful or effective.

Analyses

Access to the CCHS-CFS data was through the Statistics Canada Research Data Centre in Winnipeg, Manitoba, Canada. For all analyses, 2 estimation procedures were followed in accordance with Statistics Canada recommendations.[52] To ensure the representativeness of the data with the military population, we utilized the appropriate statistical weights provided by Statistics Canada. Next, we carried out design-based variance estimation to reflect the complex multistage sampling design of the CCHS-CFS. We employed the bootstrapping method of error estimation recommended by Statistics Canada[52] using SUDAAN.[53] Bootstrapping is a method based on repeatedly analyzing subsamples of data to create confidence intervals based on estimated error.

We first examined weighted percentages across the variables of interest. For categorical variables, multivariate logistic and multinomial regression analyses assessed relationships of the different categories of dependent variables with panic attack status (ie, no panic attack, panic attack, and panic disorder). Regressions for sociodemographic variables, mental disorders, suicidal ideation, restriction of activity, 2-week disability, and distress were run once with the "no panic attack" group as the reference group and once with the "panic attack"

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Table 1. Prevalence of Past-Year Panic Attacks and Panic Disorder by Sociodemographic and Military Variables

				Model 1: Odds Ratios (95% CIs) From Binary Logistic and Multinomial Regressions		
	No Panic Attacks (n = 7,562), %	Panic Attacks (n = 569), %	Panic Disorder (n = 137), %	Panic Attacks (reference = no panic attacks)	Panic Disorder (reference = no panic attacks)	Panic Disorder (reference = panic attacks)
Sex						
Male[a]	92.0	6.4	1.6	1.0	1.0	1.0
Female	87.4	10.0	2.6	1.6 (1.4–2.0)**	1.7 (1.2–2.4)**	1.0 (0.7–1.5)
Age						
16–24 y[a]	90.7	8.3	1.0	1.0	1.0	1.0
25–34 y	90.9	7.1	2.0	0.9 (0.7–1.1)	2.0 (1.0–4.1)	2.3 (1.0–4.9)*
35–44 y	91.4	6.6	2.0	0.8 (0.6–1.0)	2.0 (1.0–4.0)	2.5 (1.2–5.2)*
45+ y	92.8	5.4	1.8	0.6 (0.4–0.9)**	1.8 (0.8–3.8)	2.9 (1.3–6.5)*
Marital status						
Married[a]	91.6	6.7	1.7	1.0	1.0	1.0
Never married	91.7	7.0	1.3	1.0 (0.8–1.3)	0.8 (0.5–1.3)	1.8 (0.4–1.3)
Separated/widowed/ divorced	87.0	9.1	3.9	1.4 (1.0–2.0)	2.4 (1.4–4.3)**	1.7 (0.9–3.4)
Income						
$120,000+[a]	91.1	7.8	1.1	1.0	1.0	1.0
$80,000–$119,999	91.3	6.5	2.2	0.8 (0.6–1.1)	1.9 (1.1–3.5)*	2.4 (1.2–4.6)*
$40,000–$79,999	91.0	7.1	1.9	0.9 (0.7–1.2)	1.7 (0.9–3.0)	1.9 (0.9–3.5)
$39,999 or less	92.0	7.0	1.0	0.9 (0.6–1.4)	0.9 (0.3–2.2)	0.9 (0.3–2.7)
Education						
Bachelor's or more[a]	94.2	4.6	1.2	1.0	1.0	1.0
Any postsecondary	90.7	7.7	1.6	1.7 (1.3–2.3)**	1.4 (0.8–2.5)	0.8 (0.4–1.5)
High school or less	90.6	7.3	2.1	1.6 (1.3–2.1)**	1.8 (1.1–3.0)*	1.1 (0.6–2.0)
Military rank						
Junior	90.0	7.9	2.1	1.7 (1.4–2.2)**	3.0 (1.8–5.2)**	1.7 (1.0–3.1)
Senior	91.8	6.2	1.9	1.3 (1.0–1.8)*	2.8 (1.6–5.0)**	2.1 (1.1–3.8)*
Officer[a]	94.5	4.8	0.7	1.0	1.0	1.0
Military status						
Regular	91.2	6.8	2.0	0.9 (0.8–1.1)	1.6 (1.1–2.4)*	1.8 (1.1–2.8)*
Reserve[a]	91.4	7.4	1.2	1.0	1.0	1.0
Environment						
Land[a]	91.1	7.3	1.6	1.0	1.0	1.0
Air	92.6	5.5	1.9	0.7 (0.6–1.0)*	1.1 (0.7–1.8)	1.5 (0.9–2.5)
Sea	90.0	8.1	1.9	1.1 (0.9–1.5)	1.2 (0.7–2.1)	1.1 (0.6–2.0)
Communications	90.5	6.6	3.9	0.9 (0.5–1.7)	2.4 (0.9–6.6)	2.6 (0.9–8.0)

[a]Reference category.
*$P < .05$.
**$P < .01$.

group as the reference group so we could directly compare people with panic attacks to people with panic disorder. For analyses exploring variables directly related to panic attacks, perceived need for mental health treatment, and service use, logistic regressions were run with the "panic attack" group as the reference group.

For continuous variables, we used linear regression analyses to obtain adjusted mean scores to assess differences between the panic attack and panic disorder groups. A correction factor for multiple comparisons was not used, and all odds ratios are presented with 95% confidence intervals so as not to reduce power and to allow for comparison within the dataset.[54] However, the tables note which comparisons were significant at both the $P < .05$ and $P < .01$ levels.

RESULTS

For lifetime panic, 157 individuals had missing data. Of the remaining sample, 6,320 (76.4%) people had never experienced a panic attack, 1,693 (20.0%) people had experienced at least 1 panic attack in their lifetime, and 271 (3.4%) people met the criteria for lifetime panic disorder. There were 173 individuals who were missing data on past-year panic variables and were therefore excluded from the analyses. In the past 12 months, 7,562 (91.3%) people did not have a panic attack, 569 (7.0%) had at least 1 attack, and 137 (1.8%) met criteria for panic disorder.

Table 1 presents the sociodemographic and military variables across the different panic categories and the odds ratios associated with the logistic regression analyses. Panic attacks and panic disorder were significantly associated with being female, being less educated, and having a rank below officer level. Panic disorder was also associated with increased odds of being separated, widowed, or divorced and having regular military status. When the panic attack and panic disorder groups were compared, the only significant differences were with age, income, senior rank, and regular status.

Table 2 presents the military experience variables (ie, combat experience, witnessing atrocities, and deployment). The general pattern was that the prevalence of panic disorder and panic attacks was higher for those individuals with more traumatic military experiences such as combat and witnessing atrocities. To put this in context, 17.6% of males and 6.6% of females in this sample had been exposed

Table 2. Prevalence of Panic Attacks and Panic Disorder by Military Experiences

				Model 1: Odds Ratios (95% CIs) From Binary Logistic and Multinomial Regressions		
	No Panic Attacks (n = 7,562), %	Panic Attacks (n = 569), %	Panic Disorder (n = 137), %	Panic Attacks (reference = no panic attacks)	Panic Disorder (reference = no panic attacks)	Panic Disorder (reference = panic attacks)
Deployments						
0[a]	91.6	6.9	1.5	1.0	1.0	1.0
1 or more	91.0	7.0	2.0	1.0 (0.8–1.2)	1.3 (0.9–2.0)	1.3 (0.9–2.0)
Combat						
No[a]	90.2	7.8	2.0	1.0	1.0	1.0
Yes	88.8	8.3	2.9	1.2 (0.9–1.7)	1.9 (1.2–3.0)*	1.5 (0.9–2.5)
Witnessed atrocities						
No[a]	91.9	6.6	1.5	1.0	1.0	1.0
Yes	86.9	9.7	3.4	1.6 (1.2–2.1)**	2.4 (1.5–3.7)**	1.5 (0.9–2.5)

[a]Reference category.
*$P < .05$.
**$P < .01$.

Table 3. Past-Year Psychiatric Disorders and Suicidal Ideation Associated With Panic Attacks and Panic Disorder

				Model 2: Odds Ratios (95% CIs) From Multivariate Logistic Regressions Adjusted for Sociodemographic and Military Variables		
	No Panic Attacks (n = 7,562), %	Panic Attacks (n = 569), %	Panic Disorder (n = 137), %	Panic Attacks (reference = no panic attacks)	Panic Disorder (reference = no panic attacks)	Panic Disorder (reference = panic attacks)
Generalized anxiety disorder	0.9	5.3	23.0	6.1 (3.7–10.1)**	30.2 (16.6–55.0)**	1.9 (2.5–9.9)**
Depression	4.7	21.6	53.8	5.3 (4.0–7.1)**	21.8 (13.7–34.6)**	4.1 (2.5–6.8)**
Social phobia	1.9	12.5	33.3	6.8 (4.7–9.9)**	22.3 (13.4–37.2)**	3.3 (1.8–5.8)**
Posttraumatic stress disorder	1.5	7.7	23.6	4.2 (5.6–6.8)**	16.2 (9.4–28.8)**	3.8 (2.0–7.5)**
Alcohol dependence	4.4	7.5	13.3	1.7 (1.0–2.7)*	3.4 (1.7–6.9)**	2.0 (0.9–4.7)
No. of disorders						
0[a]	89.1	64.1	29.2	1.0	1.0	1.0
1	8.9	22.8	21.9	3.5 (2.7–4.5)**	7.3 (4.0–13.3)**	2.1 (1.1–4.0)*
2+	2.0	13.2	48.9	8.4 (5.7–12.6)**	70.4 (40.4–122.6)**	8.4 (5.6–15.5)**
Suicidal ideation	2.8	11.3	27.3	3.9 (2.7–5.6)**	11.4 (6.5–19.8)**	2.9 (1.6–5.4)**

[a]Reference category.
*$P < .05$.
**$P < .01$.

Table 4. Variables Related Specifically to Panic Attacks and Panic Disorder[a]

	Panic Attacks[b]	Panic Disorder	Statistical Comparison
Age at first panic attack, mean (SE), y	24.0 (0.5)	23.6 (1.0)	$t = -0.30$, $P = .763$
No. of years with at least 1 attack, mean (SE)	6.0 (0.4)	7.4 (0.7)	$t = 1.82$, $P = .069$
No. of uncued attacks—past-year, mean (SE)	2.7 (1.4)	15.2 (5.9)	$t = 2.06$, $P = .040$
No. of uncued attacks—lifetime, mean (SE)	15.0 (5.0)	35.6 (6.6)	$t = 2.52$, $P = .012$
No. of cued attacks—past-year, mean (SE)	4.8 (0.6)	20.0 (3.4)	$t = 4.41$, $P < .001$
No. of cued attacks—lifetime, mean (SE)	12.4 (4.2)	16.6 (7.6)	$t = 0.48$, $P = .629$
Severe role impairment, %[c]			Model 2 Odds Ratio (95% CI)[d]
Any area	26.2	57.3	2.4 (1.2–4.7)*
Home	10.2	32.1	3.4 (1.6–7.3)**
Work	14.2	40.8	2.5 (1.0–6.1)*
Relationships	12.7	35.7	2.2 (1.1–4.7)*
Social life	15.6	37.9	2.2 (1.1–4.3)*

[a]Means and standard errors are adjusted for sociodemographic variables from Table 1.
[b]Reference category.
[c]Sheehan Disability Scale score of ≥ 7 on 10-point scale.
[d]Model 2: Odds ratios (95% CIs) from multivariate logistic regressions adjusted for sociodemographic and military variables.
*$P < .05$.
**$P < .01$.

to combat, and 14.4% of males and 6.6% of females had witnessed atrocities.[55]

The associations of other past-year psychiatric disorders with panic attacks and panic disorder are shown in Table 3. The general pattern for each individual disorder, for number of comorbid disorders, and for suicidal ideation was that prevalence estimates were highest in the panic disorder group and lowest in the no panic attack group, with the panic attack group at an intermediate level.

Table 4 compares those with panic attacks and panic disorder for panic variables and role impairment. As expected, individuals with panic disorder reported more cued and uncued panic attacks in the past year and more uncued panic attacks in their lifetime than individuals with panic attacks alone. A substantial proportion of both groups reported severe impairment in some area, although individuals with panic disorder had higher odds of reporting severe impairment in each area. Interference with functioning, in terms of the average number of days of lost work or activity because of panic attacks (adjusted for sociodemographic variables and additional disorders), was 17.4 days (SE = 5.3) for the panic

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Table 5. Proportion of People With Panic Attacks and Panic Disorder With Reduced Activities, Disability, and High Distress and Associated Odds Ratios

				Model 2: Odds Ratios (95% CIs) From Multivariate Logistic Regressions Adjusted for Sociodemographic and Military Variables		
	No Panic Attacks (n = 7,562), %	Panic Attacks (n = 569), %	Panic Disorder (n = 137), %	Panic Attacks (reference = no panic attacks)	Panic Disorder (reference = no panic attacks)	Panic Disorder (reference = panic attacks)
Reduced activities[a]	25.6	39.2	51.0	1.9 (1.5–2.3)**	2.5 (1.6–3.8)**	1.3 (0.8–2.0)
2-Week disability[b]	19.2	26.5	34.5	1.4 (1.1–1.8)**	1.9 (1.2–3.0)**	1.4 (0.8–2.3)
High distress (K10)	8.8	27.0	59.0	3.5 (2.7–4.4)**	11.9 (7.6–18.7)**	3.4 (2.1–5.5)**

[a]Assessed by asking if a long-term physical health condition, mental health condition, or health problem never, sometimes, or often reduced the amount or kind of activity currently at home, at school, at work, or in other activities (eg, transportation or leisure).
[b]Assessed by the question, "During that period did you stay in bed at all because of illness or injury, including any nights spent as a patient in a hospital?"
Abbreviation: K10 = Kessler Psychological Distress Scale.
**$P < .01$.

Table 6. Proportion of Respondents With Perceived Need and Mental Health Service Use and Associated Odds Ratios

	Panic Attacks, %	Panic Disorder, %	Model 2: Odds Ratios (95% CIs) From Multivariate Logistic Regressions Adjusted for Sociodemographic and Military Variables	Model 3: Odds Ratios (95% CIs) From Multivariate Logistic Regressions Adjusted for Sociodemographic and Military Variables and Comorbid Disorders
Perceived need	46.3	89.6	9.8 (5.5–17.6)**	2.2 (1.1–4.1)*
Service use	32.5	74.5	5.7 (3.4–9.4)**	1.3 (0.7–2.3)
Perceived need or service use	51.3	89.9	8.3 (4.6–15.2)**	1.8 (0.9–3.5)
Treatment for panic attacks—consulted professional	43.4	80.4	6.2 (3.1–12.2)**	3.8 (1.8–8.2)**
If consulted professional				
Received effective treatment	66.1	66.5	1.1 (0.5–2.3)	1.2 (0.5–3.1)
Received treatment in past year	55.4	86.1	5.3 (1.7–15.8)**	3.0 (0.9–10.4)

*$P < .05$.
**$P < .01$.

attack group and significantly higher (32.2 days, SE = 7.0) in the panic disorder group ($t = 2.1$; $P = .033$).

Table 5 demonstrates the relationship of panic with disability and distress. Reduced activities, 2-week disability, and distress were highest in the panic disorder group, intermediate in the panic attack group, and lowest in the no panic group.

The analyses presented in Table 5 were also run after removing individuals with other psychiatric disorders (comparing pure panic groups) to assess the relationship in persons without comorbid disorders. Although the same pattern appeared, many of the comparisons were not statistically significant, very likely due to the small number of respondents who had panic disorder without another disorder.

Table 6 presents information on perceived need for mental health services, seeking help for mental health problems, and specific service use. The majority (89.6%) of individuals with panic disorder had a self-perceived need for mental health care, and almost three-quarters sought mental health care. Just under half of individuals with panic attacks perceived a need for mental health care, and approximately a third sought help. These differences in perceived need for care and service use were statistically significant even after adjusting for sociodemographic variables. However, after adjustment for the presence of additional mental disorders, the odds ratios dropped considerably, with service use no longer being significant, suggesting that some of the difference in perceived need and service use is due to psychiatric comorbidity. Of those individuals who sought help, the most common contact was a primary care physician or a social worker.

Because the health care systems differ for regular and reserve members, the previous analyses examining perceived need and service use were also carried out comparing regular and reserve populations among individuals with panic disorder. There were no significant differences between these groups, and the results are not reported here.

DISCUSSION

Much of the focus on mental health in the military has been on PTSD. Although there is understandable concern about traumatic experiences and PTSD in the military, this study demonstrates that the prevalence of many other disorders such as depression and social anxiety is higher than that of PTSD in the military. Traumatic experiences can be a factor in the development of most of the *DSM-IV* disorders. This study is the first to provide a detailed description of panic attacks and panic disorder in a military population-based sample. It is also the first to examine panic attacks in a military population, and the prevalence estimates and correlates found in this study were similar to those found in general population studies examining panic attacks.

The past-year prevalence of panic disorder was 1.8% (males 1.6%, females 2.6%). In the general Canadian population, the prevalence of panic disorder from the Canadian

Community Health Survey: Mental Health Supplement was 1.0% for males and 2.0% for females.[55] The past-year prevalence of panic attacks was 7.0% overall, 6.4% for males, and 10.0% for females. These findings are comparable to the prevalence in the general population of 6.0% in males and 9.9% in females.[56] Although it appears that panic disorder may be more prevalent in the military population, it is unclear if this difference would be significant if we directly compared the populations and adjusted for sociodemographic factors. The military population is composed mostly of men in the age range of 24–44, which is also the age range with the highest rates of panic disorder. The panic attack prevalence estimates in our study appear much closer to those in the general population; however, again, it is difficult to say whether there would be a difference after adjusting for sociodemographic factors.

Panic attacks and panic disorder in the Canadian military were associated with similar sociodemographic variables as in the general population, including being female, having less education, and being separated, widowed, or divorced.[4,57] Associations with military variables are also consistent with previous research of mental disorder in the military, such as being of regular status (opposed to reserve), having lower rank, having combat experience, and witnessing atrocities.[25,58,59]

The majority of individuals with panic disorder and a substantial portion of those with panic attacks had at least 1 other psychiatric diagnosis, the most common being depression. Although comorbidity certainly contributes to psychological distress and outcomes such as suicidal ideation, many of the negative associations of the experience of panic remained present after adjusting for the presence of comorbid disorders. The first experiences with panic attacks came at a relatively young age (23–24 years on average), and previous research has shown that anxiety disorders generally precede depressive disorders in development.[60] The groups with panic attacks and panic disorder had higher odds of reporting suicidal ideation, psychological distress, and reduction of activities than those without panic attacks, which is consistent with data from the general population[4] and suggests that panic attacks and especially panic disorder may be an important marker of other psychological problems.

It is also interesting to explore the issue of comorbidity in the military as compared to the general population in Canada.[4] The prevalence of having 2 or more comorbid disorders in this military sample was 2.0% for those with no panic attacks, 13.2% for those with panic attacks, and 48.9% in those with panic disorder. In the general population version of this survey, the prevalence estimates in the same groups were 0.7%, 8.5%, and 25.0%, respectively. Both surveys assessed common *DSM-IV* disorders, but both surveys omitted some disorders due to time constraints in the survey. The military survey did not assess agoraphobia or obsessive-compulsive disorder (OCD), and the general population survey did not assess generalized anxiety disorder, PTSD, or OCD.

Depression was assessed in both surveys. In the military, the prevalence of depression was 4.7% in those without panic attacks, 21.6% in those with panic attacks, and 53.8% in those with panic disorder. In the general population, the prevalence estimates of depression for those groups were 2.8%, 17.0%, and 35.7%, respectively. Despite the higher levels of comorbid disorders, levels of distress and reduction of activities appear to be similar compared to the same groups in the general population. In the military population, the proportion of respondents with currently reduced activities in those with no panic attacks was 25.6%, in those with panic attacks was 39.2%, and in those with panic disorder was 51.0%. In the general populations, the comparable proportions were 26.7%, 37.4%, and 54.7%, respectively. This finding may be due to the military attitude that one should "tough it out."

The findings of this study support the view that those with panic attacks not meeting the criteria for panic disorder experience significant interference in functioning.[11] Some may meet criteria for panic disorder in the future. If they receive appropriate treatments in the early stages, it may be possible to prevent some of the negative outcomes associated with panic disorder and comorbid conditions. For example, Goodwin and Olfson[61] reported that individuals in the general population treated for panic attacks were at lower risk of developing major depression. There has also been evidence that treatment for panic in a military population reduces panic attacks, panic-related worry, and phobic avoidance.[62]

The prevalence of service use in the panic disorder group was quite high compared to studies of all mental disorders in the military.[35] This is consistent with studies in the general population, in which panic disorder has been associated with higher rates of perceived need than other disorders.[41] This is very likely due to the threatening nature of panic symptoms, which lead people to seek medical treatment. Presentation in health care settings with panic symptoms may provide an opportunity for assessment and treatment of a range of mental disorders.

The findings of this study should be interpreted within the context of several limitations. The CCHS-CFS uses a cross-sectional design, which allows researchers to establish associations between variables but not to make conclusions regarding causality. Trained lay interviewers administered the interview rather than professional clinicians, which may lead to an underestimation or overestimation of the prevalence of these disorders. Axis II disorders were not assessed, and there were a number of Axis I disorders such as drug use disorders, OCD, dysthymia, and agoraphobia that were not included in the survey. The category of drug use disorders would be particularly beneficial considering that self-medication for anxiety is relatively common.[63] These disorders may account for some of the impairment related to panic disorder and panic attacks. The assessment of panic attacks also does not exclude the possibility that the panic attacks occur in the context of another anxiety disorder such as PTSD or social phobia. However, it is still important to study the phenomenon of panic because of the association with reduced functioning in our study and others.

Another limitation of the study is that the CCHS-CFS was conducted in 2002, when the majority of Canadian

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deployments were for peacekeeping missions with lower levels of combat intensity than have been seen in current operations such as Afghanistan. Peacekeeping has different stresses and benefits than combat-focused deployments[58,59,64] and may include some exposure to combat, exposure to atrocities focused on civilians, and feelings of frustration and powerlessness in having to refrain from using force on dangerous missions. However, peacekeeping can also provide a great deal of pride in serving one's country and gratification in providing aid to those in need. Finally, information on the location of the participants' deployments was not available, but the operations that occurred at the time can provide information on possible deployment experiences of the respondents. The international operations that occurred before the survey include Iraq in the first Gulf War, Rwanda, Somalia, and the former Yugoslavia.[65] If this survey were repeated today, the Canadian Forces would have much more exposure to combat and casualties than in previous peacekeeping deployments.

Given the importance of the armed forces in each nation and the high exposure to the stressful experiences of deployment and combat in recent years, it is clear that additional research is needed to understand the longitudinal course of mental disorders in the military. A better understanding of these disorders and responses to various interventions may help reduce the impact of stressful conditions and reduce the interference and disability associated with mental disorders. This study provides important data suggesting that panic attacks and panic disorder are associated with other mental health problems, disability, and health care utilization. Effective identification and treatment of these problems are important for the health and well-being of armed forces.

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Author affiliations: Department of Psychology (Dr Mackenzie and Ms Kinley), Department of Clinical Health Psychology (Dr Walker), and Departments of Psychiatry, Psychology, and Community Health Sciences (Dr Sareen), University of Manitoba, Winnipeg, Canada.
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