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Clinical Epidemiology of Alcohol Use Disorders in Military Personnel versus the General Population in Canada

Épidémiologie clinique des troubles liés à la consommation d'alcool chez les militaires par opposition à la population générale du Canada

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Abstract

Objectives: Research suggests a high prevalence of problematic alcohol use among military personnel relative to civilians. Our primary objectives were to compare the prevalence, correlates, help-seeking behaviors, perceived need for care, and barriers to care for alcohol use disorders (AUDs) in the Canadian Armed Forces (CAF) and the Canadian general population (CGP).

Methods: Data were from 2 nationally representative surveys collected by Statistics Canada: (1) the Canadian Community Health Survey on Mental Health collected in 2012 ($N = 25{,}113$; response rate = 68.9%) and (2) the Canadian Forces Mental Health Survey collected in 2013 ($N = 8{,}161$; response rate = 79.8%). Descriptive statistics and logistic regression were used to examine differences in outcomes of interest associated with AUDs in the CAF and CGP.

Results: The prevalence of lifetime AUDs was significantly higher in the CAF (32.0%) than the CGP (20.3%; adjusted odds ratio [AOR] = 1.14, 95% confidence interval [CI, 1.02 to 1.27]) after adjustment for sociodemographic covariates. In contrast, the past-year prevalence of AUDs was significantly lower among CAF personnel (4.5%) than civilians (3.8%; AOR = 0.78, 95% CI [0.61 to 0.99]) after adjustment for sociodemographic covariates. Child abuse history and comorbid mental disorders were strongly associated with past-year AUDs in both populations. CAF personnel compared to the CGP were more likely to perceive a need for care (AOR = 4.15, 95% CI [2.56 to 6.72]) and engage in help-seeking behaviors (significant AORs ranged from 1.85 to 5.54). CAF personnel and civilians with past-year AUDs reported different barriers to care.

Conclusions: Findings argue for the value of different approaches to address unmet need for AUD care in the CAF and CGP.

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Abrégé

Objectifs : La recherche suggère une prévalence élevée de la consommation d'alcool problématique chez les militaires relativement aux civils. Nos principaux objectifs étaient de comparer la prévalence, les corrélats, les comportements de recherche d'aide, le besoin de soins perçu, et les obstacles aux soins des troubles liés à la consommation d'alcool (TCA) dans les Forces armées canadiennes (FAC) et la population générale canadienne (PGC).

Méthodes : Les données provenaient de deux enquêtes représentatives de la scène nationale menées par Statistique Canada : (1) l'Enquête sur la santé dans les collectivités canadiennes - Santé mentale, menée en 2012 ($N = 25,113$; taux de réponse = 68,9%), et (2) l'Enquête sur la santé mentale dans les Forces canadiennes, menée en 2013 ($N = 8,161$; taux de réponse = 79,8%). Des statistiques descriptives et la régression logistique ont servi à examiner les différences de résultats d'intérêt associés aux TCA dans les FAC et la PGC.

Résultats : La prévalence des TCA de durée de vie était significativement plus élevée dans les FAC (32,0%) que dans la PGC (20,3%; RCA [rapport de cotes ajusté] = 1,14; IC [intervalle de confiance] à 95 % = 1,02 à 1,27) après ajustement pour covariables sociodémographiques. En contraste, la prévalence des TCA de l'année précédente était significativement plus faible chez les militaires des FAC (4,5 %) que chez les civils (3.8%; RCA = 0,78; IC à 95 % = 0,61 à 0,99) après ajustement pour covariables sociodémographiques. Les antécédents de mauvais traitements dans l'enfance et les troubles mentaux comorbides étaient fortement associés aux TCA de l'année précédente dans les deux populations. Les militaires des FAC, comparé à la PGC, étaient plus enclins à percevoir un besoin de soins (RCA = 4,15; IC à 95 % = 2,56 à 6,72) et à adopter des comportements de recherche d'aide (les RCA significatifs allaient de 1,85 à 5,54). Les militaires des FAC et les civils ayant des TCA de l'année précédente déclaraient différents obstacles aux soins.

Conclusions : Les résultats prônent la valeur de différentes approches pour répondre aux besoins non comblés à l'égard des soins des TCA chez les FAC et la PGC.

Keywords

Canada, military personnel, general population, alcohol use disorders, help-seeking, perceived need for care, barriers to care

Introduction

Research from the United States[1,2,3] and the United Kingdom[4,5,6] has indicated a high prevalence of problematic alcohol use among military personnel. Further, military and civilian comparisons have shown that military personnel report a higher prevalence of problematic drinking behaviors than civilians.[5,6,7] Military personnel face unique stressors (e.g., deployment, reintegration issues, combat exposure) that may contribute to the higher prevalence of problematic alcohol use relative to civilians. Excessive alcohol use can lead to risky behaviors and several physical, psychological, interpersonal, and operational problems.[1,3,5,8,9] Information regarding correlates of alcohol use disorders (AUDs) and help-seeking behaviors among individuals with AUDs is critical for the development and implementation of targeted prevention and intervention strategies aimed at reducing barriers to care for those with AUDs.

Problematic alcohol use has been associated with younger age, male gender, and lower income and education in military[1,2,3,5-8,10] and civilian populations.[11,12] Additionally, problematic alcohol use in the military has been associated with lower rank, military branch, and high levels of combat exposure.[5,6,8,9] Comorbid mental conditions are also prevalent among individuals with AUDs.[1,6,8,12-16]

Individuals may use alcohol as a means to self-medicate for mental health problems or to cope with exposure to traumatic events.[1] Findings on the association between deployment and AUDs have been mixed, with some studies showing greater risk in previously deployed military personnel[17-19] and others pointing to equal[20] or lower risk[21,22] relative to those who have not deployed. Findings on the association with deployment-related trauma have been more consistent, with a higher risk of AUDs being seen in those who had deployments with traumatic events.[1,4,5,13,14] Child abuse history is another type of traumatic exposure that has been associated with AUDs in both military personnel[13] and civilians.[23,24] It remains unknown whether the strength of the association between sociodemographic covariates, comorbid mental conditions, and exposure to traumatic events and AUDs differs between military personnel and civilians.

The differences between military and civilian mental health systems could change the "face of need" for those with AUDs in the 2 populations. Perceived need for care (PNC) is one of the main factors underlying help-seeking behaviors.[25,26] Substantial investment has been made to the Canadian Armed Forces (CAF) mental health system over the past decade.[27,28] Consequently, recognition of the need for care, professional help-seeking, and sufficiency of care has increased among CAF personnel.[25,27] However, military personnel have even greater concerns about mental health stigma than those in the general population,[29] which may be even more pronounced for AUDs than other types of mental health problems.[30,31] In both military and civilian populations, the majority of individuals screening positive for AUDs do not receive treatment.[2,10,11,14,24,26,31-33] Further, military personnel with problematic alcohol use are less

likely to receive treatment than military personnel suffering from other mental health problems.[33-35]

Thus, there is substantial research on the clinical epidemiology of AUDs in both military and civilian populations, and findings largely show similar patterns in the 2 populations. However, there are reasons to believe that different findings might be obtained in the military related to selection effects (e.g., strict occupational fitness standards during recruitment and service in military, a higher prevalence of adverse childhood experiences among military personnel),[36] aspects of military versus civilian culture (e.g., binge and heavy drinking as part of military culture, environmental features of military that facilitate access to alcohol),[1,34] occupational trauma exposure (e.g., combat-related traumatic exposures among military personnel, combat-related mental health problems),[1,4,5,13,14] and use of health services (e.g., military personnel more likely to perceive a need for care and to access care than civilians).[25,27] Few formal comparisons between military and civilian populations exist, and they have important limitations including (1) exploration of only difference in prevalence rates, but not other features of interest such as mental health services use;[20,37,38] (2) use of noncontemporaneous or otherwise noncomparable survey data;[20,37] and (3) surveys with low response rates.[20,37] We take advantage of highly comparable survey data to (1) compare the prevalence of lifetime and past-year AUDs in the CAF and the Canadian general population (CGP), (2) compare the correlates of past-year AUDs in the CAF and the CGP, and (3) compare the prevalence of help-seeking, PNC, and barriers to care among respondents with AUDs in the CAF and the CGP. Understanding differences in the clinical epidemiology of AUDs in the 2 populations would inform prevention and control efforts in both populations.

Methods

Data and Sample

Data are from 2 nationally representative surveys collected by Statistics Canada: (1) the Canadian Community Health Survey on Mental Health (CCHS-MH) collected in 2012 ($N = 25{,}113$; response rate = 68.9%) and (2) the Canadian Forces Mental Health Survey (CFMHS) collected in 2013 ($N = 8{,}161$; response rate = 79.8%). Both surveys used similar methods and measures and were designed to allow for comparisons across surveys. The CCHS-MH included a representative sample of Canadians aged 15 years and older living in the 10 provinces. Respondents living in the 3 territories, in Indigenous communities, and full-time members of the CAF were excluded from the sampling frame. Analyses were restricted to respondents 18 to 60 years of age in the CCHS-MH to maintain age comparability with the CFMHS ($n = 15{,}981$ in the CCHS-MH final sample). The CFMHS included a representative sample of Regular Force military personnel aged 18 to 60 years and a subsample of Reserve Force personnel who had deployed in support of the mission in Afghanistan. Reservists who had not deployed in support of the mission to Afghanistan were not included in the sampling frame; therefore, only serving CAF Regular Force personnel were included in analyses ($n = 6{,}692$). Data were collected using in-person interviewing with trained lay interviewers and computer-assisted interviewing techniques. Participation in each of the surveys was voluntary, and written informed consent was obtained. Further details of the CCHS-MH[39] and the CFMHS[28] have been published elsewhere.

Measures

AUDs. Alcohol abuse and alcohol dependence were assessed using the World Health Organization's version of the Composite International Diagnostic Interview (WHO-CIDI)[40] based on the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (*DSM-IV*) criteria.[41] In the surveys, both lifetime and past 12-month alcohol abuse and alcohol dependence were assessed. Respondents were considered to have a lifetime and/or past-year AUD if they met WHO-CIDI criteria for alcohol abuse or alcohol dependence.

Sociodemographic covariates. Sociodemographic covariates included gender, age, visible minority status, marital status, highest level of education, and past-year total household income. Military specific covariates included military rank (i.e., junior noncommissioned member [NCM], senior NCM, and officer) and military branch (i.e., Army, Navy, or Air Force).

Mental disorders. Diagnoses of past-year mental disorders were assessed with the WHO-CIDI[40] based on *DSM-IV* criteria.[41] Past-year mental disorders that were assessed in both surveys included major depressive episode and generalized anxiety disorder (GAD). The CFMHS also included WHO-CIDI-based assessments of past-year panic disorder and post-traumatic stress disorder (PTSD). Panic disorder and PTSD were included in the study for descriptive purposes to examine their relationship with AUDs among CAF Regular Force personnel. Comparable measures of past-year panic disorder and PTSD were not included in the CCHS-MH survey.

Child abuse. Child abuse exposure included experiences of physical abuse, sexual abuse, and exposure to intimate partner violence that occurred in the home before the age of 16 years.[42] Dichotomous coding was used based on the thresholds detailed in Afifi et al.'s study.[36] Any child abuse (yes or no) and total number of child abuse types (0, 1, 2, or more) variables were also computed.

Deployment-related traumatic events. Military-specific traumatic events included whether the respondent had ever been deployed (yes or no) and, if ever deployed, the total number of deployment-related traumatic events experienced while on a CAF deployment (0, 1, 2, or 3 or more). A complete

list of the deployment-related traumatic events included in the measure is available in the Supplemental Online Content.

Help-seeking and PNC. Several measures were used to assess past-year help-seeking among respondents with AUDs. Two items were used to assess alcohol-specific treatment. In the AUD module, respondents were asked whether they received any professional treatment for their use of alcohol. In the mental health service use module, all respondents were asked whether they sought assistance from a self-help group for alcohol or drug use (e.g., Alcoholics Anonymous, Narcotics Anonymous). Non-alcohol-specific treatment was also assessed. All respondents were also asked a series of questions about whether they sought help from a number of different sources for a problem with their emotions, mental health, or use of alcohol or drugs. Professional help-seeking included help from a psychiatrist, psychologist, family doctor/general practitioner, nurse, and/or social worker, counsellor, or psychotherapist. Any professional help-seeking was also computed based on whether the respondent reported seeking any professional treatment.

PNC was assessed with the Perceived Need for Care Questionnaire (PNCQ).[43] The PNCQ categorizes respondents into 1 of the 4 levels of perceived need for help with their emotions, mental health, or their use of alcohol or drugs across 4 different domains. The 4 levels of PNC included no need, needs fully met, needs partially met, and needs not met. Domains included information, medication, counseling, and/or other help. Dichotomous coding was used to classify respondents based on whether they perceived a need for care (no need vs. need) regardless of whether the needs were met or unmet in each of the individual domains as well as overall across domains. Among those with an overall PNC, respondents were categorized into groups based on whether needs were met, partially met, or unmet across the 4 domains. Thus, while our analyses of PNC and professional help-seeking use were restricted to those with AUDs, the PNC and professional help-seeking use assessed may have related to other mental health or substance use disorders.

Barriers to care. Respondents who reported receiving no help for their problems with emotions, mental health, or with their use of alcohol or drugs in the past 12 months, despite perceiving a need for help, were asked about a number of different barriers that influenced their ability to access mental health care. Barriers included both attitudinal (e.g., preferred to manage yourself, afraid of what others would think) and structural (e.g., help was not readily available, insurance didn't cover) barriers to care.[31] An additional 3 barriers were asked about in the CFMHS but not in the CCHS-MH (i.e., thought getting help could harm your career, the wait time was too long, and the respondent didn't think anything more could help).

Statistical Analyses

Statistical weights were applied to the data to ensure they were representative of each respective population. Bootstrapping was used as a variance estimation technique to account for the complex survey designs. Cross-tabulations were used to compute prevalence estimates, and logistic regression was used to examine the association of study variables with past-year AUDs. Interaction terms were used to examine whether the association between sociodemographic covariates, mental disorders, and child abuse histories and past-year AUDs differed in the CAF and the CGP. Logistic regression was used to examine differences in the prevalence of AUDs, help-seeking behaviors, PNC, and barriers to care across study populations. Multivariable models adjusted for sociodemographic variables.

Results

The prevalence of lifetime and past-year AUDs are provided in Table 1. The prevalence of lifetime AUDs was significantly higher in the CAF than CGP after adjustment for sociodemographic covariates (adjusted odds ratio [AOR] = 1.14, 95% confidence interval [CI, 1.02 to 1.27]). In contrast, the prevalence of past-year AUDs was significantly lower in the CAF than CGP after adjustment for sociodemographic covariates (AOR = 0.78, 95% CI [0.61 to 0.98]).

Similar relationships between sociodemographic covariates and past-year AUDs were found in the CAF and CGP (see Table 2). Past-year AUDs were associated in both populations with male gender, younger age, single marital status, and having a lower level of education. Visible minority status was associated with significantly decreased odds of past-year AUDs among civilians, but not CAF members. Lower income was associated with increased odds of past-year AUDs in the CAF, but not the CGP. Covariate by study population interaction terms indicated that visible minority status had a stronger relationship with past-year AUDs in the CGP and that separated, divorced, and widowed marital status and income had a stronger relationship with past-year AUDs in the CAF. None of the other covariate by study population interaction terms were significant. Military-specific covariates indicated that junior NCMs were significantly more likely than officers (OR = 2.62, 95% CI [1.86 to 3.70]), and Army and Navy personnel were significantly more likely than Air Force personnel (OR = 2.42, 95% CI [1.66 to 3.54] and OR = 1.80, 95% CI [1.13 to 2.88], respectively) to meet diagnostic criteria for a past-year AUD.

The association of past-year AUDs with comorbid mental disorders, child abuse history, and deployment covariates is provided in Table 3. Past-year major depressive episode and past-year GAD were associated with increased odds of past-year AUDs in both the CGP (AOR = 3.47, 95% CI [2.39 to 5.04] and AOR = 4.07, 95% CI [2.64 to 6.28], respectively) and CAF (AOR = 5.56, 95% CI [3.99 to 7.75] and AOR = 5.36, 95% CI [3.51 to 8.18], respectively). Past-year panic

Table 1. Prevalence of Lifetime and Past Year Alcohol Abuse or Dependence in the Canadian General Population and the Canadian Armed Forces, 2012–2013.

	Canadian General Population (CGP) % [95% CI]	Canadian Armed Forces (CAF) % [95% CI]	CGP vs. CAF[a]	
			OR [95% CI]	AOR [95% CI]
Lifetime				
Males	28.6 [26.9 to 30.2]	34.6 [33.3 to 35.8]	1.32 [1.20 to 1.46]***	1.13 [1.01 to 1.29]*
Females	12.0 [11.0 to 13.2]	15.7 [13.3 to 18.4]	1.36 [1.09 to 1.68]**	1.12 [0.88 to 1.43]
Total	20.3 [19.3 to 21.3]	32.0 [30.9 to 33.1]	1.85 [1.70 to 2.00]***	1.14 [1.02 to 1.27]*
Past year				
Males	5.6 [4.8 to 6.5]	4.8 [4.3 to 5.5]	0.86 [0.71 to 1.05]	0.77 [0.60 to 0.999]*
Females	2.1 [1.7 to 2.5]	2.2 [1.3 to 3.9]	1.09 [0.60 to 2.00]	0.93 [0.49 to 1.79]
Total	3.8 [3.4 to 4.3]	4.5 [4.0 to 5.1]	1.18 [0.99 to 1.41]	0.78 [0.61 to 0.98]*

Note. Percentages are based on weighted *N*, which have been rounded to base 20 for confidentiality purposes as per Statistics Canada's data release policies. CI = confidence interval; OR = odds ratio; AOR = odds ratio adjusted for sociodemographic covariates (age, visible minority, marital status, education, and income). AORs in total sample also adjust for respondent gender.
[a]CGP is the reference category with an odds of 1.00.
*$P \leq 0.05$. **$P \leq 0.01$, ***$P \leq 0.001$.

disorder (AOR = 5.37, 95% CI [3.38 to 8.53]) and past-year PTSD (AOR = 5.10, 95% CI [3.28 to 7.94]) were also associated with past-year AUDs in the CAF (these disorders were not assessed in the CCHS-MH). Except for the childhood sexual abuse and past-year AUDs in the CAF, all other types of child abuse and the total number of types of child abuse were associated with significantly increased odds of past-year AUDs in both the CAF and CGP. All covariate by study population interaction terms were not significant, indicating that mental disorders and child abuse exposure had similar associations with past-year AUDs in both populations. Among CAF personnel, lifetime deployment was not significantly associated with past-year AUDs. Among CAF personnel who had ever been deployed, having experienced 3 or more deployment-related traumatic events was associated with increased odds of past-year AUDs (AOR = 1.92, 95% CI [1.08 to 3.42]).

The prevalence of help-seeking and PNC among individuals with AUDs is provided in Table 4. Although the prevalence of alcohol-specific professional treatment and attending a self-help group for problems with alcohol or drugs were higher in the CAF than CGP (15.5% vs. 7.9% and 9.1% vs. 3.9%, respectively), differences between the 2 populations failed to reach statistical significance (likely due to underpowered models). However, across all types of non-alcohol-specific help-seeking, CAF personnel with past-year AUDs were more likely to seek help than their civilian counterparts (significant AORs ranged from 1.85 to 5.54). CAF personnel with past-year AUDs were also more likely to perceive a need for care, both overall (AOR = 4.15, 95% CI [2.56 to 6.72]) and in individual domains (significant AORs ranged from 2.17 to 4.15). Among those with a PNC, there were no significant differences in whether needs were partially or fully met (vs. unmet) between the CAF and CGP.

Among respondents with past-year AUDs, differences across the 2 populations were noted with regard to the types of barriers to mental health care endorsed (see Table 5). Military personnel were significantly more likely to report that their job had interfered with their getting help (41.2% vs. 8.3%). Potentially meaningful differences were seen for most other barriers though none of these achieved statistically significance, likely due to limited power.

Discussion

There are several novel findings in this study. First, the prevalence of lifetime AUDs was significantly higher in the CAF than CGP. However, the past-year prevalence of AUDs was significantly lower among CAF personnel compared to civilians. Second, sociodemographic variables, mental disorders, and child abuse history were largely associated with past-year AUDs in the same way for military personnel and civilians. Third, CAF personnel with past-year AUDs were more likely to perceive a need for care and to engage in help-seeking behaviors than civilians. Finally, CAF personnel and civilians with past-year AUDs report different barriers to mental health care though largely these did not achieve statistical significance. These findings can be used to develop more targeted prevention and intervention strategies aimed at increasing help-seeking and reducing barriers to care for individuals with AUDs.

The higher prevalence of lifetime AUDs among military personnel is similar to findings from other studies indicating a higher prevalence of problematic alcohol use in military personnel relative to civilians.[5,6,7] It should be noted that the prevalence estimates for past-year AUDs reported in this study are slightly different than those reported elsewhere using the same samples[38] due to differences in matching criteria and covariates included in multivariable models. Despite these differences, a similar trend was noted in that CAF Regular Force personnel are significantly less likely to meet diagnostic criteria for past-year AUDs than their civilian counterparts. This is similar to findings from Australia where military personnel evidenced a slightly higher

Table 2. Sociodemographic Covariates and Past Year Alcohol Abuse or Dependence in the Canadian General Population and the Canadian Armed Forces, 2012–2013.

Sociodemographic Covariate	Canadian General Population		Canadian Armed Forces		Covariate by Population Interaction Term
	% [95% CI]	OR [95% CI]	% [95% CI]	OR [95% CI]	OR [95% CI]
Sex					
Male	5.6 [4.8 to 6.5]	2.78 [2.19 to 3.53]***	4.8 [4.3 to 5.5]	2.19 [1.20 to 4.01]*	1.27 [0.67 to 2.41]
Female	2.1 [1.7 to 2.5]	1.00	2.2 [1.3 to 3.9]	1.00	
Age (years)					
18–24	9.7 [8.2 to 11.3]	4.88 [3.34 to 7.14]***	9.4 [7.3 to 11.7]	6.40 [3.95 to 10.37]***	1.31 [0.70 to 2.43]
25–34	4.8 [3.8 to 6.2]	2.31 [1.52 to 3.50]***	5.7 [4.7 to 6.9]	3.79 [2.38 to 6.04]***	1.64 [0.87 to 3.09]
35–44	2.0 [1.4 to 2.8]	0.93 [0.57 to 1.52]	2.8 [2.1 to 3.7]	1.78 [1.06 to 2.98]*	1.91 [0.92 to 3.96]
$\geq$ 45	2.1 [1.6 to 2.9]	1.00	1.6 [1.1 to 2.3]	1.00	
Visible minority					
Yes	2.5 [2.0 to 3.2]	0.58 [0.45 to 0.75]***	5.0 [3.3 to 7.4]	1.13 [0.70 to 1.80]	1.94 [1.15 to 3.25]*
No	4.3 [3.7 to 4.9]	1.00	4.4 [3.9 to 5.0]	1.00	
Marital status					
Single	7.8 [6.8 to 9.0]	3.74 [2.81 to 4.98]***	8.4 [7.1 to 9.9]	3.11 [2.38 to 4.08]***	0.83 [0.56 to 1.23]
Separated, divorced, or widowed	2.0 [1.4 to 2.8]	0.89 [0.58 to 1.36]	5.0 [3.5 to 7.6]	1.85 [1.17 to 2.94]**	2.08 [1.10 to 3.96]*
Married or common-law	2.2 [1.7 to 2.8]	1.00	2.9 [2.4 to 3.4]	1.00	
Educational level					
High school or less	5.3 [4.4 to 6.5]	2.63 [1.76 to 3.93]***	6.1 [5.0 to 7.4]	2.61 [1.78 to 3.84]***	0.99 [0.57 to 1.73]
Some postsecondary	7.2 [5.4 to 9.5]	3.64 [2.31 to 5.73]***	4.2 [2.8 to 6.9]	1.85 [0.997 to 3.42]	0.51 [0.23 to 1.11]
Trade, college, or university certificate or diploma	3.3 [2.7 to 4.0]	1.59 [1.07 to 2.38]*	4.4 [3.6 to 5.4]	1.85 [1.24 to 2.76]**	1.16 [0.65 to 2.06]
University degree	2.1 [1.5 to 2.9]	1.00	2.4 [1.8 to 3.3]	1.00	
Total household income					
Less than $50,000	4.3 [3.6 to 5.1]	1.17 [0.78 to 1.76]	10.1 [7.0 to 14.3]	5.42 [2.99 to 9.85]***	4.64 [2.21 to 9.75]***
$50,000 to $99,999	3.3 [2.7 to 4.1]	0.89 [0.58 to 1.36]	5.5 [4.7 to 6.4]	2.84 [1.74 to 4.63]***	3.19 [1.63 to 6.23]***
$100,000 to $149,999	4.4 [3.2 to 5.9]	1.20 [0.73 to 1.96]	3.0 [2.3 to 4.0]	1.52 [0.88 to 2.64]	1.27 [0.60 to 2.68]
$150,000 or more	3.7 [2.6 to 5.3]	1.00	2.1 [1.3 to 3.1]	1.00	
Military rank					
Junior NCM	—	—	6.1 [5.2 to 7.1]	2.62 [1.86 to 3.70]***	—
Senior NCM	—	—	2.7 [2.1 to 3.5]	1.13 [0.74 to 1.70]	—
Officer	—	—	2.4 [1.8 to 3.2]	1.00	—
Military environment					
Army	—	—	5.7 [4.9 to 6.7]	2.42 [1.66 to 3.54]***	—
Navy	—	—	4.3 [3.2 to 5.8]	1.80 [1.13 to 2.88]*	—
Air Force	—	—	2.4 [1.8 to 3.3]	1.00	—

Note. Percentages are based on weighted *N*, which have been rounded to base 20 for confidentiality purposes as per Statistics Canada's data release policies. Dashes indicate information that was not assessed and/or applicable in the general population survey (therefore precluding examining differences across the study populations). NCM = noncommissioned member; CI = confidence interval; OR = odds ratio.
*$P \leq 0.05$. **$P \leq 0.01$. ***$P \leq 0.001$.

prevalence of lifetime AUDs but significantly lower past-year AUDs than civilian counterparts.[20] Military personnel are predominantly male, younger, and report more extensive childhood abuse histories than civilian counterparts,[36] all of which might contribute to the higher lifetime prevalence of AUDs found in the CAF relative to the CGP. Alternatively, perhaps the benefits of selection into the military (e.g., recruitment procedures, strict continuing occupational fitness standards) help to explain the lower prevalence of past-year AUDs (in the context of higher prevalence of lifetime AUDs) among military personnel. Mental disorders have also been found to predict early attrition from military service.[37] Thus, it could also be that military personnel with AUDs are more likely to be discharged from military service (hence excluded from the current CAF sample) than those without AUDs, which could also help to account for the combination of higher lifetime, but lower past-year, prevalence of AUDs found in this study. It could also be that CAF personnel are more reluctant to self-report current problematic alcohol use than civilians due to the perceived negative impact AUDs could have on their military careers. In this study, CAF personnel with AUDs were also more likely to perceive a need for care and engage in help-seeking behaviors than the CGP, which could lead to faster detection and treatment of AUDs among military personnel compared to civilians.

Table 3. The Association of Comorbid Past Year Mental Disorders and Lifetime Traumatic Events With Past Year Alcohol Abuse or Dependence in the Canadian General Population and the Canadian Armed Forces, 2012–2013.

Independent Variable	Canadian General Population		Canadian Armed Forces		Covariate by Population Interaction Term
	% [95% CI]	AOR [95% CI]	% [95% CI]	AOR [95% CI]	AOR [95% CI]
Mental disorders					
Depression	11.2 [8.4 to 14.6]	3.47 [2.39 to 5.04]***	15.6 [12.4 to 19.3]	5.56 [3.99 to 7.75]***	1.64 [0.98 to 2.75]
GAD	10.8 [7.8 to 14.9]	4.07 [2.64 to 6.28]***	14.7 [10.5 to 19.3]	5.36 [3.51 to 8.18]***	1.33 [0.72 to 2.45]
Panic disorder	—	—	16.0 [11.5 to 22.5]	5.37 [3.38 to 8.53]***	—
PTSD	—	—	13.9 [9.8 to 18.5]	5.10 [3.28 to 7.94]***	—
Childhood trauma					
Physical abuse	6.2 [5.2 to 7.4]	2.57 [1.96 to 3.38]***	6.0 [5.1 to 7.0]	2.11 [1.57 to 2.83]***	0.85 [0.57 to 1.27]
Sexual abuse	5.2 [3.7 to 7.2]	2.59 [1.69 to 3.96]***	3.3 [1.7 to 6.0]	0.99 [0.50 to 1.96]	0.48 [0.21 to 1.10]
Exposure to IPV	4.6 [3.3 to 6.3]	1.60 [1.08 to 2.35]*	7.9 [5.7 to 10.7]	2.23 [1.49 to 3.33]***	1.46 [0.84 to 2.55]
Any child abuse	5.6 [4.7 to 6.6]	2.51 [1.91 to 3.29]***	5.8 [5.0 to 6.8]	2.18 [1.62 to 2.94]***	0.91 [0.61 to 1.37]
Total number of types of child abuse					
None	3.0 [2.5 to 3.5]	1.00	3.2 [2.6 to 3.9]	1.00	
1 type	5.4 [4.4 to 6.7]	2.25 [1.65 to 3.06]***	5.5 [4.6 to 6.6]	1.97 [1.44 to 2.70]***	0.91 [0.58 to 1.41]
2 or more types	6.0 [4.5 to 8.1]	3.30 [2.24 to 4.85]***	6.7 [5.0 to 9.2]	2.91 [1.90 to 4.46]***	0.97 [0.55 to 1.72]
Lifetime deployment					
No	—	—	6.2 [5.1 to 7.4]	1.00	—
Yes	—	—	3.4 [2.9 to 4.0]	0.88 [0.63 to 1.22]	—
Deployment-related traumatic events[a]					
0	—	—	2.3 [1.4 to 3.8]	1.00	—
1	—	—	2.4 [1.3 to 4.1]	1.08 [0.48 to 2.44]	—
2	—	—	3.3 [2.1 to 4.7]	1.51 [0.76 to 3.00]	—
3 or more	—	—	4.4 [3.5 to 5.3]	1.92 [1.08 to 3.42]*	—

Note. Percentages are based on weighted *N*, which have been rounded to base 20 for confidentiality purposes as per Statistics Canada's data release policies. Dashes indicate information that was not assessed and/or not applicable in the general population survey (therefore precluding examining differences across the study populations). GAD = generalized anxiety disorder; PTSD = post-traumatic stress disorder; IPV = intimate partner violence; CI = confidence interval; OR = odds ratio; AOR = odds ratio adjusted for sociodemographic covariates (age, gender, visible minority, marital status, education, and income).
[a]Only Regular Force personnel who reported having ever been deployed are included in estimates related to deployment-related traumatic events.
*$P \leq 0.05$. **$P \leq 0.01$. ***$P \leq 0.001$.

Past-year AUDs were associated with being male, young, single, and having a lower level of education in both the CAF and CGP. Evidence also suggests that young, less educated males are less likely to seek mental health treatment.[11,44] Increasing help-seeking among those at the highest risk of developing AUDs remains paramount to prevention and intervention efforts. The strong association between child abuse history and past-year AUDs suggests that adverse childhood experiences also need to be considered in AUD prevention and intervention efforts.[13,36] Comorbid mental conditions were strongly associated with increased odds of past-year AUDs in both populations. Individuals with mental disorders are more likely to report barriers to care than individuals without mental disorders.[18,32] As well, individuals with AUDs and other comorbid mental conditions experience greater symptom severity and poorer treatment outcomes than individuals with a single disorder.[15] Reducing barriers to care among individuals with AUDs and other comorbid mental health conditions remains a priority. In this study, we found that lifetime deployment was not significantly associated with past-year AUDs. However, exposure to 3 or more deployment-related traumatic events was associated with increased odds of past-year AUDs. This is consistent with research suggesting that high levels of combat exposure are associated with problematic drinking behaviors among military personnel.[1,4,5,13,14] Taken together, these findings highlight the pressing need for comprehensive, integrated treatment services that simultaneously address AUDs, comorbid mental disorders, and other lifetime traumatic events[15] in both the CAF and CGP.

CAF personnel with past-year AUDs were more likely to perceive a need for care, to access care, and to report that help was ongoing than Canadian civilians with AUDs. This could reflect the substantial investments in CAF mental health care over the past decade.[21] CAF personnel with past-year AUDs were more likely to seek help than civilian counterparts across most types of help-seeking. Yet, it is also important to recognize that more than half of CAF personnel with AUDs and more than three quarters of Canadian civilians with AUDs did not seek any professional help in the past year. Continued efforts at recognizing the need for care, education about the efficacy of care, and addressing population specific barriers to care are needed to increase help-seeking for AUDs among both military personnel and civilians.

Table 4. Help-Seeking and Perceived Need for Care Among Individuals With Past Year Alcohol Abuse or Dependence in the Canadian General Population and the Canadian Armed Forces, 2012–2013.

Independent Variable	Canadian General Population (CGP) % [95% CI]	Canadian Armed Forces (CAF) % [95% CI]	CGP vs. CAFa AOR [95% CI]b
Help-seeking (HS)			
Alcohol-specific HS			
Professional treatment specifically for alcohol problems	7.9 [5.3 to 11.8]	15.5 [11.5 to 20.7]	2.09 [0.90 to 4.85]
Self-help group (e.g., Alcoholics Anonymous or Narcotics Anonymous) for problems with alcohol or drugs	3.9 [2.3 to 6.6]	9.1 [5.9 to 14.2]	1.91 [0.65 to 5.65]
Non-alcohol-specific HS			
Psychiatrist	6.9 [4.5 to 10.5]	17.5 [13.2 to 23.1]	3.53 [1.46 to 8.48]**
Psychologist	5.8 [4.0 to 8.5]	20.3 [15.5 to 26.4]	3.93 [1.88 to 8.21]***
Family doctor	12.7 [9.7 to 16.7]	22.4 [17.3 to 27.5]	2.61 [1.36 to 5.02]**
Nurse	4.1 [2.4 to 6.8]	16.1 [11.6 to 20.9]	5.54 [2.18 to14.09]***
Social worker	11.0 [8.1 to 14.8]	30.1 [24.3 to 36.0]	3.95 [1.96 to 7.96]***
Any professional HS	22.3 [18.2 to 27.1]	42.0 [35.3 to 48.1]	3.14 [1.89 to 5.21]***
Perceived need (PN) for care			
PN for information	19.0 [15.1 to 23.6]	38.5 [32.1 to 44.8]	3.52 [1.99 to 6.22]***
PN for medication	18.2 [14.4 to 22.6]	33.3 [27.4 to 39.1]	3.41 [1.92 to 6.06]***
PN for counseling	28.4 [23.8 to 33.6]	53.9 [46.8 to 59.9]	4.13 [2.51 to 6.79]***
PN for other help	1.3 [0.7 to 2.5]	2.8 [1.3 to 6.7]	2.17 [0.48 to 9.76]
Overall PN (across all 4 domains)[c]	33.6 [28.6 to 39.0]	58.9 [52.6 to 65.5]	4.15 [2.56 to 6.72]***
Perceived needs met?[d]			
Needs fully met	52.9 [44.6 to 61.1]	59.5 [51.6 to 68.6]	0.83 [0.26 to 2.64]
Needs partially met	30.6 [23.7 to 38.4]	27.4 [20.3 to 36.6]	1.12 [0.35 to 3.58]
Needs not met	16.5 [11.1 to 23.8]	11.9 [7.6 to 18.0]	1.00

Note. Percentages are based on weighted *N*, which have been rounded to base 20 for confidentiality purposes as per Statistics Canada's data release policies. CI = confidence interval; AOR = odds ratios adjusted for sociodemographic covariates (age, gender, visible minority, marital status, education, and income).
[a]CGP is the reference category with an odds of 1.00.
[b]AOR adjusted for sociodemographic covariates with income dichotomized into less than $100,000 and more than $100,000 due to minimal variability in income categories.
[c]Respondents who reported perceived need in one or more areas of information, medication, counseling, or other help.
[d]Percentages based on respondents who endorsed having an overall perceived need.
*$P \leq 0.05$. **$P \leq 0.01$. ***$P \leq 0.001$.

The most commonly endorsed barriers to care among civilians with AUDs were the preferences for self-managing the problem and not getting around to seeking help. This is similar to other research suggesting a lack of readiness to change among individuals with AUDs.[11,26] Education on the harmful effects of heavy alcohol use, increasing problem recognition, and providing information of the efficacy of care may be important intervention targets for increasing help-seeking for AUDs in the CGP.[26] In contrast, the most commonly endorsed barrier to care among CAF personnel with AUDs was the belief that help-seeking may harm their career. This is similar to other research suggesting that the impact of treatment on one's military career is a primary concern among military personnel.[2,18] CAF personnel were also more likely to report that they were afraid of what others would think of them although differences failed to reach statistical significance likely due to underpowered models. This suggests that a key target for the military is to reduce the stigma associated with help-seeking for AUDs and other mental health problems.[18] Additionally, all military personnel should be trained to recognize signs of problematic alcohol use and in how to approach heavy alcohol use in ways that reduce stigma and foster positive attitudes toward help-seeking.[3]

The strengths of this study include the use of contemporary, representative samples of the CAF and CGP. Both surveys used similar methods and measures, which allows for comparisons across study populations. The use of validated, diagnostic criteria to assess AUDs, rather than a brief screening instrument, is another strength of this study. Findings also need to be interpreted in the context of several limitations. First, the data are cross-sectional, making inferences about causality impossible. Second, the data are retrospective and self-reported, which introduces potential recall and same-source bias. Third, only a limited number of mental disorders were assessed in both surveys. Importantly, PTSD was not assessed in CCHS-MH. Also, the use of other types of drugs (i.e., use of cannabis and other illicit drugs) was not assessed in the CFMHS, precluding examination of how differences in the use of other drugs might differentially affect relationships with AUDs, help-seeking, and PNC across the 2 populations. Additional research is necessary to better understand the impact of multiple comorbid psychiatric conditions as well as comorbid substance use

Table 5. Perceived Barriers to Care Among Individuals With Past Year Alcohol Abuse or Dependence in the Canadian General Population and the Canadian Armed Forces, 2012–2013.

Perceived Barriers to Care	Canadian General Population (CGP) % [95% CI]	Canadian Armed Forces (CAF) % [95% CI]	CGP vs. CAFa OR [95% CI]
Attitudinal barriers to care			
You preferred to manage it yourself	45.3 [29.5 to 62.0]	35.3 [20.0 to 54.0]	0.66 [0.23 to 1.87]
You haven't gotten around to it	46.5 [30.1 to 63.7]	29.4 [14.6 to 52.6]	0.50 [0.14 to 1.86]
You were afraid of what others would think of you	15.3 [5.4 to 36.3]	35.3 [16.4 to 52.6]	2.59 [0.54 to 12.55]
You didn't have confidence in health care system or social services	18.5 [7.7 to 38.1]	47.1 [28.5 to 65.3]	3.82 [0.95 to 15.31]
Structural barriers to care			
Help was not readily available	11.4 [5.3 to 22.7]	29.4 [14.1 to 48.9]	3.09 [0.86 to 11.03]
You didn't know how or where to get this kind of help	21.6 [9.2 to 42.8]	17.6 [6.0 to 32.0]	0.63 [0.13 to 3.08]
You couldn't afford to pay	23.8 [12.7 to 40.4]	NR	NR
Insurance didn't cover it	17.7 [8.1 to 34.2]	NR	NR
Your job interfered	8.3 [3.4 to 19.1]	41.2 [22.0 to 59.3]	7.07 [1.86 to 26.85]**
Additional barriers assessed in the CAF only			
Thought would harm your career	NA	52.9 [29.9 to 68.5]	NA
Didn't think anything more could help	NA	29.4 [14.8 to 49.5]	NA
Waiting time too long	NA	35.3 [19.2 to 57.6]	NA

Note. Percentages are based on weighted *N*, which have been rounded to base 20 for confidentiality purposes as per Statistics Canada's data release policies. NR = not released (cells were not released by Statistics Canada in order to protect respondent confidentiality). NA = not available (barriers were not assessed in the general population survey). CI = confidence interval; OR = odds ratio.

[a]CGP is the reference category with an odds of 1.00.

*$P \leq 0.05$. **$P \leq 0.01$. ***$P \leq 0.001$.

disorders on AUDs in both the CGP and CAF. Fourth, lifetime traumas only included child abuse history as other types of traumatic events were not assessed in the CCHS-MH. Fifth, due to the small number of CAF females, we were unable to examine potential gender differences in the prevalence and correlates of AUDs and help-seeking behaviors. Sixth, veterans are part of the CGP, and we were unable to assess veterans as a separate group. It is estimated that 4% of the adult male population and less than 1% of the adult female population are former members of the CAF (Regular and Reserve Forces) in Canada.[45] Although some research finds a high prevalence of problematic alcohol use among veterans,[2,10,15,19] other studies have found similar rates of heavy drinking among CAF veterans and the CGP.[45] Research examining the prevalence and correlates of AUDs among Canadian veterans remains an important research priority. Finally, the items on help-seeking, PNC, and barriers to care were not specific to alcohol use problems. Other factors, such as comorbid mental disorders, may be driving the underlying need for care in this study.

Conclusion

CAF personnel with AUDs were more likely to perceive a need for help and engage in help-seeking behaviors than Canadian civilians with AUDs. Nonetheless, a substantial proportion of both the military and civilian population with past-year AUDs neither perceived a need for care nor engaged in help-seeking behaviors. As well, alcohol-specific care was especially rare in both populations. Given the negative effects of excessive alcohol use across multiple domains of functioning, reducing barriers to care for both military and civilians with AUDs remains an important public health priority.

Authors' Note

Tamara L. Taillieu contributed to the development of the research questions and design of the study, data analysis, interpretation of the data, and writing the manuscript. Tracie O. Afifi contributed to the development of the research questions and design of the study, supervision of the analysis, interpretation of the data, and revising the manuscript. Mark Zamorski contributed to the development of the research questions and design of the study, supervision of the analysis, interpretation of the data, and revising the manuscript. Sarah Turner contributed to the development of the research questions and design of the study, data analysis, interpretation of the data, and revising the manuscript. Kristene Cheung contributed to the development of the research questions and design of the study, data analysis, interpretation of the data, and revising the manuscript. Murray Stein contributed to the development of the research questions and design of the study, interpretation of the data, and revising of the manuscript. Jitender Sareen contributed to the development of the research questions and design of the study, supervision of the analysis, interpretation of the data, and revising the manuscript. All authors have approved the final submission. Although the research and analysis are based on data from Statistics Canada, the opinions expressed do not represent the views of Statistics Canada or the Canadian Research Data Centre Network.

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Supplemental Material

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