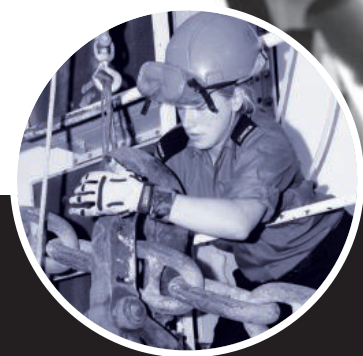




Health and Lifestyle Information Survey of Canadian Armed Forces Personnel 2013/2014





Health and Lifestyle Information Survey of Canadian Forces Personnel 2013/2014 – Regular Force Report

Conducted by the Epidemiology Section, Directorate Force Health Protection
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Abstract

Introduction: The Health and Lifestyle Information Survey (HLIS) is a quadrennial population-based survey that provides a snapshot of the current health status of Canadian Armed Forces (CAF) personnel. The survey captures data on a broad range of health and lifestyle factors, including health care utilization and satisfaction. Data from the survey is used to monitor and improve the health and well-being of CAF personnel by guiding program and policy development to sustain a healthy, fit, and deployable military force.

Methods: In 2013, 4,312 Regular Force personnel were randomly selected from a population of 56,574 personnel to complete a paper-based mail survey. The sample size was calculated to estimate health indicators within a +/- 3% margin of error by sex and rank at a 95% level of confidence. Data were weighted to reflect the age, sex, and rank distribution of the 2013 Regular Force. Descriptive statistics were used to summarize the data and regression techniques were used to establish statistical significance at the 95% confidence level between key demographic variables and the outcome of interest. Direct standardization to the 2013 Regular Force population was used to compare estimates between previous surveys conducted in 2004 and 2008/9.

Results: The adjusted response rate was 60%. Encouraging trends were noted for smoking and physical activity. The prevalence of smoking decreased from 23.0% in 2008/9 to 17.6% in 2013/14 and the percentage of physically active CAF personnel increased from 78.7% in 2008/9 to 85.2% in 2013/14. Conversely, indicators of poor diet were also noted. In 2013/14, a greater percentage of Regular Force personnel were obese (body mass index ≥ 30 kg/m²) than personnel in 2004 (25.0% vs. 20.2% respectively). Additionally, in 2013/14 only 28.7% of personnel ate vegetables and fruits more than six times per day (a proxy used for servings). A significant increase in the annual rate of repetitive strain injuries was noted from 22.6% in 2008/9 to 32.3% in 2013/14 with musculoskeletal injury cited by personnel as the most common reason for being unable to deploy in the past two years. Conditions that were unchanged from 2008/9 included: the prevalence of mental health conditions, acute injuries, the percentage of personnel who engaged in harmful drinking, and self-rated health.

Conclusion: Findings from the Regular Force HLIS 2013/14 indicate some encouraging trends in the health of CAF personnel as well as some challenges. Areas requiring further investigation that could enhance the health of CAF personnel include: obesity, diet, repetitive strain injuries, and alcohol use.

Keywords: Alcohol; behavioural risk factors; chronic conditions; cross-sectional survey; deployment health; depression; diet; health behaviours; health care satisfaction; health care use; health promotion; health status; injuries; mental health; military; nutrition; obesity; occupational health; overweight; physical activity; post-traumatic stress disorder (PTSD); preventive health care; psychological distress; screening; substance use; suicide; tobacco; women's health.



**Your health
Votre santé**



**Our mission
Notre mission**



Executive Summary

The Health and Lifestyle Information Survey (HLIS) is a population-based health survey conducted every four to five years to monitor the health status of Canadian Armed Forces (CAF) personnel. The results help guide the development and evaluation of policies and programs aimed at sustaining a healthy and deployable force. The HLIS 2013/14 is the fourth iteration in a series of successive surveys conducted after major revisions in 2000.

The HLIS 2013/14 was sent to a random sample of 4,314 Regular Force personnel drawn from a population of 56,574. After adjusting for undeliverable surveys, the response rate was 60%. The data were weighted to the 2013 Regular Force population; hence, the estimates presented in this report represent population estimates of the Regular Force. Only statistically significant differences are presented in this report. As well, the estimated prevalence for some conditions presented in this report are part of a validated scale used to screen/flag individuals for possible conditions requiring further follow-up and do not represent clinical diagnoses.

Health Status

Overall Health Status: The self-rated health of Regular Force personnel was unchanged from 2004 to 2013/14 with 94% of personnel reporting that their health was either excellent, very good, or good.

Health-Related Activity Limitation: Limitations to vigorous activity due to health reasons were reported by 38.8% of Regular Force personnel, although only 8.1% were limited a lot. The percentage of personnel with limitations to vigorous activity due to health reasons was unchanged from 2008/9.

Time Away from Work: Nearly 20% of Regular Force personnel had missed at least one day of work in the month prior to completing the survey because of their own illness, or disability from an injury. Overall, 38,113 work days were lost due to health related absenteeism in the month preceding questionnaire completion. The monthly estimate translates into approximately eight work days lost because of illness or disability or injuries per year, for each individual serving in the Regular Force in 2013/14.

Chronic Conditions: Overall, 52.4% of Regular Force personnel reported having a chronic condition diagnosed by a health professional. This percent was unchanged from 2004 and 2008/9. As reported in 2008/9, musculoskeletal problems accounted for an important portion of the chronic disease burden among Regular Force personnel. In 2013/14, the most prevalent diagnosed chronic conditions among Regular Force personnel were: lower limb muscle or joint problems (18.1%); back problems (16.2%); and upper limb muscle or joint problems (11.4%).

Mental and Social Wellness

Mental Health Services Utilization: The percentage (17.1%) of Regular Force personnel who consulted with a health professional about a mental health problem in the last 12 months was unchanged from 2008/9 but was higher than in 2004. Similarly, the percentage (14.7%) of Regular Force personnel who perceived a need for mental health care but did not receive it in the last 12 months was unchanged from 2008/9. In 2013/14, the most commonly cited reasons for not receiving needed mental health care were: prefer to manage the



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problem alone, afraid of repercussions on military career, and afraid to ask for help. The reasons cited for not receiving needed mental health care continue to highlight the stigma associated with seeking mental health care.

Of note, Regular Force personnel who screened positive for a mental health condition were more likely to have sought mental health care in the last 12 months; however, an important percentage of personnel with mental health problems did not seek mental health care in the last 12 months. As an example, only 60% of personnel who seriously contemplated suicide in the last 12 months sought mental health care during that time. In 2004, this percentage was even lower. Only 44% of personnel who seriously considered suicide in the last 12 months sought mental health care during the same time period.

Intimate Relationships: Among Regular Force personnel who had been involved in a romantic relationship in the last 12 months, 5.8% reported inflicting some type of physical or sexual abuse on their partner during that period and 9.9% of Regular Force personnel reported being physically or sexually abused by their partner at that time. Revisions to the question in the 2013/14 survey preclude comparisons to previous years.

Injuries

Injuries: Overall, 44.4% of all Regular Force personnel sustained an acute and/or a repetitive strain injury (RSI) in the 12 months preceding the HLIS 2013/14.

Repetitive Strain Injuries: Nearly one-third of all Regular Force personnel sustained an RSI in the 12 months preceding the HLIS 2013/14. The rate of RSIs increased substantially from 22.6% in 2008/9. The cause for this increase is unknown and further research is required. The majority of RSIs occurred during physical training and sports, and affected the lower back and/or other lower body parts.

Acute Injuries: Nearly one in five Regular Force personnel sustained an acute injury in the 12 months preceding the HLIS 2013/14. The rate of acute injury remained unchanged from 2008/9. Activities that were associated with a large proportion of reported RSIs – such as sports, military training, and physical training – were also associated with the majority of the most serious acute injuries. Furthermore, the vast majority of personnel who sustained an acute injury during sports or physical training reported that the activity was supervised. The fact that many injuries are occurring during supervised activities provides an opportunity to optimize injury prevention interventions.

Health Promotion

Strengthening the Forces (StF) Campaigns: Awareness of the StF program among Regular Force personnel increased over the past ten years from 36.3% in 2004 to 71.5% in 2013/14. Current StF campaigns and courses appear to be better at reaching personnel aged 40 – 60 years, females, and officers than personnel aged 18 – 29 years, males, and NCMs respectively. In addition, the content of these campaigns appears to be more effective at increasing awareness of health-related issues and enabling healthy lifestyle changes in older personnel compared to those personnel aged 18 – 29 years.

Health Care Utilization

Knowledge of Emergency Health Services: While 90.4% of Regular Force personnel knew where to seek emergency medical attention, only 64.0% knew where to seek urgent mental health care after hours.



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Furthermore, only 50.9% of personnel who reported having seriously considered suicide in the last 12 months knew where to seek urgent mental health care after hours. There are always mental health services available to CAF personnel – such as the Canadian Forces Member Assistance Program (CFMAP). Lack of knowledge of these resources among Regular Force personnel may limit their impact.

Physical Activity

Physical Activity: Using the Godin Leisure-Time Exercise Questionnaire, 85.2% of Regular Force personnel were classified as physically active in 2013/14, an increase from 78.7% in 2008/9. However, over the same time period, the amount of hours per week that Regular Force personnel spent engaged in sedentary activities such as watching television, playing video games, and surfing the internet also increased. In 2013/14, Regular Force personnel spent, on average, 30.5 hours per week engaged in sedentary activities; 3.24 hours/week greater than in 2008/9, and 6.35 hours/week greater than in 2004. The increase in sedentary activities was almost entirely driven by an increase in time spent using computers and surfing the internet.

Unsafe Physical Training: Two-thirds of Regular Force personnel reported engaging in unsafe physical training practices (e.g., exercising without a proper warm-up, engaging in a rucksack march while carrying more than 1/3 of one's own bodyweight; and running with a rucksack over distances longer than those meant to simulate running for cover) in the last 12 months, of whom 12.5% were injured as a result. This means that 4,530 CAF personnel may have avoided being injured had they followed safer training approaches. There is an opportunity to decrease the number of injuries sustained per year by reinforcing safer training practices.

Nutrition

Body Weight and Health: Based on self-reported height and weight, 49.0% of personnel were classified as overweight and another 25.0% were classified as obese. High muscle mass may account for a proportion of overweight body mass indices (BMIs), but is unlikely to account for many of those with obese BMIs. The percentage of obese Regular Force personnel increased from 2004. The percentage of obese personnel also increased from 2008/9 to 2013/14, but the difference, measured over a shorter time period, was not statistically significant.

Self-Reported Eating Habits: The majority (83.3%) of Regular Force personnel assessed that their eating habits were good, very good, or excellent. However, only 28.7% of personnel ate vegetables and fruits more than six times per day (a proxy used for number of servings and an indicator of a healthy diet). Furthermore, 42.4% of Regular Force personnel had skipped breakfast at least twice in the last week, and 52.2% of personnel underestimated Canada's Food Guide recommendations for vegetable and fruit intake. The discrepancy between self-rated eating habits and other indicators of diet quality suggests a notable nutritional knowledge gap among Regular Force personnel.

In the past month, Regular Force personnel had eaten at civilian locations much more frequently than they had used CAF food services. Empowering personnel with the right tools to make healthy food choices at home and in restaurants could, potentially, have a greater impact on the diet of the Regular Force than alterations to the meal options offered through CAF food services.



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Substance Use

Smoking: The percentage of current smokers decreased from 23.0% in 2008/9 to 17.6% in 2013/14. The majority (81.5%) of current smokers had already started smoking before joining the CAF. Of the 18.5% of current smokers who first started smoking after joining the CAF, 57.1% started smoking during basic training.

Furthermore, 79.7% of all current smokers had either: (1) re-started smoking after quitting; or (2) increased the amount they smoked at some point during their military careers. Deployments, occupational training, and basic training were associated with these types of unhealthy changes in smoking behaviour.

It is estimated that if current smokers do not quit, approximately 5,000 individuals currently serving in the Regular Force will die prematurely because of tobacco smoking. Additionally, approximately 900 of these premature deaths will occur in individuals who had never smoked prior to joining the CAF. Eliminating smoking initiation in the CAF, particularly during basic training, could prevent hundreds of premature deaths.

Alcohol Use: The Alcohol Use Disorders Identification Test (AUDIT) identified 19.9% of Regular Force personnel as having harmful or hazardous drinking behaviours, an increase from 15.7% in 2004 but unchanged from 17.3% in 2008/9. As well, one in five Regular Force personnel reported binge drinking on a monthly basis or more frequently, which was unchanged from 2004 and 2008/9. In 2013/14, 23.5% of all Regular Force personnel exceeded the Low Risk Drinking Guidelines (LRDG) to avoid acute effects of alcohol use. This percent was unchanged from 2008/9. A substantial proportion of personnel are still engaged in high risk/harmful drinking and continued efforts to promote responsible drinking are warranted.

Deployment Health

Pre-Deployment Screening Process: One out of five currently serving Regular Force personnel had been unable to deploy overseas at some point in the last two years. The percentage of Regular Force personnel who had been unable to deploy in the last two years was unchanged from 2008/9. The most commonly cited reasons for being unable to deploy overseas were related to adverse health conditions, such as: (1) musculoskeletal injuries; (2) mental health issues; and (3) other illnesses.

Occupational Health and Safety Issues

Protective Measures: The majority (93.3%) of Regular Force personnel reported always wearing a seatbelt when driving a civilian vehicle. On the other hand, only 77.0% of personnel reported always wearing a seatbelt when operating a military vehicle. This difference may be partly attributable to the operational challenges of working inside a military vehicle (e.g., handling weapons, exiting a vehicle rapidly). Nevertheless, seatbelt use in military vehicles requires further investigation.

Conclusion

Findings from the HLIS 2013/14 Regular Force report indicate some positive trends in the health of CAF personnel as well as some challenges. Most notably, encouraging trends were noted for smoking and physical activity. In addition, awareness of the StF health promotion programs increased and more than half of all Regular Force personnel intended to exercise more, improve their diet, spend more time with family and friends, and/or lose weight within the next year, in an effort to improve their health.



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Although little change was noted in the percentage of personnel engaged in harmful drinking, a substantial proportion of personnel are still engaged in high risk/harmful drinking behaviours including binge drinking and continued efforts to promote responsible drinking are warranted.

The findings also highlight several areas that could benefit from further study. The most prominent challenges that merit further exploration include: the increased proportion of obese personnel; poor nutrition; and the unexplained increase in repetitive strain injuries, all of which can affect both the short- and long-term health of CAF personnel.

The information contained in this report identifies some key areas that through a strategic review of current policies and programs could augment the health of CAF personnel and their deployability. Although current health promotion programs are targeting the areas of greatest health consequence to the CAF, there are always improvements to be made in how programs are delivered and greater support to be gained from the chains of command and other partners in improving the health of CAF personnel.





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Introduction

The Health and Lifestyle Information Survey (HLIS) is a comprehensive population-based health survey that provides a snapshot of the overall health status of Canadian Armed Forces (CAF) personnel. Full-time CAF personnel are specifically excluded from other Canadian population-based surveys, making the HLIS a key source of information for lifestyle behaviours and health care use and satisfaction. This cross-sectional survey is conducted every four to five years to monitor the health of CAF personnel with the goal of providing information to optimize the health of CAF personnel. Separate surveys are conducted for both the Regular and Reserve Force. This report focuses on Regular Force personnel only.

The HLIS collects information on a wide variety of health topics including: general health and well-being; lifestyle behaviours; mental and social wellness; women's health issues; deployment health; and occupational health and safety issues. In addition, information on the awareness and use of CAF health promotion programs, and the use and satisfaction with health care services is collected. The results are used to identify priority areas for interventions aimed at sustaining a healthy and readily deployable force.

This particular HLIS coincided with the end of Canada's combat mission in Afghanistan in which more than 40,000 CAF personnel served in the theatre of operations between 2001 and 2014. Canada's combat role ended in 2011, followed by the end of its training contribution to Afghanistan's army and police force in March 2014.

I.1 Background

The HLIS is a long running health survey designed to collect data on the health of CAF personnel. The survey underwent major revisions in 2000, with further refinement made to the questionnaire and survey design in 2004 and 2008/9. Minimal changes were made to the 2013/14 survey to enable comparisons to the 2004 and 2008/9 surveys. The survey has maintained a set of core questions for comparison purposes to previous surveys and has included other questions based on emerging issues and changing needs in the CAF. The HLIS is designed, administered and analyzed by the Epidemiology Section, Directorate Force Health Protection (DFHP).

I.1.1 Previous Health and Lifestyle Information Surveys

In 2000, the HLIS was a census of the entire CAF population and had a strong focus on occupational health issues. The mail survey had four survey versions available in both English and French. Each version contained an identical set of core questions along with unique version-specific questions on different health determinants. The response rate was 50%.

In 2004, the HLIS was changed to a single version mail survey with a focus on behavioural risk factors and barriers to healthy lifestyle changes. The survey included many of the same questions as the HLIS 2000. The survey sampling strategy was changed from a census to a stratified random sample to minimize costs and focus resources on increasing response rates. Females and personnel deployed in the last year were over-



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sampled to ensure adequate precision to enable comparisons between these subpopulations. The estimated sample size was 2,500 Regular Force personnel. The sample size was doubled based on the HLIS 2000 response rate of 50%. Sixty-two percent of survey participants responded to the survey.

The HLIS 2008/9 focused on the health of personnel who had deployed overseas; hence, a stratified random sample was used to allow for comparisons between males and females, officers and non-commissioned members (NCMs), and those deployed and not deployed in the past two years. To control for the effect of seasonality, the survey sample was randomly allocated into three groups and sent out every four months. The estimated sample size was 3,844 Regular Force personnel. These estimates incorporated a non-response of 50% based on previous surveys. An interim analysis noted a low response rate for male NCMs. To address this issue, a supplementary sample of male NCMs was randomly selected from the original sampling frame to ensure more precise estimates for this subpopulation. An additional 999 male NCMs were included in the sample. As with the 2004 survey, all results were weighted to represent the Regular Force population and directly standardized to allow for comparisons to the 2004 survey. The response rate for the HLIS 2008/9 Regular Force survey was 53.0% (Table I-1).

Table I-1: Summary of past Regular Force Health and Lifestyle Information Surveys

Survey Year	Sample Size	Stratified	Adjusted ^a Response Rate	Focus
2000	Census 54,474	No	50.0%	Occupational and deployment health focus
2004	5,036 (adjusted for a 50% response rate)	<ul style="list-style-type: none"> • Sex • Deployed in the past year 	62.0%	Behavioural risk factors and barriers to lifestyle changes
2008/9	3,844 (adjusted for a 50% response rate)	<ul style="list-style-type: none"> • Sex • Rank • Deployed in the past two years 	53.0%	The health of personnel who have recently deployed overseas

^a Numerator adjusted for retired, released, and deceased Canadian Armed Forces personnel.

I.1.2 Current Health and Lifestyle Information Survey

The 2013/14 survey consisted of over 200 questions and took approximately an hour to complete. Minimal changes were made to the survey content of the 2013/14 survey to enable comparisons to both the 2004 and 2008/9 surveys. Consultations were held with subject matter experts to review the survey to ensure face and content validity. Validated survey instruments, and questions from the Canadian Community Health Survey (CCHS), a population-based health survey of Canadians, were used whenever possible. Additional content on environmental exposures, anger management and stress, nutrition, and health care service satisfaction was added. The revised questionnaire was piloted with a group of 12 CAF personnel and revised accordingly based on their feedback. The survey was formatted to enable the use of optical character recognition software for data capture.

The primary objectives of the HLIS 2013/14 were:

- a) To assess the current health status (physical and mental health) of CAF personnel;
- b) To measure the prevalence of behavioural risk factors among CAF personnel;



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- c) To measure the awareness and use of health promotion campaigns and programs;
- d) To measure the health care utilization and satisfaction with CAF health care services; and
- e) To describe occupational/deployment related health issues.

Authorization to conduct the survey was received from the Minister of National Defence and the three environmental commands via the Director General Military Personnel Research and Analysis (Coordination number: 1070-12N). Research ethics approval was given by Veritas Review Board, an accredited independent external research ethics board based in Montreal, Québec.

I.2 Methods

I.2.1 Sampling Plan

The target population for the HLIS 2013/14 included all trained effective strength Regular Force personnel aged 18 to 60 years. Effective strength included Regular Force personnel less the military manning overhead and the non-effective strength (personnel on the advanced training list, basic training list, subsidized university training list, retirement leave, service personnel holding list, on leave without pay, absent without authority, detained, suspended or in civil custody). A listing of eligible personnel was obtained from the Directorate Human Resources Information Management on August 28, 2013 consisting of 56,574 Regular Force personnel (Table I-2).

Table I-2: Total Regular Force effective strength population, as of August 28, 2013

Rank	Age Group	Age	Sex		Total
			Female	Male	
NCM	Group	18 – 29	1,166	11,752	12,918
		30 – 39	1,996	12,891	14,887
		40 – 49	1,766	9,519	11,285
		50+	465	2,972	3,437
	Total		5,393	37,134	42,527
Officer	Group	18 – 29	616	2,515	3,131
		30 – 39	837	3,697	4,534
		40 – 49	574	3,589	4,163
		50+	172	2,047	2,219
	Total		2,199	11,848	14,047
TOTAL			7,592	48,982	56,574

I.2.2 Sample Size

The sample size and sampling plan along with drawing the random sample were devised and conducted by Statistics Canada in consultation with the DFHP. A random sample stratified by age, sex, and rank was drawn



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from the target population. The randomly selected sample was large enough to estimate the prevalence of any condition of interest in males and females, and in officers and NCMs separately, within 3% of its true population value, at a 95% confidence level.

Once the sample size was established to guarantee a 3% margin of error (ME) for sex and rank, several iterations of calculations were performed to redistribute the sample so that the same margin of errors were expected for each of the age groups, as well as within the crossings of any of the stratification variables (e.g., sex by age, sex by rank, rank by age). Based on the calculations and assumptions the expected MEs were:

- 4.7% for each of the four age groups;
- 6.3% for any sub-group in the crossing of age group and sex;
- 4.0% for any sub-group in the crossing of rank and sex; and
- 6.4% for any sub-group in the crossing of age group and rank.

A design effect of one was assumed for the survey, which implies that the survey did not lose any precision by doing a more complex sampling design rather than a simple random sample. Although stratification by age, sex, and rank was done, the majority of the variables in the survey are highly likely to be more similar within any of the age, sex, and rank groups. Consequently, an inflation factor to account for the design effect was not required (Appendix A).

To adjust for non-response, a differential response rate between various age, sex, and rank sub-groups was used (Table I-3). The predicted response rates were based on what was observed in the 2008/9 survey, in that males were less likely to respond than females (43% vs. 58%), NCMs were less likely to respond than officers (41% vs. 63%), and the fact that response rates tended to increase with age.

Table I-3: Predicted response rates by age, sex, and rank

Rank	Age Group	Sex		Total	
		Female	Male		
NCM	Age Group	18 – 29	31%	23%	41%
		30 – 39	52%	38%	
		40 – 49	57%	42%	
		50+	57%	42%	
Officer	Age Group	18 – 29	48%	36%	63%
		30 – 39	80%	59%	
		40 – 49	88%	65%	
		50+	88%	65%	
	Age Group	18 – 29			27%
		30 – 39			45%
		40 – 49			50%
		50+			50%
TOTAL			58%	43%	45%



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The calculations included the automatic adjustments, as well as the manual interventions to the sample size to assure that all of the constraints were respected. Additionally, manual verification was done to ensure that the sample size did not exceed the actual number in a cell. The estimated final sample size adjusted for non-response was 4,314 Regular Force personnel (Table I-4). The sample of participants was then randomized into one of three cycles to complete the survey.

Table I-4: Sample size requirements by age, sex, and rank

Rank	Age Group	Sex		Total
		Female	Male	
NCM	Age 18 – 29	398	605	1,003
	Group 30 – 39	240	365	605
	40 – 49	217	329	546
	50+	207	314	521
	Total	1,062	1,613	2,675
Officer	Age 18 – 29	244	363	607
	Group 30 – 39	150	223	373
	40 – 49	136	202	338
	50+	129	192	321
	Total	659	980	1,639
TOTAL		1,721	2,593	4,314

I.2.3 Survey Distribution

The mail out of the paper-based surveys commenced at the beginning of October 2013. The surveys were distributed in three cycles over a one-year period to account for seasonal differences in responses. Accordingly, surveys were sent to one-third or 1,438 Regular Force personnel each cycle. Cycle 1 surveys were mailed in October 2013, cycle 2 surveys were mailed in January 2014, and cycle 3 surveys were mailed in May 2014. Receipt of a French or English version of the survey was contingent on the member's first official language captured in the CAF's Human Resources Management System.

Similar to previous iterations of the HLIS, Dillman's Tailored Design Method (Dillman et al., 2009) was used to maximize the survey response rate. In addition to the two reminders used with the HLIS 2004 and HLIS 2008/9 surveys, the HLIS 2013/14 incorporated a pre-notification letter and shortened the follow-up time between receipt of the first survey package and receipt of the first reminder from two weeks to one week to augment the response rate.

All printed survey materials were sent to the participant's work address. Participants first received a pre-notification letter signed by the Chief of Defence Staff detailing the purpose of the survey and encouraging participation. Second, a complete survey package was mailed to participants one week later. Each survey package contained a cover letter of support from the Surgeon General explaining the value of the survey and detailing how to complete it, a copy of the HLIS 2013/14 survey in French or English, a pre-addressed stamped return envelope for the survey, and a postcard with a unique identifier to be mailed separately from



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the completed survey. The postcard provided a means to track non-respondents for follow-up reminders since the survey itself had no identifiers. Third, a thank you/reminder letter endorsed by the Surgeon General was sent one week after the survey package to all participants. The intent of the letter was to prompt participants to complete the survey and to thank those participants who had already done so. Finally, a second survey package was sent to all non-respondents three weeks after the first thank you/reminder letter.

In addition to applying Dillman’s Tailored Design Method to increase the response rate, local survey coordinators were nominated at each base/wing to serve as a resource for survey participants and to liaise with the mailroom to ensure survey materials reached the selected participants or were redirected accordingly.

The data collection period commenced with the mail-out of the first surveys in October 2013 and concluded at the end of September 2014.

I.2.4 Response Rate

Surveys were mailed to 4,314 Regular Force personnel, of which 2,500 were completed for a crude response rate of 58% (Table I-5). After adjusting for participants who did not receive their survey (deceased (n = 2), released (n = 25), on leave (n = 70), retired (n = 8)) or could not be located despite multiple attempts (n = 21), the response rate was 60% (4,314 – 126 = 4,188). Response rates were higher among older personnel, females, and officers.

Table I-5: Crude response rates by age, sex, and rank

Rank	Age Group	Age	Sex				Total	
			Female		Male		%	n
			%	n	%	n		
NCM	Age	18 – 29	46.5	185	32.2	195	37.9	380
	Group	30 – 39	57.9	139	48.2	176	52.1	315
		40 – 49	64.5	140	59.6	196	61.5	336
		50+	72.0	149	77.1	242	75.0	391
		Total		57.7	613	50.2	809	53.2
Officer	Age	18 – 29	61.9	151	55.4	201	58.0	352
	Group	30 – 39	72.0	108	63.2	141	66.8	249
		40 – 49	71.3	97	70.8	143	71.0	240
		50+	77.5	100	71.4	137	73.8	237
		Total		69.2	456	63.4	621	65.8
TOTAL		62.1	1,069	55.2	1,431	58.0	2,500	

I.2.5 Data Cleaning

The data was cleaned and analyzed using Stata v14.0 (StataCorp, 2015). Data was imputed for surveys missing key demographic data required to weight the sample to the target population. Fourteen values for age were imputed based on responses to other questions in the survey. If the respondent was found to be less than



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40 years, an average value of 29 was imputed (18 – 39). If it was determined that the respondent was within an age range (40 – 49, 50 – 60) the mean of the age group was imputed. Eighteen surveys were missing a value for the sex of the respondent. Based on responses to the women’s health chapter, sex was imputed as either male or female. Finally, 19 surveys were missing rank. Responses to age, sex, hours sitting, years in the Regular Force, years in the Reserve Force, education, and base were used to classify the respondent as a NCM or an officer. Two personnel independently reviewed the data to determine the rank. Based on a 95% agreement, rank was imputed for 19 surveys. One survey was removed for inconsistent responses throughout the survey, to give a total of 2,499 surveys available for analysis.

Data validation was done by applying logic checks and examining the distribution of the data. Outliers were verified with the paper copy and corrected accordingly. Adherence to skip patterns was also checked and responses were adjusted according to the response to the “step in” question. In addition, variables that included the option for a text response were individually reviewed and either grouped into a new category if there were more than 10 similar responses or re-categorized into an existing category when appropriate. An identical method was used with the 2004 and 2008/9 data to ensure comparability across the surveys. Key demographic variables, including age group, rank, marital status, highest education level, and level of mental health care available locally, were derived. Element was used as a proxy for command.

I.2.6 Statistical Analysis

The 2013/14 data were weighted according to the stratified sampling plan (by age group (18 – 29, 30 – 39, 40 – 49, and 50 – 60), sex (male or female), and rank (NCM or officer)) to the 2013 Regular Force population of 56,574 using the inverse probability of selection. All estimates presented throughout this report were weighted. Caution should be used when interpreting estimates based on fewer than 20 unweighted observations. Small numbers are associated with a larger amount of variance around their estimate and may be less stable compared to estimates based on larger numbers. For this reason, estimates based on less than 10 unweighted observations were not reported. Of note, only statistically significant results are presented in this report.

All analyses were done using the svyset package in Stata v14.0 (StataCorp, 2015) to account for the complex sampling design. Standard errors were computed using the linearized variance estimator. Percents and 95% confidence intervals (CIs) were computed for categorical data. The normal approximation method was used to calculate 95% CIs. To determine a statistically significant relationship between two variables: logistic regression was used for binary dependent variables; ordinal regression was used for ordered or Likert scale dependent variables; and linear regression was used for continuous dependent variables. Both logistic and ordinal regressions compute odds ratios (ORs) and corresponding 95% CIs. If the 95% CIs included one, the association was considered not significant. Of note, although the OR signifies the magnitude of a relationship, the magnitude of the estimate in highly prevalent conditions can be overestimated. Therefore, computation of the OR was only used to determine statistical significance; prevalence estimates and their corresponding 95% CIs were always compared to ascertain the magnitude of differences identified as statistically significant through logistic regression. Linear regression was used to determine statistical significance for continuous variables at the 5% level.

I.2.6.1 Standardization of Results

Direct standardization was used to compare results between survey years (2004, 2008/9, and 2013/14). The 2013 Regular Force population was chosen as the standard population and weights were adjusted to ensure that comparison years (2004 and 2008/9) had the same age, sex, and rank distribution as the 2013

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Regular Force population. Of note, the standardized estimates in this report are not comparable to estimates in the 2004 and 2008/9 reports because of the use of different standard populations.

I.2.7 Demographic Characteristics

The demographic characteristics of the respondents weighted to the 2013 effective strength Regular Force population are presented in Table I-6. Over two-thirds (62.7%) of personnel were under 40 years of age, about 1 in 8 personnel were female, and over three-quarters of personnel were NCMs. Two-thirds of personnel had some post-secondary education or had completed university, the majority of personnel were married or living common-law, and 50% of personnel served under the land element or army.

Table I-6: Distribution of demographic characteristics among effective strength Regular Force personnel, 2013/14

Variable	Category	Percent	(95% CI)
Age (years) ^a	18 – 29	28.4	
	30 – 39	34.3	
	40 – 49	27.3	
	50 – 60	10.0	
Sex ^a	Female	13.4	
	Male	86.6	
Rank ^a	NCM	75.2	
	Officer	24.8	
Highest education level	Secondary	34.7	(32.2, 37.3)
	Some post-secondary	39.9	(37.3, 42.5)
	Completed university	25.4	(24.3, 26.5)
Marital status	Married or common-law	68.6	(66.1, 71.1)
	Widowed, separated, or divorced	9.3	(7.9, 11.0)
	Single	22.1	(20.0, 24.3)
Service element	Air	31.7	(29.3, 34.2)
	Sea	18.2	(16.2, 20.4)
	Land	50.0	(47.4, 52.8)
First official language	French	28.2	(25.8, 30.8)
	English	71.8	(69.2, 74.2)

^a Stratification variables.



I.2.8 Comparisons to Other Surveys

Findings from surveys of other allied military organizations and of the general Canadian population are presented throughout this report to provide context for the HLIS 2013/14 results. However, even when surveys share identical questions (e.g., the HLIS paper questionnaire and the Canadian Community Health Survey (CCHS) interviewer-administered questionnaire), their results are difficult to compare. It has been shown that people respond to the same questions differently, depending on survey mode (Christensen, 2014). The surveyed populations may vary on demographic characteristics and other important health determinants, further prohibiting direct comparisons of estimates.

I.2.9 Limitations

Although cross-sectional surveys are an efficient method of collecting data on populations, there are some inherent biases that may affect the survey results. Reporting bias, the selective revealing or suppression of information (Last, 1995) could influence the results of the survey given the personal and sensitive nature of some of the questions in the HLIS. As well, some of the questions ask participants to recall events that occurred in the past year. Differences in recall among participants could affect the accuracy or completeness of data. In addition, individuals who respond to surveys may be different from individuals who don't respond to surveys. In this survey the 40% who didn't complete a survey may be different from the 60% who did complete a survey.

Furthermore, the HLIS collects self-reported data which could introduce social desirability bias causing estimates to be either underestimated or overestimated. For example, a comparison of body mass index using self-reported to actual measures of height and weight found self-reported height and weight underestimated the prevalence of obesity by about 7% (Gorber, 2008).

In addition, this report provides only the results of univariate and bivariate analyses, which may oversimplify the relationship under study. In other words, it assesses the association between one factor (e.g., age of respondent) and one outcome of interest (e.g., percentage of personnel physically active) at a time. However, most health issues are influenced by multiple factors and multivariable analyses are required to examine the independent effects of these factors.

Lastly, cross-sectional surveys collect data on both exposure/risk factors and outcomes at the same time. It is, therefore, difficult to determine whether the exposure preceded or followed the disease. Additional criteria should be used to determine causation.

I.3 References

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Chapter 1 – Health Status

1.1 Introduction

The World Health Organization defines health as “a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity” (WHO, 1948). The health of Canadian Armed Forces (CAF) personnel is of paramount importance to the success of CAF operations, and to the fulfillment of the CAF mission to: (1) defend Canada; (2) defend North America in partnership with U.S. forces; and (3) contribute to broader international security.

The HLIS 2013/14 asked respondents a series of detailed questions to collect information on all aspects of their health. The following chapter will present metrics on the overall health status of Regular Force personnel. Subsequent chapters will discuss more specific aspects of health.

1.2 Self-Rated Health

Self-rated health status is a very common measure in public health research. This popular proxy for overall health status is highly predictive of well-being and mortality (Sargent-Cox, 2010). In fact, the World Health Organization considers that the rating of one’s own health is one of the best population health indicators available (WHO, 1996; Sargent-Cox, 2010). The HLIS 2013/14 asked respondents to rate their health as either: (1) excellent; (2) very good; (3) good; (4) fair; or (5) poor.

Nearly two-thirds (65.4%) of all Regular Force personnel rated their health as either excellent or very good (Figure 1-1). The distribution of Regular Force personnel across the various categories of self-rated health remained virtually unchanged from 2004 and 2008/9¹ (Figure 1-1). These findings were strikingly similar to those of the Canadian Community Health Survey, which measured self-rated health in the general Canadian population (Statistics Canada, 2010).

¹ Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.



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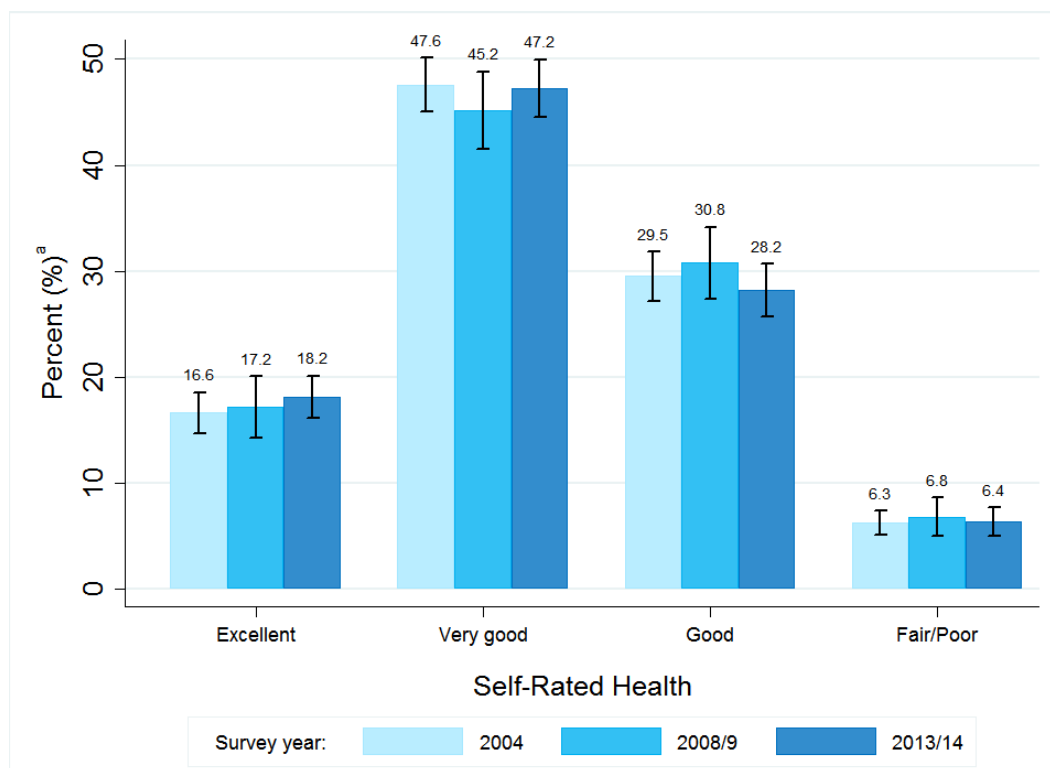


Figure 1-1: Self-rated health status of Regular Force personnel.

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

In 2013/14, reporting higher levels of health was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; (2) officers compared to NCMs; (3) Land personnel compared to Air personnel; (4) normal weight personnel compared to overweight and obese personnel; (5) non-smokers compared to smokers; and (6) moderately and sufficiently active personnel compared to inactive personnel² (Table 1-1). Levels of self-rated health were not different between categories of sex, harmful drinking habits³, or deployed in the last two years.

² Physical activity level measured using the Godin Leisure-Time Exercise Questionnaire. See Chapter 7 for more details.

³ Harmful drinking habits were measured using the AUDIT scale. See Chapter 9 for more details.



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Table 1-1: Self-rated health status of Regular Force personnel

Variable	Category	Percent (95% CI)								Odds Ratio (95% CI)
		Excellent		Very Good		Good		Fair/Poor		
Overall		18.2	(16.2, 20.1)	47.2	(44.5, 50.0)	28.2	(25.8, 30.7)	6.4	(5.1, 7.7)	
Age (years)	18 – 29	24.6	(20.1, 29.1)	50.6	(45.3, 56.0)	20.5	(16.1, 24.9)	4.2	(2.0, 6.4)	Reference
	30 – 39	17.9	(14.2, 21.5)	48.2	(42.9, 53.4)	27.7	(22.9, 32.5)	6.2	(3.5, 8.9)	0.65 (0.50, 0.86)
	40 – 49	13.1	(10.2, 16.0)	44.6	(39.8, 49.4)	34.8	(30.1, 39.4)	7.6	(5.1, 10.0)	0.46 (0.36, 0.60)
	50 – 60	14.6	(11.4, 17.9)	41.4	(36.9, 45.9)	34.0	(29.8, 38.3)	10.0	(7.3, 12.7)	0.44 (0.34, 0.58)
Rank	NCM	14.5	(12.1, 16.9)	47.1	(43.6, 50.5)	31.1	(28.0, 34.3)	7.3	(5.5, 9.0)	Reference
	Officer	29.0	(25.8, 32.3)	47.7	(44.1, 51.3)	19.5	(16.6, 22.3)	3.8	(2.4, 5.2)	2.21 (1.83, 2.68)
Service element	Air	17.5	(14.3, 20.6)	45.2	(40.7, 49.8)	30.4	(26.1, 34.7)	6.9	(4.4, 9.4)	Reference
	Sea	13.5	(9.6, 17.4)	47.4	(41.0, 53.9)	31.1	(25.0, 37.1)	8.0	(4.5, 11.4)	0.87 (0.65, 1.15)
	Land	20.4	(17.2, 23.6)	48.3	(44.3, 52.4)	26.1	(22.5, 29.6)	5.2	(3.5, 7.0)	1.28 (1.02, 1.60)
Body mass index	Normal weight	26.9	(22.7, 31.1)	52.2	(47.1, 57.2)	17.1	(13.2, 21.0)	3.9	(1.9, 5.9)	Reference
	Overweight	19.1	(16.0, 22.2)	50.6	(46.5, 54.6)	26.1	(22.5, 29.7)	4.3	(2.8, 5.8)	0.63 (0.49, 0.80)
	Obese	6.4	(3.7, 9.2)	36.2	(30.7, 41.7)	44.4	(38.7, 50.1)	13.0	(9.0, 16.9)	0.20 (0.15, 0.27)
Current smoker	No	20.5	(18.1, 22.8)	47.2	(44.2, 50.3)	26.3	(23.6, 29.0)	6.0	(4.6, 7.5)	Reference
	Yes	8.9	(5.0, 12.8)	47.7	(40.7, 54.7)	35.6	(28.8, 42.5)	7.7	(4.3, 11.2)	0.57 (0.44, 0.74)
Physical activity level	Inactive	5.5	(1.5, 9.4) ^a	25.9	(17.1, 34.6)	46.8	(36.6, 57.0)	21.8	(13.4, 30.2)	Reference
	Moderately active	10.1	(4.2, 16.0)	40.7	(31.0, 50.4)	39.9	(30.3, 49.5)	9.3	(3.3, 15.4) ^a	2.36 (1.39, 4.02)
	Sufficiently active	20.1	(17.8, 22.4)	49.9	(46.9, 52.9)	25.3	(22.7, 27.9)	4.7	(3.4, 5.9)	5.27 (3.50, 7.93)

^a Fewer than 20 unweighted observations; estimate may be unstable; interpret with caution.



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HLIS respondents were also asked if their health limited their participation in vigorous physical activities. Overall, 61.2% of Regular Force personnel reported that their participation in vigorous activities was not limited by their health, and an additional 30.7% reported that their participation in such activities was only “limited a little” by their health. These percentages remained virtually unchanged from 2008/9 (Figure 1-2).

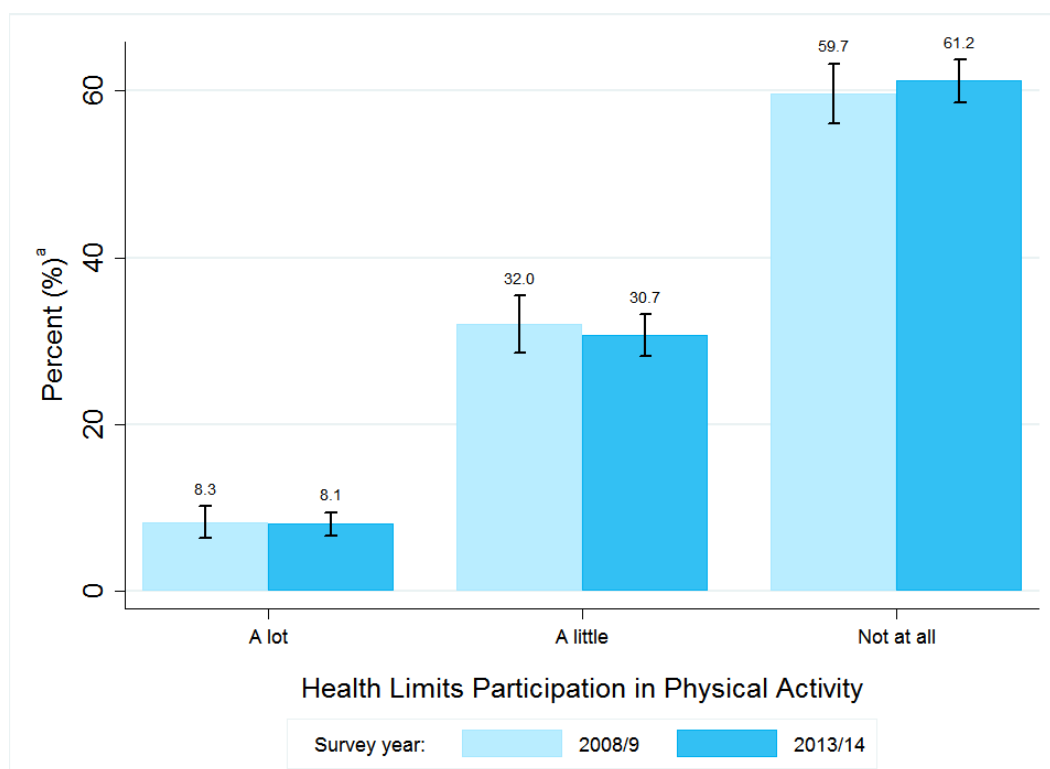


Figure 1-2: Degree to which health limits Regular Force personnel from participating in vigorous physical activity.

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

In 2013/14, reporting greater limitation to participating in vigorous physical activities because of one’s health was more likely in: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; (2) NCMs compared to officers; (3) Air personnel compared to Land personnel; (4) overweight and obese personnel compared to normal weight personnel; and (5) inactive personnel compared to moderately or sufficiently active personnel (Table 1-2). There were no differences between categories of sex, smoking status, or harmful drinking behaviour. It is interesting to note that nearly 40% of inactive personnel do not feel that their health limits their participation in vigorous physical activity. In other words, health limitations do not account for the low levels of activity in nearly 40% of inactive personnel. This finding highlights a large segment of the inactive population in which health promotion interventions targeting physical activity could be particularly effective. The physical activity level of Regular Force personnel is discussed more thoroughly in Chapter 7.



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Table 1-2: Degree to which health limits Regular Force personnel from participating in vigorous physical activity

Variable	Category	Percent (95% CI)			Odds Ratio (95% CI)
		A Lot	A Little	Not at All	
Overall		8.1 (6.6, 9.5)	30.7 (28.3, 33.2)	61.2 (58.6, 63.8)	
Age (years)	18 – 29	2.6 (0.9, 4.3)	20.3 (16.0, 24.7)	77.1 (72.6, 81.6)	Reference
	30 – 39	7.0 (4.2, 9.8)	27.6 (22.9, 32.3)	65.4 (60.4, 70.4)	1.83 (1.31, 2.56)
	40 – 49	11.5 (8.4, 14.6)	41.2 (36.4, 46.0)	47.3 (42.5, 52.1)	3.75 (2.75, 5.12)
	50 – 60	17.9 (14.5, 21.3)	42.4 (37.9, 46.9)	39.7 (35.2, 44.2)	5.42 (3.97, 7.38)
Rank	NCM	9.0 (7.2, 10.8)	31.3 (28.2, 34.4)	59.6 (56.4, 62.8)	Reference
	Officer	5.1 (3.5, 6.7)	28.9 (25.7, 32.1)	66.0 (62.7, 69.3)	0.74 (0.61, 0.90)
Service element	Air	8.1 (5.5, 10.6)	36.4 (32.0, 40.9)	55.5 (50.9, 60.0)	Reference
	Sea	10.9 (7.2, 14.6)	25.5 (19.9, 31.0)	63.6 (57.6, 69.7)	0.78 (0.56, 1.08)
	Land	6.8 (4.9, 8.7)	29.2 (25.6, 32.8)	64.0 (60.2, 67.8)	0.72 (0.57, 0.91)
Body mass index	Normal weight	4.3 (2.3, 6.3)	21.9 (17.9, 25.9)	73.8 (69.6, 78.1)	Reference
	Overweight	6.2 (4.4, 8.0)	31.0 (27.3, 34.7)	62.7 (58.9, 66.6)	1.66 (1.26, 2.18)
	Obese	14.3 (10.4, 18.2)	39.4 (33.8, 44.9)	46.3 (40.6, 52.1)	3.37 (2.45, 4.62)
Physical activity level	Inactive	30.9 (21.9, 39.9)	29.7 (20.4, 39.0)	39.4 (29.4, 49.4)	Reference
	Moderately active	12.9 (6.5, 19.3)	34.3 (25.2, 43.5)	52.8 (43.0, 62.5)	0.43 (0.23, 0.81)
	Sufficiently active	5.5 (4.2, 6.8)	30.3 (27.6, 33.0)	64.2 (61.4, 67.0)	0.25 (0.15, 0.42)



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1.3 Time Away from Work

Work absenteeism is another measure associated with overall health status (Allen, 2008). Although employees may be absent from work for a wide range of reasons – many of which are unrelated to health – poor overall health is a well-known contributor to higher rates of work absenteeism (Hendriks, 2015; Gustafsson, 2014; Merchant, 2014). HLIS 2013/14 participants were asked how many days they had been absent from work over the past month.

In the month preceding survey completion, 35.4% of all Regular Force personnel missed at least one day of work (Table 1-3). Personnel who missed at least one day of work in the last month were more likely to be: (1) aged 30 – 49 years compared to 18 – 29 years; (2) females compared to males; and (3) in the Air element compared to the Land element (Table 1-3). There were no differences between NCMs and officers.

Table 1-3: Percentage of Regular Force personnel who missed at least one day of work in the last month

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		35.4	(32.8, 37.9)		
Age (years)	18 – 29	28.0	(23.3, 32.7)	Reference	
	30 – 39	38.9	(33.8, 44.0)	1.64	(1.19, 2.25)
	40 – 49	38.9	(34.1, 43.6)	1.64	(1.20, 2.23)
	50 – 60	34.3	(29.9, 38.6)	1.34	(0.99, 1.82)
Sex	Female	41.9	(38.5, 45.4)	Reference	
	Male	34.3	(31.4, 37.3)	0.72	(0.60, 0.88)
Service element	Air	39.3	(34.8, 43.8)	Reference	
	Sea	39.3	(33.0, 45.6)	1.00	(0.72, 1.39)
	Land	31.1	(27.4, 34.8)	0.70	(0.54, 0.90)

Among Regular Force personnel who had missed at least one day of work in the last month, the average number of days lost to absenteeism was 4.5 (95% CI: 3.9, 5.1). Overall, an estimated 91,718 days (95% CI: 77,801, 105,636) had been lost to absenteeism in the Regular Force in the month preceding survey completion. The reasons accounting for the greatest number of work days lost to absenteeism were: (1) illness; (2) caring for dependent children or elders; and (3) disability from an accident or an injury (Figure 1-3).



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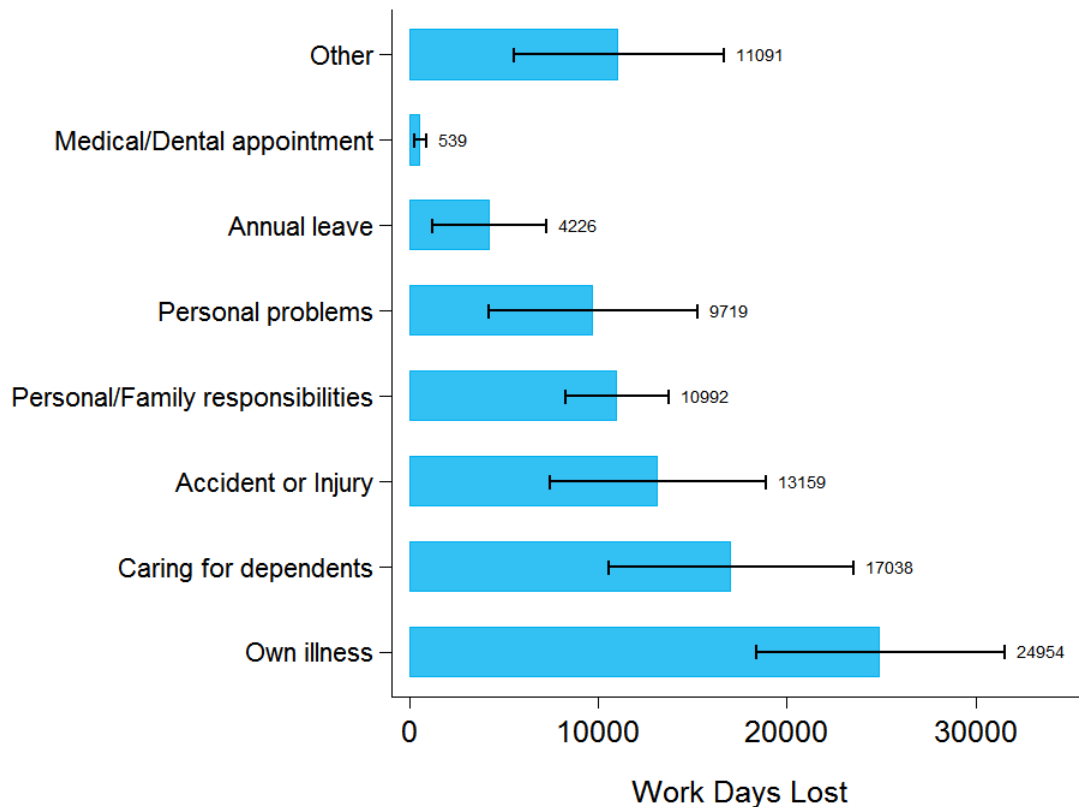


Figure 1-3: Number of days lost to absenteeism in the Regular Force last month.

As depicted in Figure 1-3, Regular Force personnel are sometimes absent from work for reasons that are unavoidable, even in a perfectly healthy working population (e.g., medical appointments, personal responsibilities, caring for dependents, annual leave). However, Regular Force personnel are also sometimes absent from work for health-related reasons (e.g., their own illness, or their disability from an accident or an injury). Such health-related absences are considered preventable, and are of much greater concern to the CAF. In the month preceding survey completion, 18.4% of all Regular Force personnel missed at least one day of work because of their own illness, or their own disability from an accident or an injury (Table 1-4). Having missed at least one workday in the last month due to health-related problems was more likely in: (1) personnel aged 30 – 39 years compared to personnel aged 18 – 29 years; (2) females compared to males; (3) Air personnel compared to Land personnel; and (4) inactive personnel compared to sufficiently active personnel (Table 1-4). There were no differences between categories of rank, obesity, smoking status, or harmful drinking behaviour. Overall, an estimated 38,113 days (95% CI: 29,332, 46,895) were lost to health-related absenteeism in the Regular Force in the month preceding survey completion (Figure 1-3).



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Table 1-4: Percentage of Regular Force personnel who missed at least one day of work in the last month because of health issues

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		18.4	(16.4, 20.6)		
Age (years)	18 – 29	14.6	(11.3, 18.6)	Reference	
	30 – 39	20.4	(16.5, 24.9)	1.50	(1.02, 2.22)
	40 – 49	19.4	(15.9, 23.5)	1.41	(0.96, 2.07)
	50 – 60	19.7	(16.3, 23.5)	1.44	(0.99, 2.09)
Sex	Female	24.4	(21.5, 27.6)	Reference	
	Male	17.5	(15.2, 20.0)	0.65	(0.52, 0.82)
Service element	Air	23.3	(19.6, 27.5)	Reference	
	Sea	22.6	(17.6, 28.5)	0.96	(0.66, 1.40)
	Land	13.8	(11.3, 16.8)	0.53	(0.39, 0.72)
Physical activity level	Inactive	26.8	(19.3, 36.0)	Reference	
	Moderately active	20.9	(14.4, 29.4)	0.72	(0.39, 1.35)
	Sufficiently active	17.4	(15.3, 19.8)	0.58	(0.37, 0.91)

The monthly estimates presented above translate to roughly eight work days lost because of illness or disability from accidents or injuries per year, for each individual serving in the Regular Force in 2013/14. By comparison, in the general Canadian population, average full-time employees were absent from work for 7.7 days because of illness or disability in 2011 (Dabboussy, 2012). However, a direct comparison of health-related absenteeism rates between military and civilian work forces is difficult, because of important differences in the distribution of sex and age in these two populations. Furthermore, unlike some of their civilian counterparts, all Regular Force personnel are entitled to paid sick leave, a factor that has been shown to increase health-related absenteeism rates (Dabboussy, 2012). In addition, the physical nature of military work might prohibit many military personnel from returning to work until they have fully recovered from their injuries.

It should be noted that a comparison of health-related absenteeism with previous versions of the HLIS could not be done because of changes in the wording of questions on absenteeism.

1.4 Chronic Conditions

In the HLIS 2013/14, a chronic condition was defined as a health issue that has lasted or is expected to last for at least six months, and that has been diagnosed by a health professional. Overall, 52.4% of Regular Force personnel reported having a chronic condition diagnosed by a health professional. This percentage had not changed from 2004 and 2008/9 (Table 1-5). Reporting a diagnosed chronic condition was more likely in: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; and (3) Air personnel compared to Land personnel (Table 1-6). There were no differences by rank.



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Table 1-5: Percentage of Regular Force personnel who reported at least one diagnosed chronic condition, by survey year

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	53.7	(51.1, 56.3)	1.06	(0.91, 1.23)
2008/9	55.6	(51.9, 59.3)	1.14	(0.95, 1.37)
2013/14	52.4	(49.7, 55.0)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

Table 1-6: Percentage of Regular Force personnel who reported at least one diagnosed chronic condition

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		52.4	(49.7, 55.0)		
Age (years)	18 – 29	38.9	(33.8, 44.1)	Reference	
	30 – 39	47.2	(41.9, 52.4)	1.40	(1.03, 1.90)
	40 – 49	65.3	(60.7, 69.9)	2.96	(2.20, 3.98)
	50 – 60	72.8	(68.7, 76.8)	4.19	(3.10, 5.65)
Sex	Female	58.9	(55.6, 62.2)	Reference	
	Male	51.3	(48.3, 54.4)	0.74	(0.61, 0.88)
Service element	Air	57.2	(52.6, 61.7)	Reference	
	Sea	49.7	(43.3, 56.0)	0.74	(0.54, 1.01)
	Land	50.6	(46.6, 54.6)	0.77	(0.60, 0.98)

Overall, 28.3% of Regular Force personnel reported taking prescribed medications for a chronic condition at some point in the last month (Table 1-7). In other words, slightly more than half of all personnel with a diagnosed chronic condition had taken prescribed medication for at least one of their chronic conditions in the last month. This percentage had not changed substantially from 2008/9 (Table 1-7).

Table 1-7: Percentage of Regular Force personnel who took prescription medications in the last month for a diagnosed chronic condition

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2008/9	29.3	(26.1, 32.6)	1.05	(0.87, 1.27)
2013/14	28.3	(26.0, 30.6)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.



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As was the case in 2008/9, musculoskeletal problems accounted for an important portion of the chronic disease burden in Regular Force personnel. In 2013/14, the most prevalent diagnosed chronic conditions in the Regular Force were: (1) lower limb muscle or joint problems; (2) back problems; and (3) upper limb muscle or joint problems (Figure 1-4). In 2008/9, back problems and musculoskeletal problems had also contributed to the three most prevalent chronic conditions. Due to changes in the list of diseases used to ask survey respondents about their chronic conditions between the HLIS 2008/9 and the HLIS 2013/14, a direct comparison of the most prevalent chronic conditions in Regular Force personnel could not be done.

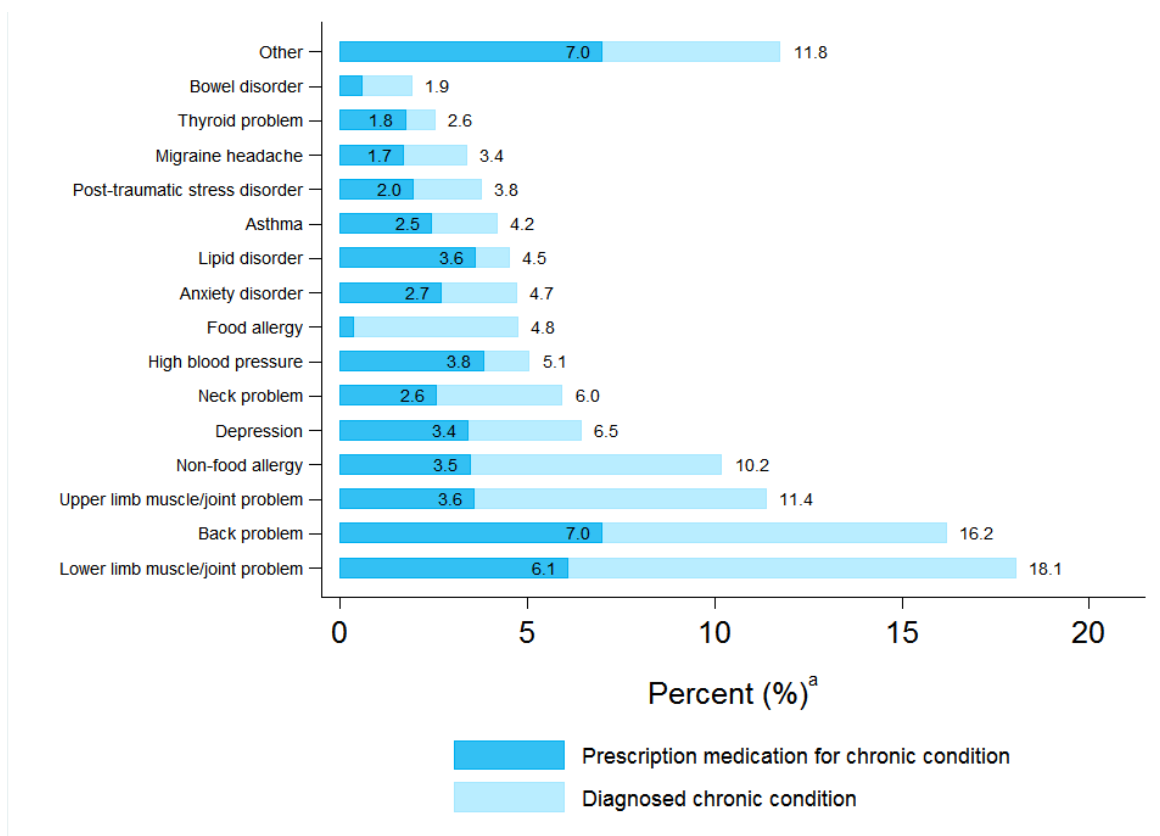


Figure 1-4: Percentage of Regular Force personnel: (1) with a diagnosed chronic condition; and (2) who took prescription medications for their chronic conditions in the last month.

^a Note that respondents could report more than one chronic condition.

1.5 Conclusion

The self-rated health of Regular Force personnel, the degree to which their health impedes participation in vigorous physical activities, and the overall prevalence of chronic conditions was largely unchanged between 2004, 2008/9 and 2013/14.

Nearly 40% of physically inactive personnel reported that their health status did not limit their participation in vigorous physical activities. Factors unrelated to health are likely responsible for the low levels of physical activity in a substantial proportion of inactive personnel.



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Nearly 20% of Regular Force personnel had missed at least one day of work in the last month because of their own illness, or their own disability from an accident or an injury. Overall, 38,113 work days had been lost due to these reasons in the month preceding questionnaire completion. However, health-related absenteeism rates in the Regular Force are consistent with those reported for the Canadian working population.

1.6 References

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Chapter 2 – Mental and Social Wellness

2.1 Introduction

Mental health is “a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (WHO, 2014). Mental health is fundamental to the short- and long-term well-being of Canadian Armed Forces (CAF) personnel; it is also of utmost importance in maintaining a strong and deployable military force. Ultimately, the mental wellness of the CAF has profound implications for health services utilization, resources, and planning.

The mental health of CAF personnel is affected by a unique and complex blend of biological, psychological, sociological, and occupational factors. On one hand, CAF personnel are recruited from the general Canadian population; their mental health status could therefore be expected to reflect that of their civilian counterparts. On the other hand, potential recruits with serious mental illnesses are screened out of the CAF. However, CAF personnel risk exposure to trauma and operational stress rarely seen elsewhere in Canadian society. They also face the same risks and vulnerabilities that can impact the mental health of the general Canadian population.

Recent years have seen an influx of political support and financial commitment to understand and optimize the mental health of CAF personnel. In 2013, the publication of the *Surgeon General’s Mental Health Strategy* consolidated the CAF plan to improve the mental health of its personnel (DND, 2013).

The following chapter contains results of the HLIS 2013/14 related to mental health. First, prevalence estimates of various mental health issues are presented. Second, CAF personnel’s utilization of mental health services is discussed. Finally, data on relationship status and family issues are provided.

HLIS 2013/14 results are compared to the results of previous HLIS surveys where applicable. However, important contextual differences should be kept in mind when results of different survey years are compared. Since the previous survey, many Canadian soldiers deployed in support of the mission in Afghanistan. The CAF sustained numerous combat casualties between 2008/9 and 2013/14. Over the same time period, great efforts have been made to improve the mental health care of CAF personnel. Compared to the population surveyed in previous years, the 2013/14 Regular Force had arguably been exposed to more psychological trauma, but also had access to better mental health care. Both of these factors could influence the results presented in this chapter.

2.2 Mental Health Problems in the Canadian Armed Forces

The HLIS 2013/14 found that the majority of CAF personnel have excellent or good mental health, but that an important minority are suffering from mental health problems. This finding is consistent with that of other recent studies of CAF personnel (Statistics Canada, 2014; Zamorski, 2014).

Overall, 66.8% of Regular Force personnel rated their mental health as either excellent or very good (Table 2-1). Mental health was more highly rated in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 49 years; (2) officers compared to NCMs; (3) normal weight personnel compared to overweight and obese personnel; (4) sufficiently active personnel compared to physically inactive personnel; (5) married or common-law personnel compared to widowed, separated, or divorced personnel; and (6) francophone personnel compared to anglophone personnel (Table 2-1). Self-rated mental health was not different by categories of sex, service element, or recent deployment history.



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Table 2-1: Self-rated mental health in Regular Force personnel

Variable	Category	Percent (95% CI)				Odds Ratio	(95% CI) ^a
		Excellent	Very Good	Good	Fair or Poor		
Overall		28.3 (25.9, 30.7)	38.5 (35.9, 41.2)	24.1 (21.7, 26.4)	9.1 (7.5, 10.8)		
Age (years)	18 – 29	35.9 (30.8, 41.0)	38.2 (33.0, 43.3)	17.8 (13.8, 21.9)	8.2 (5.1, 11.2)		Reference
	30 – 39	25.0 (20.7, 29.3)	37.9 (32.8, 43.0)	26.9 (22.1, 31.6)	10.3 (6.9, 13.6)		0.60 (0.46, 0.80)
	40 – 49	23.0 (19.1, 27.0)	40.2 (35.5, 45.0)	27.7 (23.3, 32.1)	9.0 (6.3, 11.8)		0.59 (0.46, 0.77)
	50 – 60	32.4 (28.2, 36.6)	37.0 (32.6, 41.4)	22.5 (18.7, 26.2)	8.1 (5.7, 10.6)		0.84 (0.64, 1.09)
Rank	NCM	24.6 (21.6, 27.5)	38.4 (35.1, 41.8)	26.4 (23.3, 29.4)	10.6 (8.5, 12.8)		Reference
	Officer	39.5 (36.0, 43.0)	38.7 (35.2, 42.2)	17.2 (14.5, 19.9)	4.6 (3.1, 6.1)		2.06 (1.72, 2.47)
Body mass index	Normal weight	35.6 (30.8, 40.4)	38.8 (33.9, 43.7)	17.7 (13.8, 21.6)	7.9 (5.1, 10.7)		Reference
	Overweight	27.9 (24.3, 31.4)	39.0 (35.0, 42.9)	23.7 (20.2, 27.2)	9.4 (7.0, 11.8)		0.70 (0.55, 0.90)
	Obese	21.2 (16.6, 25.8)	38.0 (32.4, 43.6)	30.3 (25.0, 35.6)	10.5 (6.8, 14.3)		0.51 (0.39, 0.68)
Physical activity level ^b	Inactive	16.7 (9.7, 23.7)	39.9 (29.8, 50.0)	32.3 (22.9, 41.7)	11.1 (4.8, 17.4)		Reference
	Moderately active	26.0 (17.4, 34.6)	36.9 (27.4, 46.5)	23.7 (15.8, 31.6)	13.4 (6.0, 20.7) ^c		1.33 (0.80, 2.22)
	Sufficiently active	29.6 (27.0, 32.3)	38.8 (35.9, 41.7)	23.4 (20.8, 26.0)	8.2 (6.5, 9.9)		1.73 (1.23, 2.43)
Marital status	Married or common-law	28.2 (25.4, 31.1)	40.6 (37.4, 43.8)	23.3 (20.5, 26.2)	7.8 (6.0, 9.7)		Reference
	Widowed, separated, or divorced	20.0 (13.2, 26.8)	31.4 (23.3, 39.5)	34.5 (25.9, 43.0)	14.2 (8.0, 20.3)		0.54 (0.38, 0.76)
	Single	32.3 (26.7, 37.8)	35.6 (29.9, 41.3)	21.1 (16.2, 26.0)	11.0 (7.0, 15.1)		1.04 (0.79, 1.36)
First official language	French	32.8 (27.9, 37.6)	38.0 (32.9, 43.1)	21.9 (17.6, 26.2)	7.4 (4.6, 10.1)		Reference
	English	26.5 (23.8, 29.3)	38.9 (35.8, 42.0)	24.7 (21.8, 27.5)	9.9 (7.9, 11.9)		0.76 (0.60, 0.95)

^a Odds ratios computed with ordinal logistic regression. See Methods section for more details.

^b Physical activity level measured using the Godin Leisure-Time Exercise Questionnaire. See Chapter 7 for more details.

^c Fewer than 20 unweighted observations; estimates may be unstable; interpret with caution.



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Overall, 32.2% of Regular Force personnel reported currently experiencing a problem related to stress, emotions, drugs/alcohol, or family (Figure 2-1). Currently experiencing a mental health problem – regardless of its severity – was more likely in: (1) personnel aged 30 – 49 years compared to personnel aged 18 – 29 years; (2) females compared to males; (3) widowed, separated, or divorced personnel compared to married, common-law, or single personnel; and (4) anglophone personnel compared to francophone personnel (Table 2-2). The percentage of Regular Force personnel who reported currently experiencing a mental health problem – regardless of its severity – did not differ by categories of rank, service element, recent deployment history, body mass index (BMI), or physical activity level.

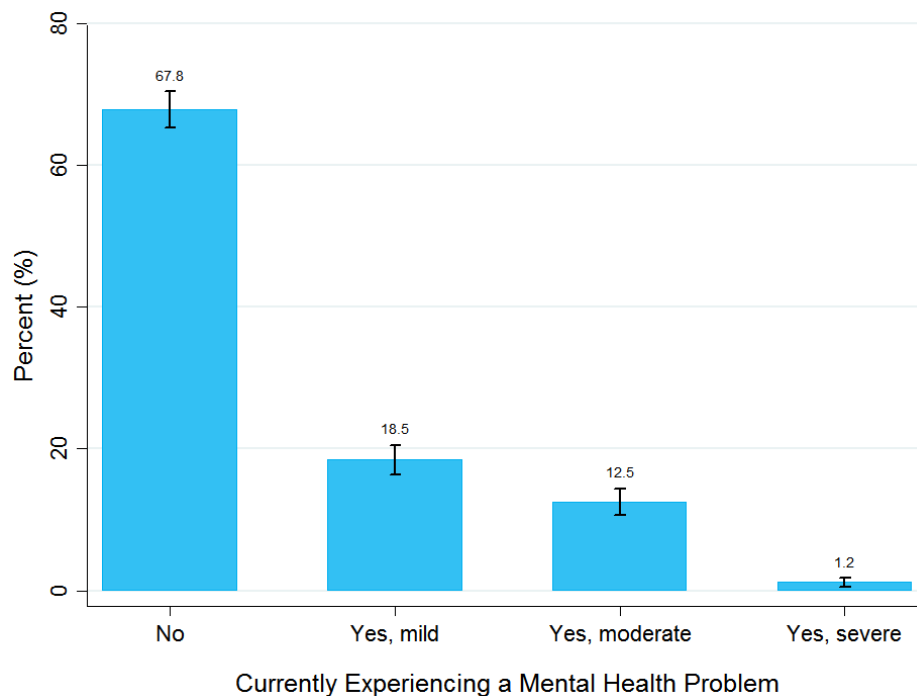


Figure 2-1: Regular Force personnel who reported currently experiencing a stress, emotional, drug/alcohol, or family problem.



Table 2-2: Percentage of Regular Force personnel currently experiencing a stress, emotional, alcohol/drugs or family problem

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		32.2	(29.6, 34.7)		
Age (years)	18 – 29	23.8	(19.4, 28.3)	Reference	
	30 – 39	36.1	(31.0, 41.2)	1.80	(1.29, 2.51)
	40 – 49	37.3	(32.6, 41.9)	1.90	(1.38, 2.60)
	50 – 60	28.5	(24.4, 32.6)	1.27	(0.93, 1.75)
Sex	Female	38.4	(35.0, 41.8)	Reference	
	Male	31.2	(28.3, 34.1)	0.73	(0.60, 0.89)
Marital status	Married or common-law	31.6	(28.5, 34.6)	Reference	
	Widowed, separated, or divorced	50.8	(42.0, 59.7)	2.24	(1.53, 3.28)
	Single	25.3	(20.2, 30.5)	0.74	(0.54, 1.01)
First official language	French	26.7	(22.1, 31.2)	Reference	
	English	34.2	(31.2, 37.3)	1.43	(1.09, 1.88)

2.2.1 Depression

Depression is the world’s leading cause of years lost to disability (Marcus, 2012). It is a very common mental disorder and its symptoms include sadness, loss of interest in previously enjoyable activities, feelings of low self-worth, changes in appetite and sleep pattern, poor concentration, and reduced energy (WHO, 2012). Depression has been associated with decreased quality of life, increased morbidity, impaired ability to fulfill regular responsibilities, and increased risk of suicide (Kessler, 2001; Wells, 1989).

The HLIS 2013/14 measured depression using the Patient Health Questionnaire-2 (PHQ-2). The PHQ-2 is a measurement tool that has been extensively validated and is easy to self-administer. It queries respondents on two key symptoms of depression: (1) loss of interest or pleasure in doing things; and (2) feeling down, depressed, or hopeless. Respondents report how frequently they experienced each of these two symptoms in the previous two weeks. Respondents are then categorized as either “depressed” or “not depressed,” using a validated cut-off which has been shown to correctly identify 83% of people who truly have major depressive disorder, and 90% of people who truly don’t have major depressive disorder (Kroenke, 2003).

The PHQ-2, therefore provided a valid estimate of the prevalence of depression in the CAF in 2013/14. However, the HLIS 2004 used the Composite International Diagnostic Interview Short-Form (CIDI-SF) rather than the PHQ-2 to measure depression. Having been designed for use as an interviewer-administered measurement tool, the CIDI-SF is more difficult to self-administer than the PHQ-2. It contains questions on the presence, duration, and frequency of depression symptoms in the previous 12 months. The CIDI-SF has



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never been fully validated as a self-administered tool, and its use is no longer recommended to measure depression. It was only included in the HLIS 2013/14 to allow for historical comparisons to the HLIS 2004.

Both the PHQ-2 and the CIDI-SF suggested that depression rates had not changed from previous HLIS cycles (Table 2-3).

Table 2-3: Prevalence of major depression in Regular Force personnel, as measured by two different screening tools, by survey year

Tool	HLIS	Percent (95% CI) ^a	Odds Ratio (95% CI)
PHQ-2	2008/9	6.8 (4.8, 8.8)	0.89 (0.61, 1.30)
	2013/14	7.6 (6.1, 9.1)	Reference
CIDI-SF	2004	7.1 (5.9, 8.3)	0.89 (0.67, 1.18)
	2008/9	8.2 (6.2, 10.2)	1.04 (0.74, 1.46)
	2013/14	7.9 (6.3, 9.4)	Reference

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

Using the PHQ-2, the estimated prevalence of major depression in 2013/14 was 7.6%. Major depression was more likely in: (1) NCMs compared to officers; and (2) widowed, separated, or divorced personnel compared to married or common-law personnel (Table 2-4). The estimated prevalence of major depression was not different by categories of age, sex, service element, body mass index, physical activity level, or first official language. Regular Force personnel who had deployed overseas in the last two years were not at higher risk of major depression than those who had not deployed overseas during that same time period.

Table 2-4: Percentage of Regular Force personnel with major depression, as measured using the Patient Health Questionnaire (PHQ-2) screening tool

Variable	Category	Percent (95% CI)	Odds Ratio (95% CI)
Overall		7.6 (6.1, 9.1)	
Rank	NCM	8.8 (6.8, 10.8)	Reference
	Officer	3.8 (2.5, 5.2)	0.41 (0.27, 0.64)
Marital status	Married or common-law	6.4 (4.7, 8.0)	Reference
	Widowed, separated, or divorced	13.2 (7.0, 19.5)	2.24 (1.21, 4.15)
	Single	9.2 (5.4, 12.9)	1.48 (0.87, 2.54)



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2.2.2 Post-Traumatic Stress Disorder

Post-traumatic stress disorder (PTSD) is the most common operational stress injury in CAF personnel (DND, 2013). It is a psychiatric disorder that may develop after exposure to traumatic events, such as actual or threatened death, serious injury or sexual violation. Regardless of its trigger, PTSD, by definition, causes clinically significant distress, and decreased psychosocial and occupational functioning (APA, 2013). Because of the dangerous environments in which military personnel must sometimes operate, PTSD is of particular concern in the CAF.

The HLIS 2013/14 measured PTSD using the Primary Care PTSD (PC-PTSD) screen. The PC-PTSD is a measurement tool that is easy to self-administer and that has been validated in primary care settings (Prins, 2003). This tool is extensively used to screen and identify primary care patients in need of further PTSD evaluation. The PC-PTSD queries respondents on the absence or presence of four PTSD symptoms during the previous month. Respondents reporting three or more symptoms are flagged as requiring further evaluation. Validation studies have shown that this cut-off correctly classifies 78% of people who truly have PTSD and 87% of people who truly don't have PTSD. However, the PC-PTSD has only ever been validated in primary care settings, where the prevalence of PTSD is expected to be higher than in the general population; as a result, the false-positive rate may be relatively high if this tool is used for epidemiological purposes rather than for screening primary care patients (Lee, 2014; Terhakopin, 2008). In other words, using the PC-PTSD outside of the primary care setting might overestimate the prevalence of PTSD. Nevertheless, the PC-PTSD was the most efficient self-administered PTSD measurement tool available when the HLIS 2013/14 was designed.

In 2013/14, 10.4% of Regular Force personnel were flagged as needing further PTSD evaluation. Although this percentage was slightly higher than in 2008/9, the increase was not statistically significant (Table 2-5).

Table 2-5: Percentage of Regular Force personnel in need of further post-traumatic stress disorder evaluation, as measured with the primary care post-traumatic stress disorder scale, by survey year

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2008/9	8.2	(6.0, 10.4)	0.77	(0.54, 1.09)
2013/14	10.4	(8.7, 12.2)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

In 2013/14, screening positive on the PC-PTSD measurement tool was more likely in: (1) NCMs compared to officers; (2) obese personnel compared to normal weight personnel; (3) widowed, separated, or divorced personnel compared to married or common-law personnel; and (4) anglophone personnel compared to francophone personnel (Table 2-6). The association between obesity and PTSD has been observed in other recent studies; it is believed that PTSD is a risk factor for unhealthy weight gain, particularly in women (Pagoto, 2012; Kubzansky, 2014). The percentage of Regular Force personnel in need of further PTSD evaluation was not different by categories of age, sex, service element, or physical activity level. Regular Force personnel who had deployed overseas in the last two years were not at higher risk of being flagged as needing further PTSD evaluation than those who had not deployed overseas during that time period. It must be noted that many overseas deployments do not involve combat (e.g., CAF personnel may deploy as part of



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humanitarian operations, training, and advisory missions; see Chapter 10). The relationship between PTSD and exposure to combat-related trauma could not be assessed with the HLIS 2013/14.

Table 2-6: Percentage of Regular Force personnel in need of further post-traumatic stress disorder evaluation, as measured with the primary care post-traumatic stress disorder scale

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		10.4	(8.7, 12.2)		
Rank	NCM	11.8	(9.6, 14.1)	Reference	
	Officer	6.3	(4.5, 8.0)	0.50	(0.34, 0.72)
Body mass index	Normal weight	7.9	(4.9, 10.9)	Reference	
	Overweight	10.3	(7.8, 12.8)	1.34	(0.82, 2.19)
	Obese	13.3	(9.0, 17.5)	1.79	(1.03, 3.10)
Marital status	Married or common-law	10.3	(8.2, 12.4)	Reference	
	Widowed, separated, or divorced	19.6	(11.7, 27.4)	2.12	(1.22, 3.67)
	Single	6.4	(3.6, 9.3)	0.60	(0.35, 1.01)
First official language	French	4.5	(2.3, 6.6)	Reference	
	English	12.7	(10.4, 15.0)	3.12	(1.81, 5.38)

2.2.3 Psychological Distress

Psychological distress is a broad term encompassing various non-specific psychological symptoms. Previous studies have shown that these non-specific distress symptoms are strongly associated with a wide range of serious mental illnesses⁴ (SMIs) (Cairney, 2007; Kessler, 2003). As such, psychological distress is an important indicator of general mental health. It can be used to identify individuals with broadly-defined mental health problems in need of more in-depth clinical assessment (Kessler, 2010).

The HLIS 2013/14 measured psychological distress using the Kessler Screening Scale for Psychological Distress (K6). The K6 is a measurement tool that has been extensively validated and that is easy to self-administer. It queries respondents on six psychological symptoms: (1) nervousness; (2) hopelessness; (3) restlessness; (4) depressive mood; (5) worthlessness; and (6) perceived effort of daily activities. Based on the self-reported frequency of these symptoms in the past 30 days, respondents are flagged as either “probably suffering from a SMI” or “probably not suffering from a SMI” using validated cut-offs. The use of this method and cut-off values has been shown to correctly identify 36% of individuals who truly suffer from a

⁴ Any condition described in the Diagnostic and Statistical Manual of Mental Disorders (DSM) that has a substantial impact on a patient’s level of functioning is considered a serious mental illness (Insel, 2013).



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SMI and 96% of individuals who truly do not suffer from a SMI, in a general population with low SMI prevalence (Kessler, 2003). At the cut-off values used in this report, the K6 cannot be used to estimate the extent of need for mental health services in the CAF, as it will likely underestimate the number of CAF members suffering from a SMI. The K6 is nevertheless a useful measurement tool in comparing levels of psychological distress between demographic categories and to track trends over time⁵.

The estimated prevalence of psychological distress in 2013/14 was 2.9%. This percentage was unchanged from the HLIS 2004 and the HLIS 2008/9 (Table 2-7).

Table 2-7: Percentage of Regular Force personnel who suffer from psychological distress, as measured by the Kessler-6 scale, by survey year

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	2.4	(1.6, 3.2)	0.85	(0.53, 1.36)
2008/9	2.3	(1.0, 3.6)	0.81	(0.42, 1.56)
2013/14	2.9	(1.9, 3.8)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

In 2013/14, being flagged as probably suffering from a SMI was more likely in: (1) females compared to males; (2) NCMs compared to officers; and (3) widowed, separated, or divorced personnel compared to married or common-law personnel (Table 2-8). The percentage of Regular Force personnel who were flagged as suffering from psychological distress was not different by categories of age, service element, body mass index, recent deployment history, or first official language.

Table 2-8: Percentage of Regular Force personnel who suffer from psychological distress, as measured by the Kessler-6 scale

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		2.9	(1.9, 3.8)		
Sex	Female	4.8	(3.3, 6.3)	Reference	
	Male	2.6	(1.5, 3.6)	0.52	(0.31, 0.90)
Rank	NCM	3.3	(2.1, 4.5)	Reference	
	Officer	1.6	(0.8, 2.4)	0.48	(0.25, 0.92)
Marital status	Married or common-law	2.4	(1.4, 3.5)	Reference	
	Widowed, separated, or divorced	7.3	(2.1, 12.4) ^a	3.16	(1.31, 7.60)
	Single	1.6	(0.2, 3.1) ^a	0.67	(0.25, 1.80)

^a Fewer than 20 unweighted observations; estimates may be unstable; interpret with caution.

⁵ Of note, the K6 could also be used to study a range of mental illnesses, including disorders below diagnostic threshold levels. In the context of the HLIS, the K6 is used to measure SMI in a way that is not diagnosis-specific.



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2.2.4 Suicide Ideation

In 2013/14, 10.0% of all Regular Force personnel reported seriously considering suicide at some point in their life, and 3.9% reported seriously considering suicide at some point in the last 12 months. The percentage of Regular Force personnel who had seriously considered suicide during their lifetime or at some point in the last 12 months was unchanged from the HLIS 2004 and the HLIS 2008/9 (Table 2-9).

Table 2-9: Percentage of Regular Force personnel who had seriously considered suicide, by survey year

HLIS Cycle	Ever Considered Suicide				Considered Suicide in the Last 12 Months			
	Percent	(95% CI) ^a	Odds Ratio	(95% CI)	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	8.6	(7.1, 10.1)	0.84	(0.65, 1.10)	3.2	(2.3, 4.1)	0.82	(0.54, 1.23)
2008/9	9.1	(6.9, 11.3)	0.90	(0.65, 1.24)	3.1	(1.6, 4.5)	0.77	(0.44, 1.35)
2013/14	10.0	(8.4, 11.7)	Reference		3.9	(2.8, 5.0)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

In 2013/14, having reportedly seriously considered suicide at some point in the last 12 months was more likely to be reported by: (1) overweight personnel compared to normal weight personnel; and (2) widowed, separated, or divorced personnel compared to married or common-law personnel (Table 2-10). The percentage of Regular Force personnel who had reportedly considered suicide at some point in the last 12 months was not different by categories of age, sex, rank, service element, recent deployment history, physical activity level, or first official language.

Table 2-10: Percentage of Regular Force personnel who seriously considered suicide in the last 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		3.9	(2.8, 5.0)		
Body mass index	Normal weight	2.1	(1.0, 3.2)	Reference	
	Overweight	4.6	(2.7, 6.4)	2.24	(1.15, 4.37)
	Obese	3.8	(1.7, 6.0)	1.86	(0.85, 4.06)
Marital status	Married or common-law	3.0	(1.8, 4.1)	Reference	
	Widowed, separated, or divorced	8.8	(3.7, 14.0)	3.17	(1.49, 6.76)
	Single	4.3	(1.8, 6.9)	1.49	(0.72, 3.09)



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2.2.5 Suicide Attempt

Of the Regular Force personnel who reported having ever seriously considered suicide, 19.7% (95% CI: 13.6%, 27.8%) had reportedly ever attempted suicide at some point in their life. In other words, 1.9% (95% CI: 1.3%, 2.9%) of all Regular Force personnel had reportedly ever attempted suicide. The HLIS could not determine if these reported suicide attempts occurred before or after recruitment into the CAF.

Too few respondents from the HLIS 2013/14 reported having attempted suicide in the last 12 months to compare to previous survey results.

2.2.6 Anger

Anger is a strong emotional response to a perceived provocation. In itself, anger is not necessarily problematic; it is natural for humans to experience anger as a transient emotion every once in a while. However, anger-related problems can arise when this emotion is experienced on a frequent basis. Chronically recurring anger can have a negative impact on psychological adjustment and personal health. The inability to properly manage anger can also lead to physical and aggressive behaviour (Novaco, 1986). The HLIS 2013/14 queried respondents on their general anger level, and its impact on their personal and professional lives.

Overall, 61.4% of Regular Force personnel felt that their ability to manage anger was either excellent or very good (Table 2-11). Reporting greater ability to manage one's anger was more likely in: (1) personnel aged 50 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; and (3) officers compared to NCMs (Table 2-11). Self-reported anger management ability was not associated with service element, physical activity level, marital status, recent deployment history, or first official language.



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Table 2-11: Self-rated ability to manage anger in Regular Force personnel

Variable	Category	Percent (95% CI)				Odds Ratio	(95% CI) ^a
		Excellent	Very Good	Good	Fair or Poor		
Overall		21.9 (19.8, 24.1)	39.5 (36.8, 42.2)	24.9 (22.5, 27.3)	13.7 (11.7, 15.7)		
Age (years)	18 – 29	22.7 (18.4, 26.9)	36.2 (31.1, 41.3)	26.8 (22.0, 31.6)	14.3 (10.5, 18.2)	Reference	
	30 – 39	20.7 (16.5, 24.9)	38.8 (33.7, 43.9)	26.1 (21.5, 30.7)	14.4 (10.5, 18.4)	0.97 (0.74, 1.28)	
	40 – 49	20.1 (16.3, 23.8)	42.6 (37.8, 47.4)	23.0 (18.8, 27.1)	14.4 (10.9, 17.8)	1.03 (0.79, 1.33)	
	50 – 60	29.5 (25.3, 33.7)	42.9 (38.4, 47.5)	20.2 (16.6, 23.7)	7.4 (5.0, 9.8)	1.67 (1.29, 2.15)	
Sex	Female	23.0 (20.2, 25.8)	42.9 (39.4, 46.4)	24.2 (21.1, 27.2)	9.9 (7.9, 12.0)	Reference	
	Male	21.8 (19.3, 24.3)	39.0 (35.9, 42.0)	25.0 (22.2, 27.7)	14.3 (12.0, 16.6)	0.83 (0.71, 0.98)	
Rank	NCM	19.3 (16.6, 22.0)	38.9 (35.5, 42.2)	26.5 (23.4, 29.5)	15.4 (12.8, 17.9)	Reference	
	Officer	29.8 (26.6, 33.1)	41.4 (37.9, 45.0)	20.0 (17.2, 22.9)	8.7 (6.7, 10.7)	1.79 (1.49, 2.15)	

^a Odds ratios computed with ordinal logistic regression. See Methods section for more details.



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HLIS 2013/14 respondents were also asked to what degree their anger limited their participation in each of the following five common activities: (1) work; (2) social interactions; (3) family activities; (4) leisure activities; and (5) daily routines. For roughly three-quarters of Regular Force personnel, anger did not interfere with participation in each of these five activities (Table 2-12). Males and NCMs were more likely to report that their anger had a greater impact on their participation in each of these five activities compared to females and officers, respectively. Personnel aged 18 – 29 years were more likely to report that their anger had a greater impact on their participation in work, social interactions, and family activities compared to personnel aged 50 – 60 years (data not shown).

Table 2-12: Degree to which anger limits Regular Force personnel’s participation in five common activities

Activity	Degree to Which Participation is Limited					
	Not at All		A Little		More than a Little	
	Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)
Work (primary occupation)	69.4	(66.9, 72.0)	21.3	(19.0, 23.7)	9.2	(7.6, 10.9)
Social interactions	71.5	(69.0, 74.1)	17.6	(15.5, 19.7)	10.9	(9.1, 12.8)
Family activities	69.5	(67.0, 72.1)	18.7	(16.6, 20.8)	11.8	(9.9, 13.6)
Leisure activities	77.5	(75.2, 79.9)	15.0	(13.0, 17.0)	7.5	(5.9, 9.0)
Daily routines	74.4	(71.9, 76.8)	18.8	(16.5, 21.0)	6.9	(5.4, 8.4)

2.2.7 Stress

Stress is a negative emotional experience that can be accompanied by predictable biochemical, physiological, cognitive, and behavioural changes that either alter the stressful event, or accommodate to its effects (Taylor, 2009). Whether one perceives a potential stressor as harmful, threatening, or challenging, and whether one feels he or she has the personal resources to cope with the stressor, determines whether the potential stressor will be experienced as stressful (Lazarus, 1984). When improperly managed, excessive and chronic stress can disrupt the immune system, exacerbate physical illness, and negatively impact mental health (Shields, 2004). The HLIS 2013/14 queried respondents on their general stress level, and its effect on their personal and professional lives.

Overall, 17.9% of Regular Force personnel reported that their days are typically quite a bit stressful or extremely stressful (Table 2-13). Greater levels of stress were reported by: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; (3) officers compared to NCMs; (4) overweight and obese personnel compared to normal weight personnel; and (5) personnel whose first official language was English compared to French (Table 2-13). Service element, recent deployment history, and physical activity level were not associated with the amount of stress perceived in a typical day.

Overall, 56.9% of Regular Force personnel felt that their ability to manage stress was either excellent or very good (Table 2-14). Greater ability to manage one’s stress was reported by: (1) males compared to females; (2) officers compared to NCMs; (3) physically active personnel compared to physically inactive personnel; and (4) normal weight compared to obese personnel (Table 2-14). Stress management ability was not associated with age, service element, recent deployment history, marital status, or first official language.



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Table 2-13: Amount of stress perceived by Regular Force personnel during a typical day

Variable	Category	Percent (95% CI)								
		Not at All		Not Very		A Bit		Quite a Bit / Extremely		Odds Ratio (95% CI) ^a
Overall		9.0	(7.4, 10.7)	31.8	(29.3, 34.4)	41.2	(38.5, 43.9)	17.9	(15.8, 20.0)	
Age (years)	18 – 29	12.1	(8.5, 15.8)	39.9	(34.6, 45.1)	35.5	(30.4, 40.5)	12.5	(9.1, 15.9)	Reference
	30 – 39	9.9	(6.5, 13.2)	27.9	(23.2, 32.6)	42.8	(37.6, 48.0)	19.4	(15.2, 23.6)	1.69 (1.27, 2.25)
	40 – 49	4.9	(2.8, 7.0)	28.0	(23.5, 32.4)	45.4	(40.6, 50.2)	21.8	(17.7, 25.8)	2.13 (1.64, 2.77)
	50 – 60	8.8	(6.3, 11.4)	33.1	(28.8, 37.5)	40.7	(36.2, 45.2)	17.4	(14.0, 20.8)	1.48 (1.15, 1.92)
Sex	Female	5.4	(3.9, 6.9)	30.4	(27.1, 33.6)	43.1	(39.6, 46.5)	21.2	(18.4, 24.0)	Reference
	Male	9.6	(7.7, 11.5)	32.1	(29.2, 35.0)	40.9	(37.9, 44.0)	17.4	(15.0, 19.7)	0.76 (0.64, 0.90)
Rank	NCM	10.3	(8.1, 12.5)	33.3	(30.1, 36.6)	38.4	(35.1, 41.8)	17.9	(15.3, 20.5)	Reference
	Officer	5.2	(3.7, 6.8)	27.4	(24.3, 30.6)	49.5	(45.9, 53.1)	17.9	(15.2, 20.6)	1.39 (1.17, 1.66)
Body mass index	Normal weight	10.8	(7.3, 14.3)	36.2	(31.3, 41.1)	39.6	(34.8, 44.5)	13.5	(10.3, 16.7)	Reference
	Overweight	9.2	(6.6, 11.7)	29.2	(25.4, 32.9)	43.4	(39.4, 47.4)	18.3	(15.2, 21.4)	1.39 (1.09, 1.76)
	Obese	6.2	(3.2, 9.1)	31.3	(26.0, 36.6)	39.5	(33.9, 45.1)	23.1	(18.1, 28.1)	1.63 (1.22, 2.18)
First official language	French	13.6	(9.7, 17.5)	35.4	(30.4, 40.5)	33.3	(28.5, 38.2)	17.6	(13.8, 21.5)	Reference
	English	7.1	(5.4, 8.9)	30.5	(27.6, 33.5)	44.3	(41.1, 47.5)	18.1	(15.6, 20.6)	1.48 (1.15, 1.89)

^a Odds ratios computed with ordinal logistic regression. See Methods section for more details.



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Table 2-14: Self-rated ability to manage stress in Regular Force personnel

Variable	Category	Percent (95% CI)				Odds Ratio (95% CI) ^a
		Excellent	Very Good	Good	Fair or Poor	
Overall		18.5 (16.3, 20.6)	38.4 (35.8, 41.0)	30.2 (27.7, 32.7)	12.9 (11.0, 14.8)	
Sex	Female	11.7 (9.5, 13.9)	38.8 (35.4, 42.2)	33.8 (30.5, 37.2)	15.7 (13.1, 18.2)	Reference
	Male	19.5 (17.1, 22.0)	38.4 (35.4, 41.3)	29.6 (26.8, 32.5)	12.5 (10.4, 14.7)	1.42 (1.20, 1.68)
Rank	NCM	18.0 (15.3, 20.7)	36.4 (33.1, 39.7)	31.5 (28.3, 34.7)	14.1 (11.7, 16.5)	Reference
	Officer	19.9 (17.1, 22.7)	44.5 (41.0, 48.1)	26.1 (23.0, 29.3)	9.4 (7.4, 11.4)	1.39 (1.16, 1.66)
Physical activity level ^b	Inactive	9.4 (3.8, 15.0)	37.6 (27.9, 47.3)	34.6 (25.1, 44.1)	18.4 (9.8, 27.0)	Reference
	Moderately active	14.3 (7.4, 21.2)	33.5 (24.6, 42.4)	39.1 (29.3, 48.9)	13.1 (6.0, 20.2)	1.20 (0.73, 1.98)
	Sufficiently active	19.5 (17.1, 21.9)	39.4 (36.5, 42.3)	28.9 (26.2, 31.6)	12.1 (10.1, 14.1)	1.72 (1.18, 2.51)
Body mass index	Normal weight	17.1 (13.2, 20.9)	45.0 (40.0, 50.0)	27.5 (23.0, 31.9)	10.5 (7.4, 13.6)	Reference
	Overweight	19.7 (16.4, 23.0)	38.7 (34.8, 42.7)	28.2 (24.5, 31.8)	13.4 (10.6, 16.2)	0.93 (0.74, 1.18)
	Obese	17.4 (13.0, 21.8)	31.6 (26.5, 36.8)	36.3 (30.7, 41.9)	14.7 (10.4, 18.9)	0.71 (0.53, 0.93)

^a Odds ratios computed with ordinal logistic regression. See Methods section for more details.

^b Physical activity level measured using the Godin Leisure-Time Exercise questionnaire. See Chapter 7 for more details.



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HLIS 2013/14 respondents were also asked to what degree their stress limited their participation in each of the following five common activities: (1) work; (2) social interactions; (3) family activities; (4) leisure activities; and (5) daily routines. Slightly more than half of all active Regular Force personnel reported that stress did not interfere with their participation in each of these five activities (Table 2-15). Females were more likely to report that their stress had a greater impact on their participation in daily routines than males. NCMs were more likely to report that their stress had a greater impact on their participation in work activities than officers. Personnel aged 30 – 49 years were more likely to report that their stress had a greater impact on their participation in social interactions, family activities, leisure activities and daily routines than personnel aged 18 – 29 years (data not shown).

Table 2-15: Degree to which stress limits Regular Force personnel’s participation in five common activities

Activity	Degree to Which Participation is Limited					
	Not at All		A Little		More Than a Little	
	Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)
Work (primary occupation)	54.2	(51.5, 56.9)	29.6	(27.2, 32.2)	16.1	(14.2, 18.3)
Social interactions	52.6	(49.9, 55.3)	27.5	(25.1, 30.0)	19.9	(17.8, 22.2)
Family activities	58.0	(55.3, 60.7)	25.7	(23.4, 28.2)	16.2	(14.3, 18.4)
Leisure activities	57.3	(54.6, 59.9)	26.4	(24.0, 28.8)	16.3	(14.4, 18.5)
Daily routines	56.3	(53.6, 59.0)	29.7	(27.3, 32.2)	14.0	(12.2, 16.0)

2.3 Mental Health Services Utilization in the Canadian Armed Forces

As is the case in the civilian world, many CAF personnel turn to their primary care physicians when seeking mental health care. Primary care physicians can either directly provide the required assistance to their patients, or refer them to the specialized mental health care available through Canadian Forces Health Services. This specialized mental health care is coordinated at a national level by the Directorate of Mental Health, and delivered at the local level by Canadian Forces Health Services Centres.

There are two different levels of CAF specialty mental health services. The first level of service is referred to as the “Psychosocial Services Program” and is available at most CAF medical clinics (Figure 2-2). Through this first-level program, social workers and mental health nurses offer basic mental health services such as crisis intervention, addictions consultation, and short-term intervention. The second level of service is referred to as the “Mental Health Program” and is available at larger CAF bases (Figure 2-2). Through this second-level program, psychiatrists, psychologists, social workers, mental health nurses, addiction counsellors, and chaplains offer a broad range of mental health services. On some of the larger CAF bases, an “Operational Trauma and Stress Support Centre” (OTSSC) is also offered to provide comprehensive treatment to patients suffering from an operational stress injury (Figure 2-2). CAF personnel serving on larger bases, therefore, have access to a greater range of mental health services through Canadian Forces Health Services. However, CAF personnel are always referred to civilian health care providers when the mental health services they need are not locally available through the CAF. In fact, there are over 2,000 civilian health care professionals on the Blue Cross™ provider list who offer varying levels of care to CAF personnel across Canada. In addition, CAF personnel have 24/7 access to professional counsellors through the CF Member Assistance Program.

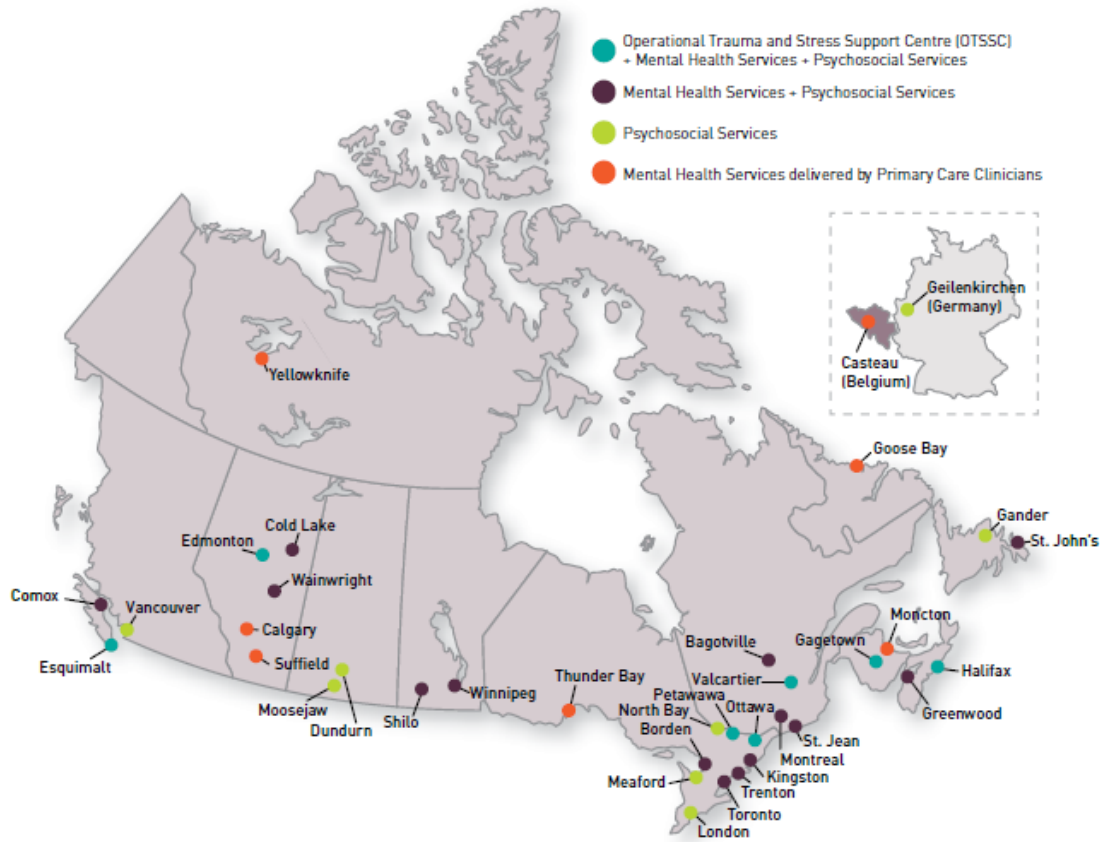


Figure 2-2: Level of mental health care available through Canadian Forces Health Services (DND, 2013).

2.3.1 Seeking Mental Health Care from a Health Professional

In the past 12 months, 17.1% of Regular Force personnel reported talking to a health professional about their mental health for reasons other than deployment-related screening. This percentage was unchanged from 2008/9, but was higher than in 2004 (Table 2-16). The health professionals most commonly consulted in regards to a mental health problem were medical officers/general practitioners, and social workers/counsellors (Figure 2-3).

Table 2-16: Percentage of Regular Force personnel who sought mental health care from a health professional in the last 12 months, by survey year

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	12.9	(11.3, 14.5)	0.72	(0.59, 0.88)
2008/9	14.8	(12.5, 17.2)	0.85	(0.67, 1.07)
2013/14	17.1	(15.0, 19.1)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.



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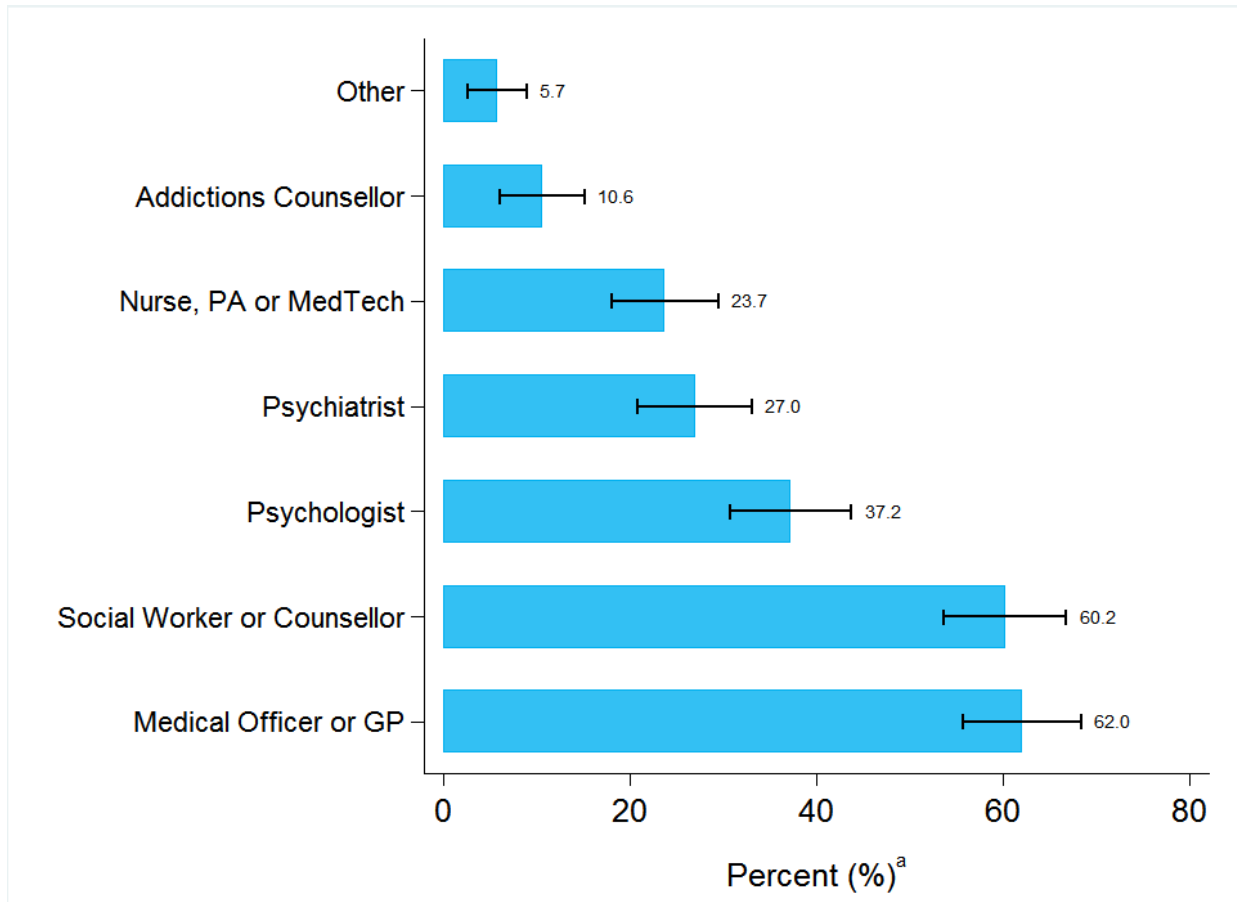


Figure 2-3: Type of health professional consulted for mental health problems, in Regular Force personnel who sought mental health care from a health professional in the last 12 months.

^a Note that respondents may have consulted more than one type of professional. Percents may sum to more than 100%.

Increases in mental health services use could be driven by either: (1) increases in need for care; and/or (2) decreases in barriers to care. As discussed in Section 2.2, the estimated prevalence of major depressive disorder, PTSD, suicide ideation, and psychological distress was unchanged from previous survey years. These findings suggest the need for mental health care has not changed substantially in recent years. On the other hand, barriers to mental health care may have decreased; a greater percentage of Regular Force personnel with mental health disorders had recently sought care in 2013/14 than in 2004 (Table 2-17). Although the changes were not significant for any particular disorder, their combined effect may help explain why care-seeking increased from 2004 to 2013/14.



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Table 2-17: Percentage of Regular Force personnel who sought mental health care from a health professional in the last 12 months, among those who screened positive for various mental health conditions, by survey year

Condition	HLIS	Sought Mental Health Care		
		Percent	(95% CI) ^a	Odds Ratio (95% CI)
Major depression ^b	2004	55.4	(46.5, 63.9)	0.74 (0.42, 1.29)
	2008/9	58.2	(45.1, 70.2)	0.83 (0.42, 1.64)
	2013/14	62.7	(52.2, 72.1)	Reference
Further PTSD evaluation required ^c	2008/9	39.5	(27.4, 53.1)	0.70 (0.36, 1.35)
	2013/14	48.5	(39.4, 57.6)	Reference
Psychological distress ^d	2004	59.3	(42.2, 74.5)	0.80 (0.30, 2.14)
	2008/9	59.7	(31.6, 82.7)	0.81 (0.21, 3.18)
	2013/14	64.6	(47.5, 78.6)	Reference
Suicide ideation in last 12 months	2004	43.9	(31.2, 57.4)	0.51 (0.23, 1.14)
	2008/9	59.4	(36.5, 78.9)	0.96 (0.32, 2.90)
	2013/14	60.4	(45.9, 73.4)	Reference

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

^b Major depression measured using the Composite International Diagnostic Interview short-form scale.

^c Need for further post-traumatic stress disorder evaluation measured using the primary care post-traumatic stress disorder scale.

^d Psychological distress measured using the Kessler-6 scale.

Having reportedly sought mental health care from a health professional in the past 12 months was more likely in: (1) personnel aged 30 – 39 years compared to personnel aged 18 – 29 years; and (2) females compared to males (Table 2-18). The percentage of Regular Force personnel who sought mental health care from a health professional in the past 12 months was not different by categories of rank, service element, or recent deployment history. Local availability of the Mental Health Program was not associated with the percentage of Regular Force personnel who sought mental health care from a health professional in the last 12 months.



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Table 2-18: Percentage of Regular Force personnel who sought mental health care from a health professional in the last 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		17.1	(15.0, 19.1)		
Age (years)	18 – 29	14.0	(10.4, 17.6)	Reference	
	30 – 39	19.7	(15.5, 23.9)	1.51	(1.01, 2.25)
	40 – 49	18.1	(14.5, 21.7)	1.36	(0.92, 2.00)
	50 – 60	14.2	(11.1, 17.2)	1.01	(0.68, 1.50)
Sex	Female	26.1	(23.0, 29.2)	Reference	
	Male	15.7	(13.4, 18.0)	0.53	(0.41, 0.67)
Major depression ^a	No	14.5	(12.5, 16.5)	Reference	
	Yes	48.7	(38.0, 59.5)	5.60	(3.54, 8.86)
Further PTSD evaluation required ^b	No	13.1	(11.2, 15.0)	Reference	
	Yes	48.5	(39.3, 57.6)	6.24	(4.17, 9.36)
Psychological distress ^c	No	15.8	(13.8, 17.9)	Reference	
	Yes	64.6	(48.6, 80.6)	9.70	(4.74, 19.85)
Suicide ideation in last 12 months	No	14.4	(12.4, 16.3)	Reference	
	Yes	60.4	(46.3, 74.5)	9.10	(4.94, 16.76)

^a Major depression measured using the Patient Health Questionnaire (PHQ-2) scale.

^b Need for further post-traumatic stress disorder evaluation measured using the primary care post-traumatic stress disorder scale.

^c Psychological distress measured using the Kessler-6 scale.

Regular Force personnel who were flagged as potentially suffering from a mental health problem using each of the screening tools described in previous sections (i.e., PHQ-2, PC-PTSD, and K-6) were more likely to have sought mental health care in the last 12 months than personnel who had been flagged negative. However, a substantial percentage of personnel who were flagged as potentially suffering from mental health problems had not sought care in the last 12 months (Table 2-18). As an example, only 60.4% of personnel who had seriously considered suicide in the last 12 months had sought mental health care during the same time period.

Among Regular Force personnel who had sought mental health care in the last 12 months, 72.6% were either very satisfied or satisfied with the treatment and services they received (Figure 2-4). Satisfaction with mental health treatment and services did not vary by categories of sex, or rank. Too few survey respondents reported being dissatisfied with mental health treatment services for meaningful statistics to be reported by age category and service element. Due to changes in question design, satisfaction with mental health services could not be compared between survey years.

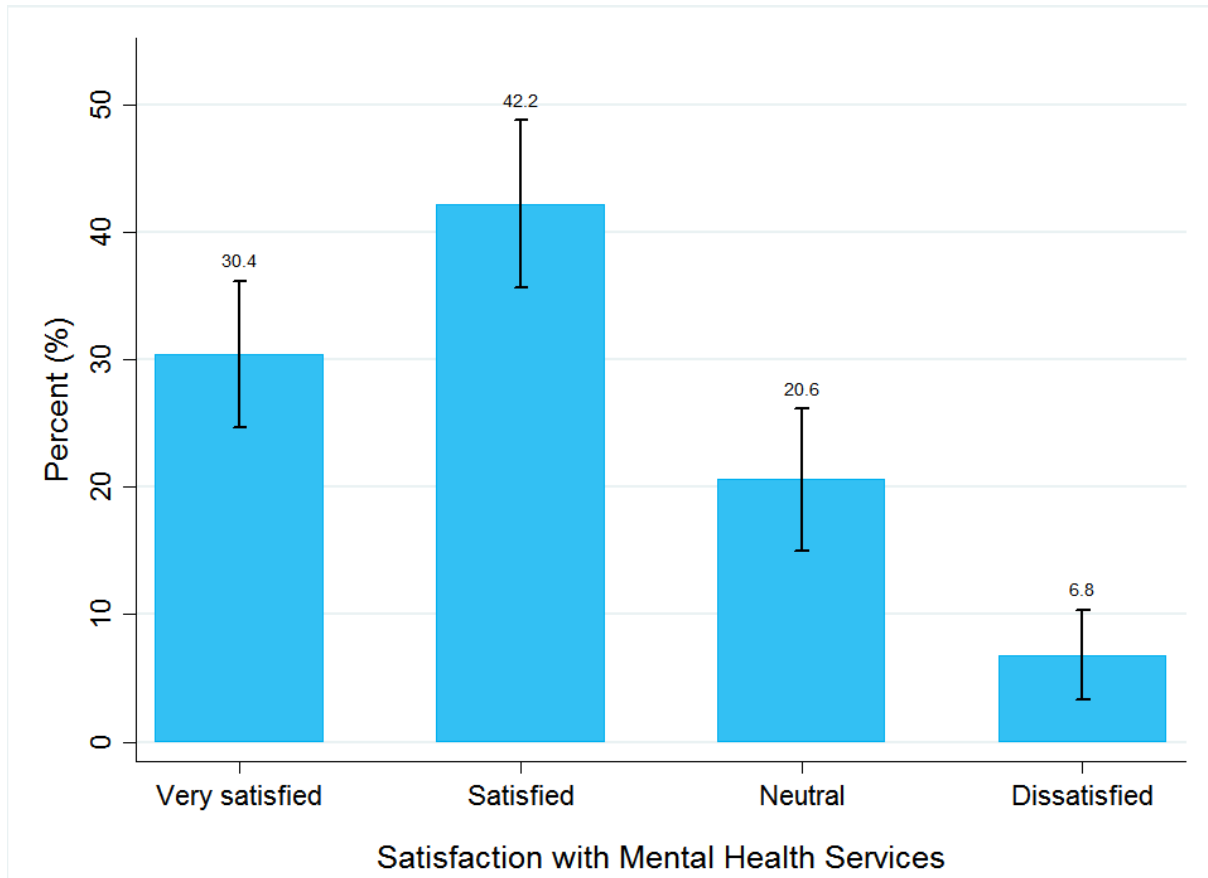


Figure 2-4: Satisfaction with treatment and services received, in Regular Force personnel who sought mental health care from a health professional in the last 12 months.

2.3.2 Ending Consultations for a Mental Health Problem

Among Regular Force personnel who had sought mental health care in the last 12 months, 54.8% (95% CI: 48.3%, 61.2%) also stopped mental health consultations with a health professional. This percentage was unchanged from 2008/9. The most commonly reported reasons for ending mental health consultations with a health professional in the last 12 months were: (1) felt better; (2) completed the recommended treatment; and (3) thought the treatment was not helping (Figure 2-5).



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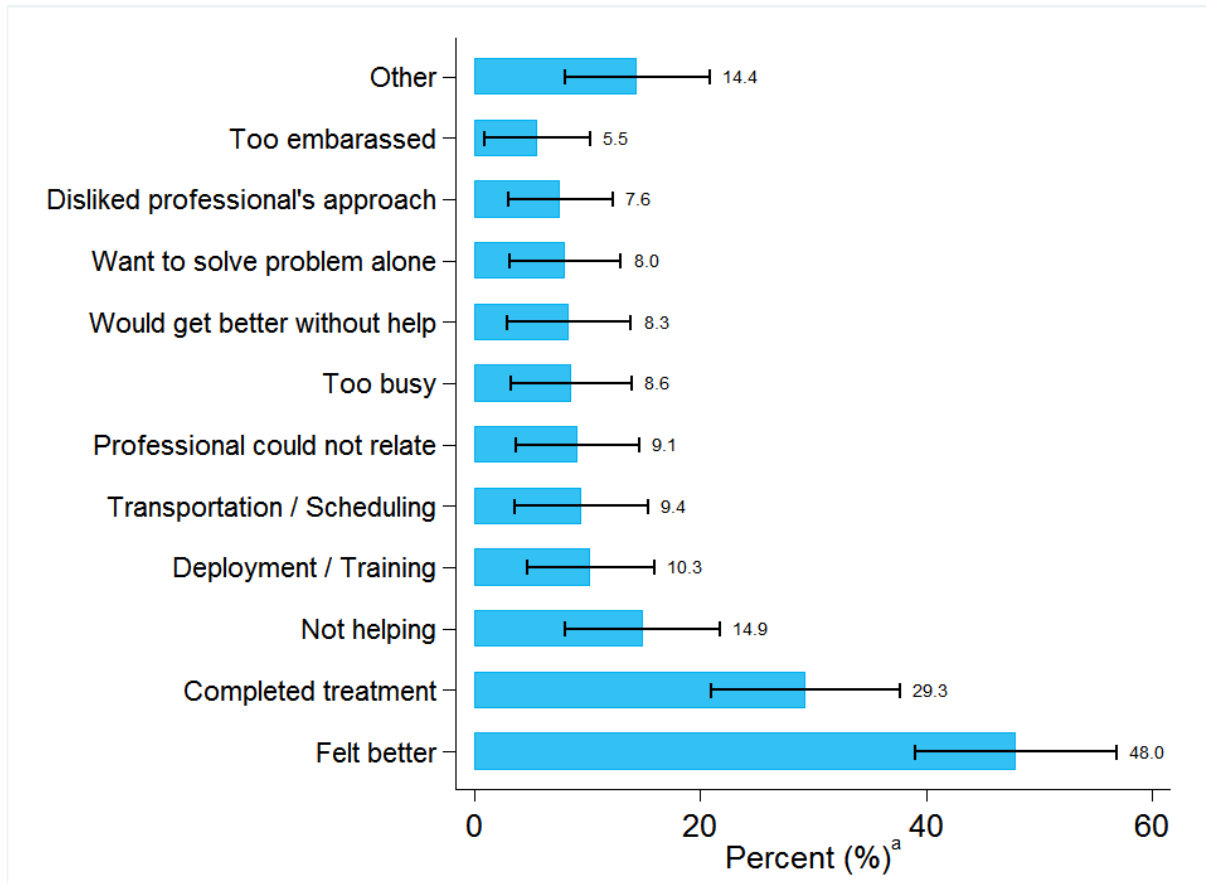


Figure 2-5: Reasons for which mental health consultations with a health professional were ended, among Regular Force personnel who stopped consulting a health professional for a mental health problem in the last 12 months.

^a Note that respondents may have stopped consulting more than one type of health professional. Percents may sum to more than 100%.

Some of the reasons listed in Figure 2-5 are indicative of a successful treatment, and represent desired outcomes for mental health patients (e.g., the patient felt better). However, other reasons are indicative of a premature end to treatment, and represent undesired outcomes for mental health patients (e.g., the patient felt too busy to pursue treatment). Personnel whose only reasons for ending mental health consultations in the past 12 months were either “felt better” or “completed recommended treatment” were, therefore, excluded from the following analyses. Of note, the percentage of personnel who reportedly ended mental health consultations in the past 12 months because they either felt better and/or completed treatment was unchanged from 2008/9.

Among Regular Force personnel who had reportedly sought mental health care in the last 12 months, 30.3% also reported stopping mental health consultations for reasons other than feeling better or completing recommended treatment (i.e., their consultations ended prematurely). This percentage was unchanged from 2008/9. Prematurely stopping mental health consultations was more likely in personnel aged 18 – 29 years than in personnel aged 40 – 60 years (Table 2-19). The percentage of Regular Force personnel who had prematurely stopped mental health consultations in the last 12 months was not different by categories of sex, rank, or service element.



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Table 2-19: Percentage of Regular Force personnel who stopped their mental health consultations in the last 12 months, for reasons other than feeling better or having completed the prescribed treatment, among Regular Force personnel who consulted a mental health professional in the last 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		30.3	(24.1, 36.5)		
Age (years)	18 – 29	39.9	(25.9, 53.9)	Reference	
	30 – 39	35.4	(23.8, 47.1)	0.83	(0.38, 1.79)
	40 – 49	19.2	(10.6, 27.8)	0.36	(0.16, 0.80)
	50 – 60	16.7	(8.0, 25.4)	0.30	(0.13, 0.71)

2.3.3 Barriers to Mental Health Care

There have been substantial investments in access to mental health services delivered through the CAF since the turn of the millennium, particularly in treatments for operational stress injuries (DND, 2013). But for these services to have an optimal impact on the health of CAF personnel, they must be easily accessible to all who require them. The HLIS 2013/14, therefore, queried respondents on the barriers they may have perceived in receiving mental health care.

At some point in the 12 months preceding the HLIS 2013/14, 14.7% of all Regular Force personnel felt a need for help from a mental health professional, but did not receive it. The percentage of Regular Force personnel who had not received help despite perceiving a need for it was not different in 2013/14 compared to 2008/9 (Table 2-20). Since 2008/9, substantial efforts have been made to increase access to mental health services among Regular Force personnel. However, efforts have also been made to raise awareness of mental health issues and available resources. Although the prevalence of common mental health conditions has remained unchanged, it is possible that a greater percentage of Regular Force personnel are recognizing a need for mental health care. Further research would be needed to disentangle the combined effects of: (1) increased access to care; and (2) increased awareness of mental health symptoms on reported barriers to needed care.

Table 2-20: Percentage of Regular Force personnel who perceived a need for mental health care but did not receive it in the last 12 months, by survey year

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2008/9	11.7	(9.3, 14.0)	0.77	(0.58, 1.01)
2013/14	14.7	(12.7, 16.7)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

In 2013/14, personnel aged 18 – 29 were more likely to report not receiving the mental health care they needed compared to personnel aged 50 – 60 years (Table 2-21). The percentage of Regular Force personnel who did not receive needed mental health care in the last 12 months was not different by categories of sex, rank, or service element.



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Table 2-21: Percentage of Regular Force personnel who perceived a need for mental health care but did not receive it in the last 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		14.7	(12.7, 16.7)		
Age (years)	18 – 29	13.5	(10.0, 17.1)	Reference	
	30 – 39	17.9	(13.8, 22.0)	1.39	(0.92, 2.11)
	40 – 49	13.9	(10.5, 17.2)	1.03	(0.68, 1.56)
	50 – 60	9.1	(6.5, 11.6)	0.64	(0.41, 0.99)

In 2013/14, the most commonly cited reasons for not receiving needed mental health care were: (1) preferred to manage the problem on his/her own; (2) afraid of negative repercussions on his/her military career; and (3) afraid to ask for help (Figure 2-6). The frequency with which these reasons were cited as reasons for not receiving needed mental health care was unchanged from 2008/9. These findings highlight an enduring stigma surrounding mental health care-seeking behaviours in the CAF.

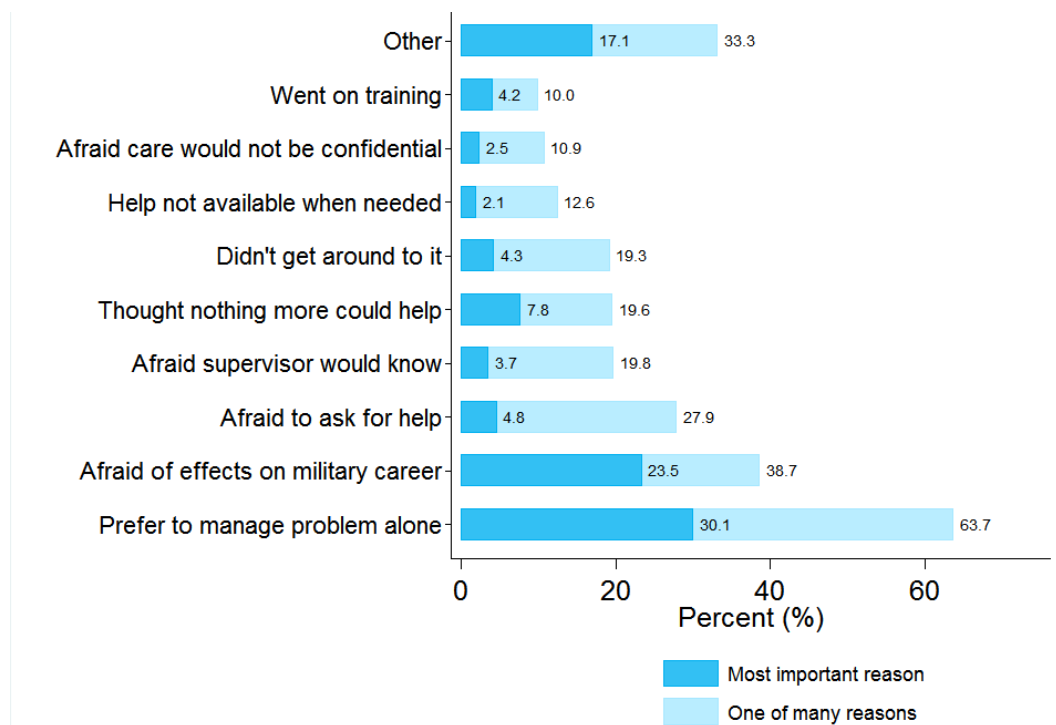


Figure 2-6: Reasons for which Regular Force personnel did not receive the mental health care they needed in the last 12 months.

In 2013/14, 40.5% of all Regular Force personnel believed that seeking mental health care definitely or probably would damage someone's military career (Figure 2-7). Regular Force personnel's beliefs regarding the effect of seeking mental health care on someone's military career had not changed from 2008/9.

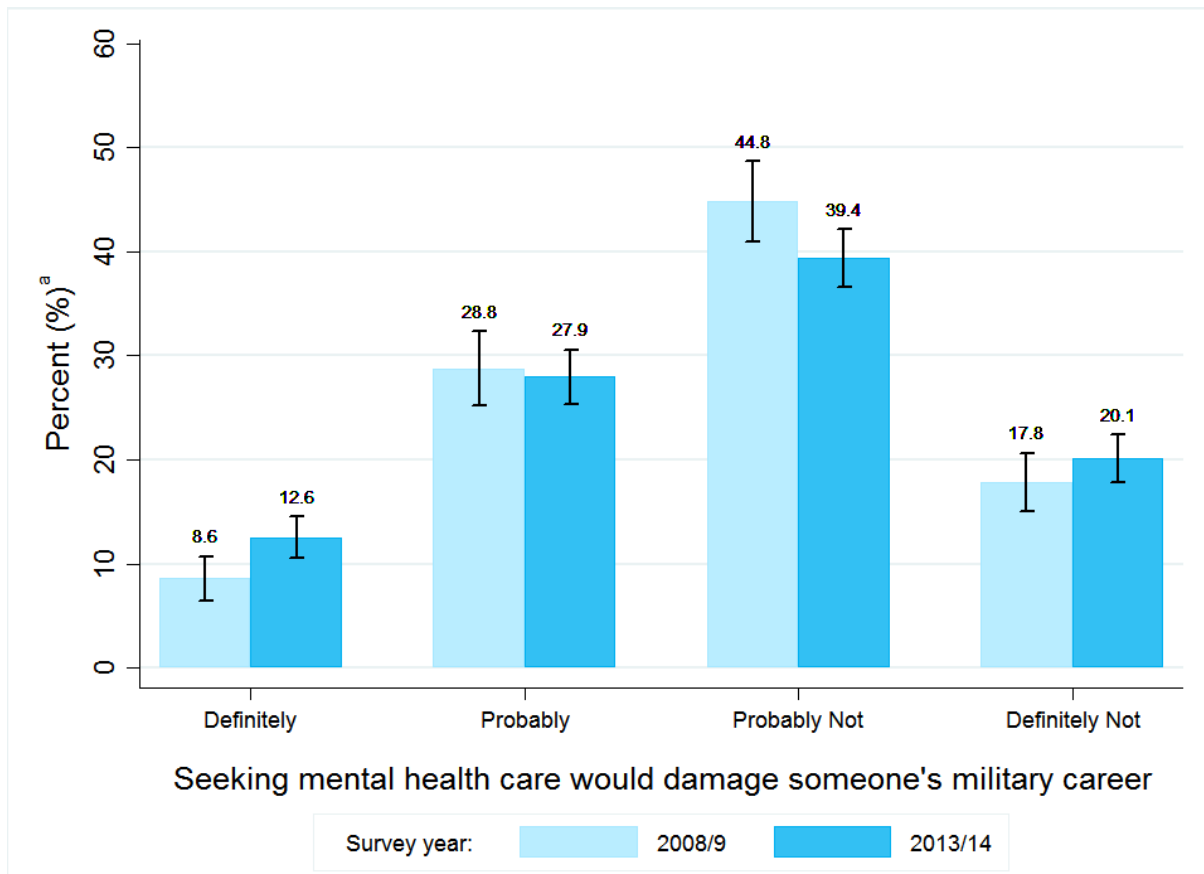


Figure 2-7: Regular Force personnel's beliefs regarding the impact of seeking mental health care on one's military career.

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

In 2013/14, believing that seeking mental health care would have a negative impact on someone's military career was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; (2) males compared to females; (3) NCMs compared to officers; and (4) Land personnel compared to Air personnel (Table 2-22).



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Table 2-22: Regular Force personnel’s beliefs regarding the impact of seeking mental health care on one’s military career

Variable	Category	Seeking Mental Health Care Would Damage Someone’s Military Career (Percent (95% CI))				Odds Ratio	(95% CI) ^a
		Definitely	Probably	Probably Not	Definitely Not		
Overall		12.6 (10.6, 14.6)	27.9 (25.3, 30.6)	39.4 (36.6, 42.1)	20.1 (17.8, 22.4)		
Age (years)	18 – 29	12.2 (8.4, 16.0)	34.9 (29.6, 40.2)	40.5 (35.1, 45.9)	12.4 (8.9, 15.9)	Reference	
	30 – 39	14.6 (10.6, 18.6)	25.1 (20.2, 30.0)	37.2 (32.0, 42.4)	23.1 (18.4, 27.8)	0.72	(0.54, 0.96)
	40 – 49	11.6 (8.2, 15.0)	25.3 (20.8, 29.7)	39.8 (34.9, 44.8)	23.3 (19.0, 27.6)	0.65	(0.50, 0.84)
	50 – 60	9.0 (6.2, 11.8)	25.2 (21.0, 29.5)	42.7 (37.8, 47.5)	23.1 (19.0, 27.2)	0.59	(0.46, 0.76)
Sex	Female	9.1 (6.9, 11.3)	23.6 (20.5, 26.6)	48.1 (44.4, 51.7)	19.2 (16.4, 22.1)	Reference	
	Male	13.1 (10.8, 15.4)	28.6 (25.6, 31.6)	38.0 (34.9, 41.2)	20.3 (17.7, 22.9)	1.25	(1.06, 1.48)
Rank	NCM	13.9 (11.3, 16.5)	29.2 (25.8, 32.5)	37.3 (33.8, 40.8)	19.7 (16.8, 22.5)	Reference	
	Officer	8.7 (6.5, 10.9)	24.4 (21.2, 27.5)	45.5 (41.8, 49.2)	21.5 (18.4, 24.6)	0.72	(0.60, 0.87)
Service element	Air	9.3 (6.2, 12.3)	26.9 (22.5, 31.2)	41.0 (36.3, 45.7)	22.8 (18.7, 27.0)	Reference	
	Sea	10.1 (6.2, 14.1)	28.0 (21.7, 34.3)	39.0 (32.4, 45.6)	22.8 (17.0, 28.6)	1.06	(0.77, 1.44)
	Land	15.4 (12.3, 18.6)	28.7 (24.8, 32.5)	38.4 (34.4, 42.5)	17.5 (14.3, 20.6)	1.44	(1.14, 1.83)

^a Odds ratios computed with ordinal logistic regression. See Methods section for more details.



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2.4 Intimate Relationships

An intimate relationship with a spouse or a partner has profound repercussions on mental health because it is often the most important and complex interpersonal relationship that an individual will ever experience. While healthy relationships can protect both romantic partners against various mental health problems, stressful relationships can increase both partners' risk of mental disorders (Whisman, 2012). To better understand relationship satisfaction, and domestic abuse in the CAF, the HLIS 2013/14 queried participants on specific aspects of their current intimate relationships.

2.4.1 Relationship Satisfaction

In the last 12 months, 86.5% (95% CI: 84.5%, 88.3%) of Regular Force personnel had been married, dating, or involved in a romantic relationship. Among personnel who had been in a relationship in the last 12 months, 78.8% (95% CI: 75.5%, 81.7%) reported being extremely satisfied, very satisfied, or satisfied with their relationship(s) during that time period (Figure 2-8). This percentage did not differ by categories of age, sex, rank, or service element.

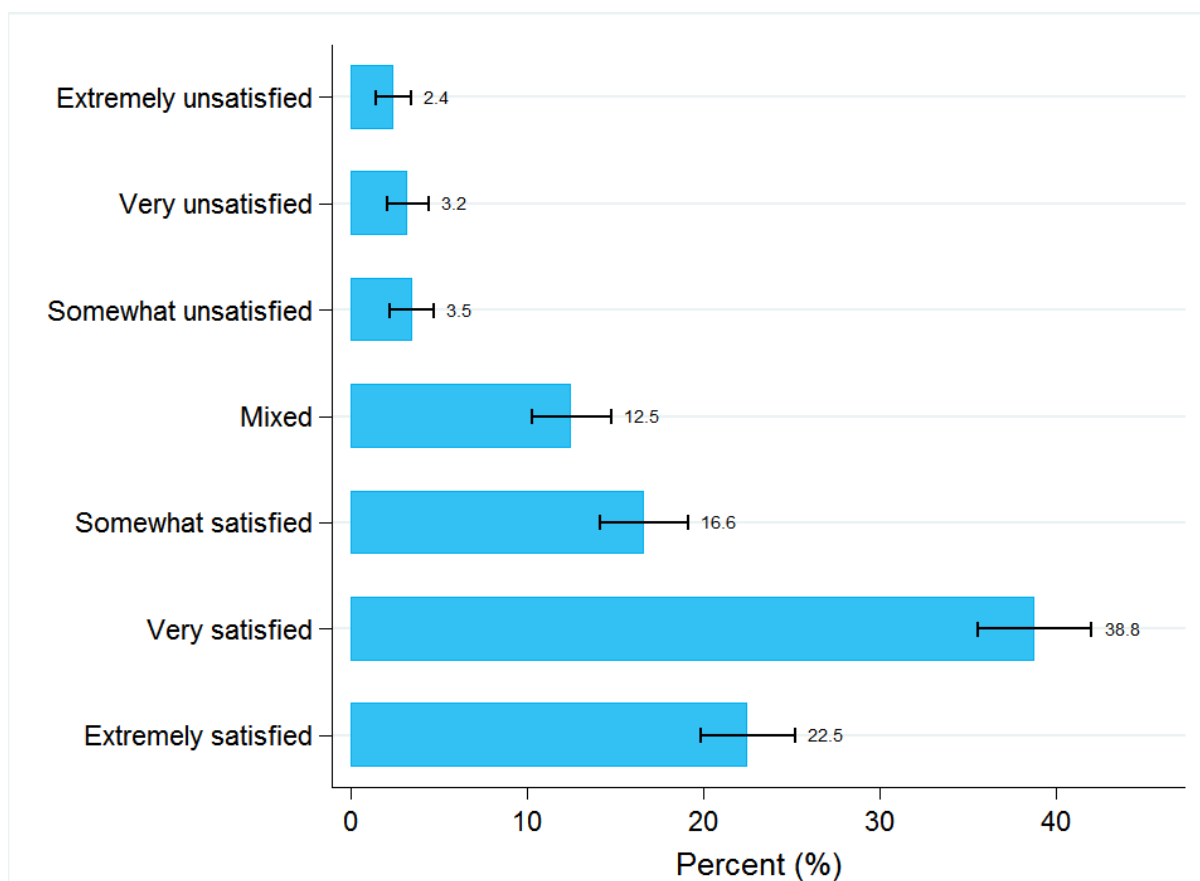


Figure 2-8: Satisfaction with romantic relationship(s) in the last 12 months, among Regular Force personnel who had been married, dating, or involved in a relationship in the last 12 months.



2.4.2 Physical and Sexual Abuse Inflicted by Canadian Armed Forces Personnel

Among Regular Force personnel who had been involved in a romantic relationship in the last 12 months, 5.8% (95% CI: 4.6%, 7.4%) admitted to inflicting some type of physical or sexual abuse on their partner during that time period. This percentage was not different by categories of sex, age, rank, or service element. These percentages cannot be compared to results of the HLIS 2008/9, because of important changes in question design.

The most commonly reported type of abuse inflicted on an intimate partner was pushing, grabbing, or shoving (Table 2-23). Too few survey respondents reported inflicting physical or sexual abuse on their intimate partners in the last 12 months to allow meaningful comparisons of types of abuse by demographic categories.

Table 2-23: Prevalence of physical and sexual abuse between intimate partners in the last 12 months, among Regular Force personnel who had been involved in a romantic relationship in the last 12 months

Type of Abuse	Regular Force Personnel Abused Partner		Regular Force Personnel Abused by Partner	
	Percent	(95% CI)	Percent	(95% CI)
Push, grab, or shove	5.5	(4.1, 6.9)	7.4	(5.7, 9.0)
Slap, kick, bite, or hit	1.1	(0.5, 1.7)	5.2	(3.8, 6.7)
Cut or bruise	0.9	(0.3, 1.6) ^a	0.9	(0.4, 1.5) ^a
Force sexual activity	–	–	0.8	(0.3, 1.2) ^a

^a Fewer than 20 unweighted observations; values may be unstable; interpret with caution.

2.4.3 Physical and Sexual Abuse Inflicted by Intimate Partner of Canadian Armed Forces Personnel

Among Regular Force personnel who had been involved in a romantic relationship in the last 12 months, 9.9% reported being physically or sexually abused by their partner during that time period. This percentage was not different by categories of sex, rank, or service element. However, a greater percentage of personnel aged 18 – 29 years reported being abused by their intimate partner in the last 12 months than personnel aged 40 – 60 years (Table 2-24). These percentages cannot be compared to results of the HLIS 2008/9, because of important changes in question design.

Table 2-24: Percentage of Regular Force personnel who reported being physically or sexually abused by their partner in the last 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		9.9	(8.0, 11.7)		
Age (years)	18 – 29	13.8	(9.7, 18.0)	Reference	
	30 – 39	9.4	(6.1, 12.7)	0.65	(0.39, 1.09)
	40 – 49	7.9	(5.0, 10.8)	0.53	(0.31, 0.90)
	50 – 60	5.9	(3.5, 8.3)	0.39	(0.23, 0.68)



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2.5 Conclusion

The estimated prevalence of important mental health problems such as major depression, post-traumatic stress disorder, psychological distress, and suicide ideation has not changed from the HLIS 2004 and the HLIS 2008/9.

Recent overseas deployments were not associated with any adverse mental health outcomes, but three caveats must be kept in mind when interpreting these results: (1) only personnel who passed extensive screening for adverse mental health issues would have been able to deploy overseas; (2) only data on deployments in the past two years were ascertained; and (3) no data were collected to measure whether or not personnel were exposed to combat or other traumatic events while on deployment.

In general, mental health tended to be poorer in: (1) NCMs compared to officers; (2) widowed, divorced, or separated personnel compared to married or common-law personnel; and (3) obese personnel compared to normal weight personnel. These findings are consistent with the scientific literature. In fact, recent studies have found that individuals with poor mental health are at an increased risk of unhealthy weight gain.

The percentage of Regular Force personnel who consulted with a health professional about a mental health problem in the last 12 months had not changed from the HLIS 2008/9. Similarly, the percentage of Regular Force personnel who perceived a need for mental health care but did not receive it in the last 12 months had not changed from the HLIS 2008/9. However, an important proportion of personnel with mental health problems did not seek mental health care in the last 12 months. As an example, only 60% of personnel who seriously contemplated suicide in the last 12 months sought mental health care during the same time period. Barriers to mental health care persist in the Regular Force. Given that mental health service use is driven by both (1) need for care; and (2) accessibility and acceptability of care, future research is warranted.

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Chapter 3 – Injuries

3.1 Introduction

Injuries are the leading threat to the Universality of Service or “soldier first” principle, which demands that all Canadian Armed Forces (CAF) personnel are physically fit, employable, and deployable (CF H Svcs Gp, 2014). In peacetime and in combat, injuries negatively impact the overall health, productivity, and operational readiness of military populations (Jones, 2010). Injuries increase lost time, health care utilization, and disability costs, generating substantial economic burden (Nindl, 2013).

Paradoxically, the work and training requirements of the CAF places personnel at a higher risk of injury. The importance of physical health to operational readiness suggests that there is a need for effective injury prevention programs to mitigate the burden caused by injuries. Identifying injury risk factors could guide resource allocation for intervention opportunities.

An injury that is severe enough to limit normal daily functioning, for at least one day, is considered activity-limiting. An activity-limiting repetitive strain injury results from a repetitive movement that occurs over a period of time (e.g., development of carpal tunnel syndrome from exposure to daily workplace factors). An activity-limiting acute injury generally results from a single incident at a single point in time (e.g., a broken bone.)

The HLIS 2013/14 queried participants on repetitive strain injuries (RSIs) and acute injuries sustained in the last 12 months. Participants who reported having sustained an injury were probed for further details on the context in which their injuries occurred.

3.2 Repetitive Strain Injuries

RSIs result from repetitive or forceful motions affecting muscles, tendons, and nerves, and occur over extended periods of time (Yassi, 1997). Common examples of RSIs include: tendonitis; carpal tunnel syndrome; and tennis elbow.

3.2.1 One-Year Prevalence of Repetitive Strain Injuries

In the last 12 months, 32.3% of all Regular Force personnel reported having sustained a RSI that was serious enough to limit their normal activities (Table 3-1). The percentage of personnel who sustained a RSI in the last 12 months increased with increasing age (Table 3-2). Normal weight personnel were less likely to have sustained a RSI in the last 12 months than overweight and obese personnel (Table 3-2). The percentage of Regular Force personnel who suffered a RSI in the last 12 months was not different between categories of sex, rank, service element, smoking status, or physical activity level.

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Table 3-1: Percentage of Regular Force personnel who suffered a repetitive strain injury in the last 12 months, by survey year

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	26.4	(24.3, 28.6)	0.75	(0.64, 0.88)
2008/9	22.6	(19.7, 25.8)	0.61	(0.50, 0.75)
2013/14	32.3	(29.8, 34.8)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

Table 3-2: Percentage of Regular Force personnel who suffered a repetitive strain injury in the last 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		32.3	(29.8, 34.8)		
Age (years)	18 – 29	23.3	(19.1, 28.2)	Reference	
	30 – 39	31.7	(26.9, 36.8)	1.52	(1.08, 2.14)
	40 – 49	37.3	(32.8, 42.1)	1.96	(1.42, 2.71)
	50 – 60	45.9	(41.3, 50.4)	2.79	(2.03, 3.81)
Body mass index	Normal weight	25.7	(21.6, 30.3)	Reference	
	Overweight	31.7	(28.1, 35.6)	1.34	(1.01, 1.78)
	Obese	42.3	(36.7, 48.0)	2.11	(1.53, 2.92)

Of all Regular Force personnel who suffered a serious RSI in the last 12 months, 79.8% sought medical care as a result of their injury. In other words, 25.5% of all Regular Force personnel sought medical care for a RSI sustained in the last 12 months. Injured females were more likely to seek care for their injury than injured males (Table 3-3). There were no differences in care-seeking behaviour for recent RSIs between categories of age, rank, or service element.

Table 3-3: Percentage of injured Regular Force personnel who sought care for their repetitive strain injury in the last 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		79.8	(75.6, 83.5)		
Sex	Female	87.5	(83.2, 90.9)	Reference	
	Male	78.5	(73.6, 82.7)	0.52	(0.34, 0.81)



3.2.2 Types of Repetitive Strain Injuries Sustained

The body parts most commonly affected by RSIs in the last 12 months were: (1) lower back; (2) thighs and knees; and (3) shoulders and upper back (Figure 3-1). The three body parts most commonly affected by RSIs in the last 12 months were the same for both males and females, and varied little between age categories.

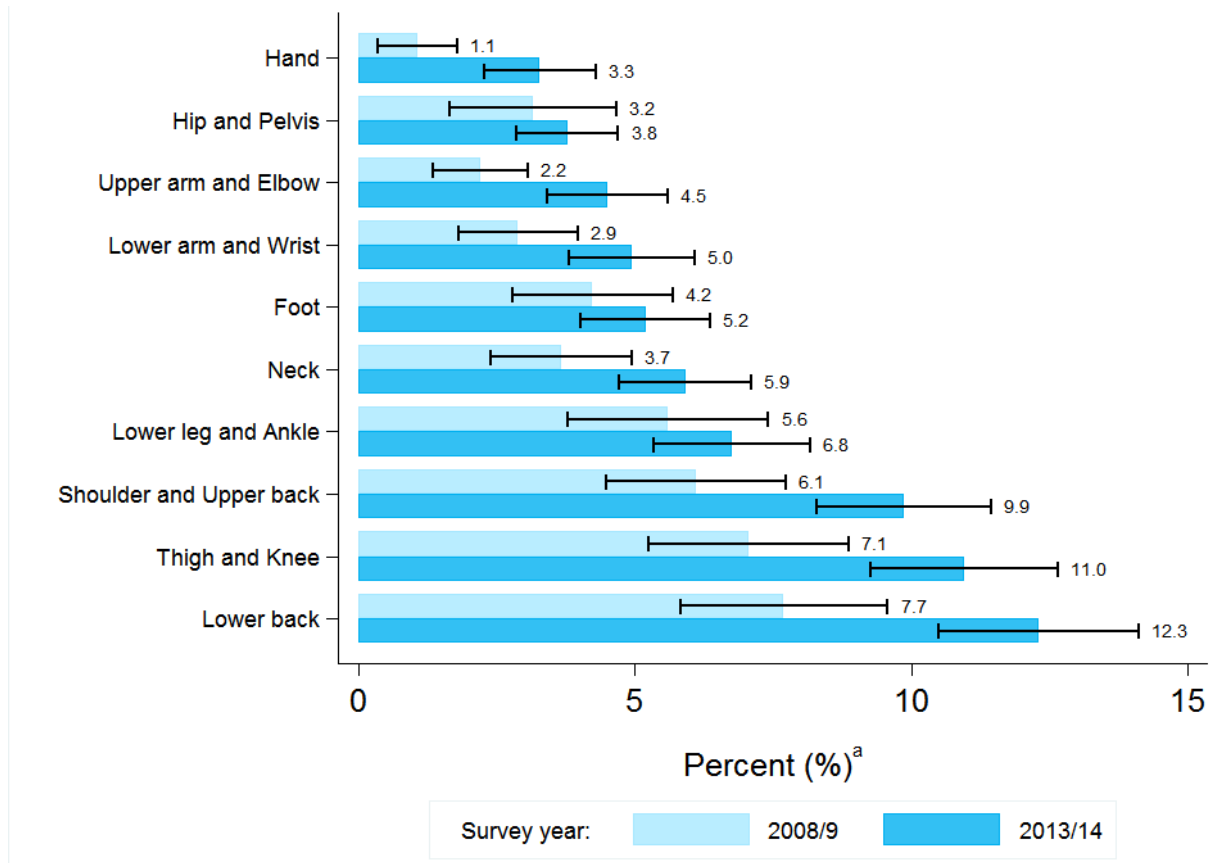


Figure 3-1: Percentage of all Regular Force personnel who suffered a repetitive strain injury to specific body parts in the last 12 months.

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

The activities in which injured Regular Force personnel were most commonly participating when they sustained a RSI in the last 12 months were: (1) physical training; (2) sports; and (3) military training (Figure 3-2). Jogging was the physical activity associated with the highest number of injuries among Regular Force personnel. Ice hockey, a sport practiced by fewer individuals than jogging, was the physical activity associated with the highest injury rate among Regular Force personnel (see Chapter 7).



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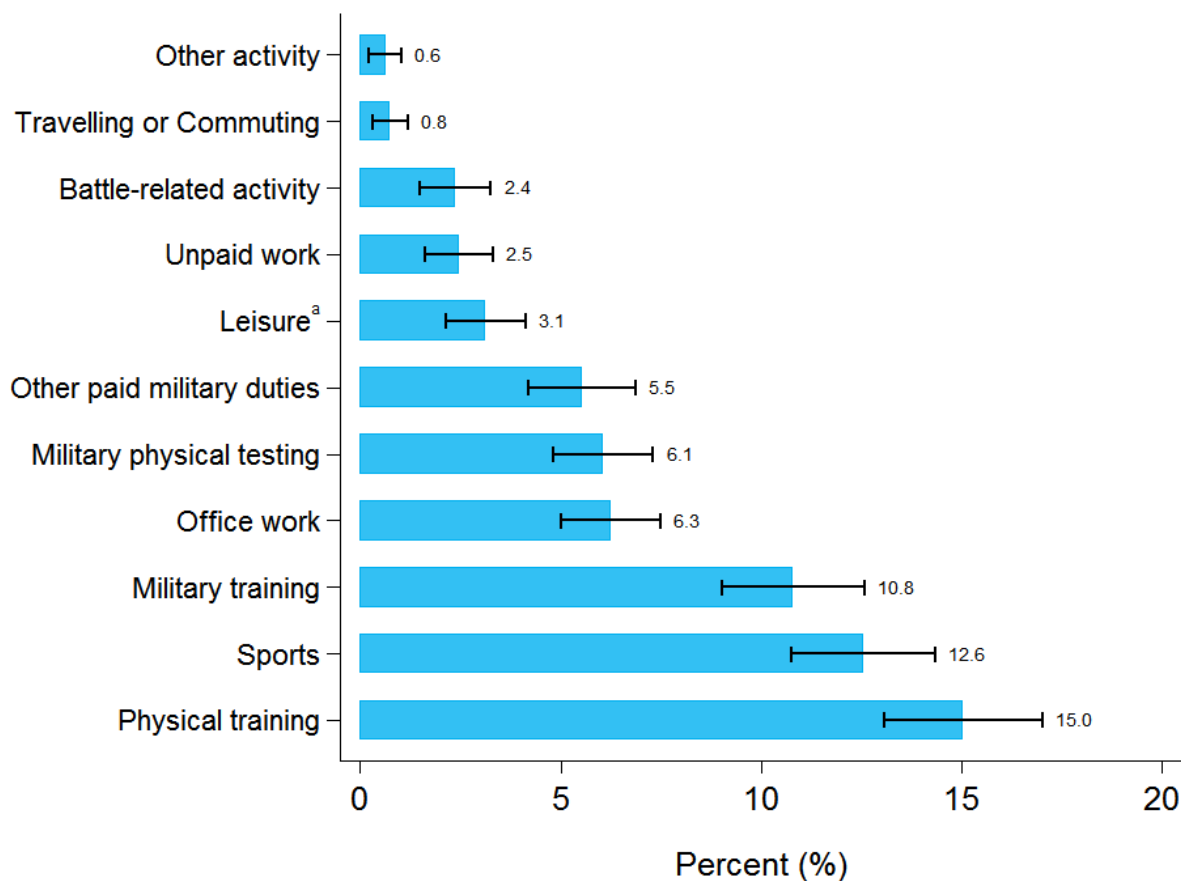


Figure 3-2: Percentage of all Regular Force personnel who suffered a repetitive strain injury while participating in specific activities in the last 12 months.

^a Leisure activities excluding sports, adventure training, or physical training.

Of note, 2.4% of all RSIs sustained in the last 12 months were reportedly suffered during battle-related activities (Figure 3-2). However, 33.6% (95% CI: 18.2%, 53.6%) of personnel who reported having sustained an RSI during a battle-related activity in the last 12 months had not been deployed overseas in the last two years. Therefore, survey respondents likely interpreted “battle-related activities” as: (1) activities related to battle against an armed enemy; and/or (2) activities related to battle simulations conducted as part of military exercises. Results should be interpreted with this caveat in mind.

The three activities in which injured Regular Force personnel were most commonly participating in when they sustained a RSI in the last 12 months were the same for both males and females, and varied very little between age categories. Of all the serious RSIs suffered by Regular Force personnel in the last 12 months, 6.7% were thigh or knee injuries that occurred during physical training (Figure 3-3).



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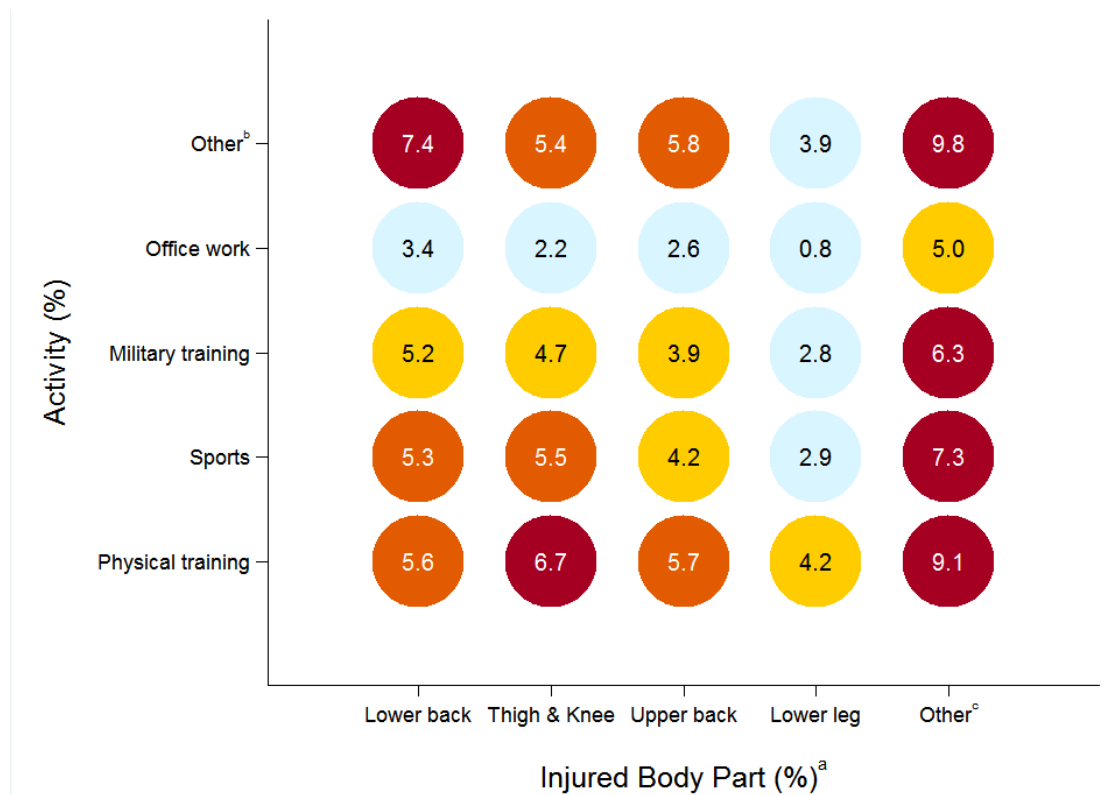


Figure 3-3: Percentage of all repetitive strain injuries suffered by Regular Force personnel in the last 12 months that affected a given body part and occurred while member was participating in a given activity.

^a Note that Regular Force personnel may have suffered more than one repetitive strain injury. Percents may sum to more than 100%.

^b Other activities include: battle-related activities, physical testing, adventure training, travelling, unpaid work, leisure activities, and other paid duties.

^c Other body parts include: neck, upper arm, elbow, lower arm, wrist, hand, hip, pelvis, foot, chest, and abdomen.

Of note, a greater percentage of Regular Force personnel reported suffering a RSI in the 12 months preceding the HLIS 2013/14 than in previous surveys (Table 3-1). This apparent increase in the one-year prevalence of RSIs was not driven by any single type of injury; rather, the prevalence of many types of RSIs (including lower back, thigh and knee, and shoulder and upper back injuries) increased from 2008/9 to 2013/14 (Figure 3-1). The reason for this apparent increase in one-year prevalence of RSIs in Regular Force personnel is not known. The RSI definition used in the HLIS changed slightly between 2008/9 and 2013/14, but this small difference was unlikely to account for the large observed increase in the one-year prevalence of RSIs.

3.3 Acute Injuries

Acute injuries result from a sudden transfer of energy in an amount or rate that exceeds the threshold of human tolerance, or from the absence of vital elements such as oxygen or heat (CDC, 2001). Unlike RSIs, acute injuries are caused by a single event, and occur at a precise moment in time. Common examples of acute injuries include bone fractures, muscle tears, and lacerations.



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3.3.1 One-Year Prevalence of Acute Injuries

In the last 12 months, 19.4% of all Regular Force personnel reported having suffered an acute injury serious enough to limit their normal activities. This percentage was unchanged from the HLIS 2008/9, but was lower than in the HLIS 2004 (Table 3-4). In 2013/14, the percentage of personnel who suffered a serious acute injury in the last 12 months was not different by categories of age, sex, rank, service element, body mass index, smoking status, or physical activity level.

Table 3-4: Percentage of Regular Force personnel who suffered an acute injury in the last 12 months

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	26.1	(23.9, 28.4)	1.47	(1.23, 1.76)
2008/9	20.5	(17.8, 23.5)	1.07	(0.86, 1.34)
2013/14	19.4	(17.3, 21.6)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

Of all Regular Force personnel who suffered an acute injury in the last 12 months, 83.2% (95% CI: 77.9%, 87.4%) sought medical care for their injury. In other words, 16.1% (95% CI: 14.2%, 18.2%) of all Regular Force personnel reported seeking care for an acute injury in the last 12 months. The percentage of personnel who sought medical care for an acute injury suffered in the last 12 months was not different by categories of age, sex, rank, or service element.

3.3.2 Types of Acute Injuries and Body Parts Affected

The most commonly reported types of acute injuries sustained in the last 12 months were: (1) sprains or strains of the hip, knee, ankle, or foot; (2) back injuries; and (3) sprains or strains of the shoulder, elbow, wrist, or hand (Figure 3-4). As expected, medical care-seeking behaviour differed between types of acute injuries. As an example, nearly all Regular Force personnel who suffered bone fractures or knee ligament tears in the last 12 months sought medical care for their injuries, while only 38% of Regular Force personnel who suffered scrapes, bruises or blisters in the last 12 months sought care (Figure 3-4).



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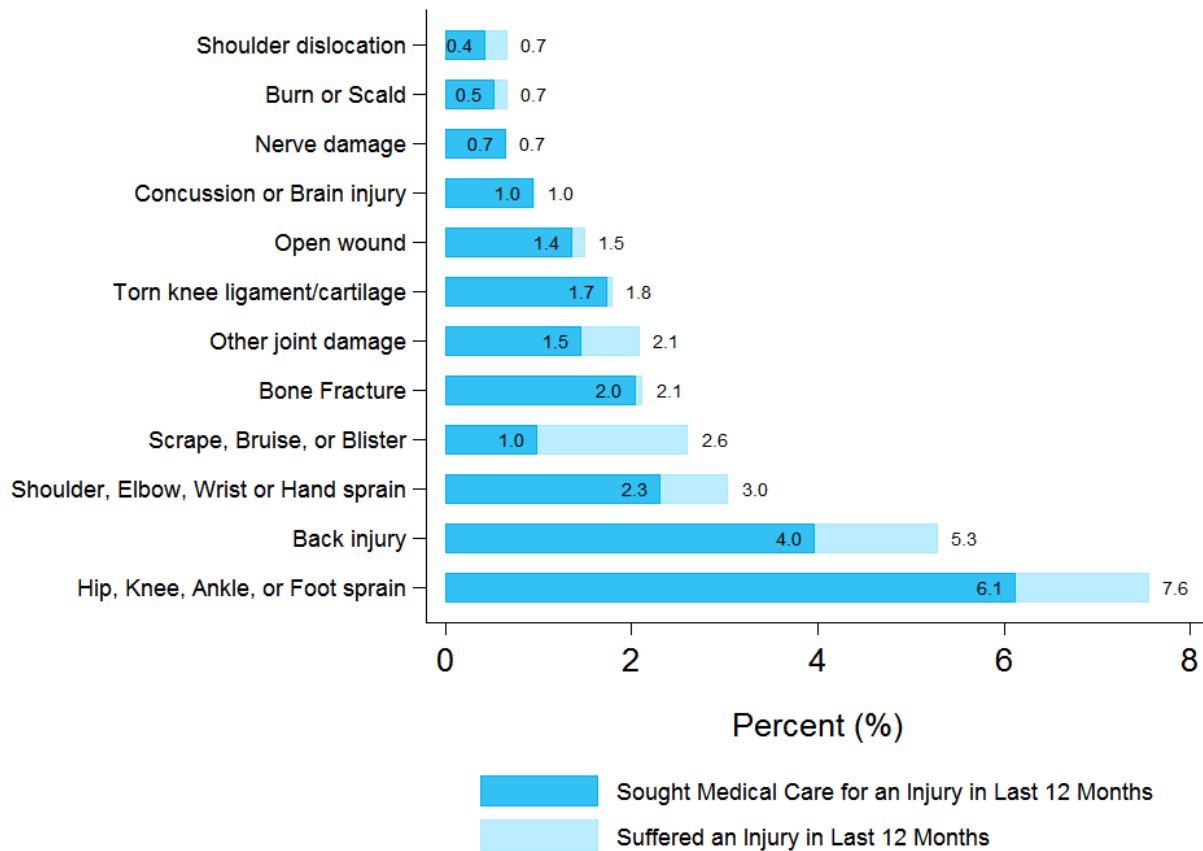


Figure 3-4: Percentage of all Regular Force personnel who suffered various types of serious acute injuries in the last 12 months, and who sought medical care for their injuries.

3.3.3 Most Serious Acute Injury Suffered in the Last 12 Months

Survey respondents who reported having suffered at least one acute injury in the last 12 months were asked to provide further details on their *most serious* acute injury suffered during that time. Sprains or strains of the hip, knee, ankle, or foot accounted for 26.4% of the most serious acute injuries suffered by Regular Force personnel in the last 12 months; back injuries (21.2%) and bone fractures (9.3%) accounted for the second and third highest proportions of the most serious acute injury suffered in that time period (Figure 3-5).

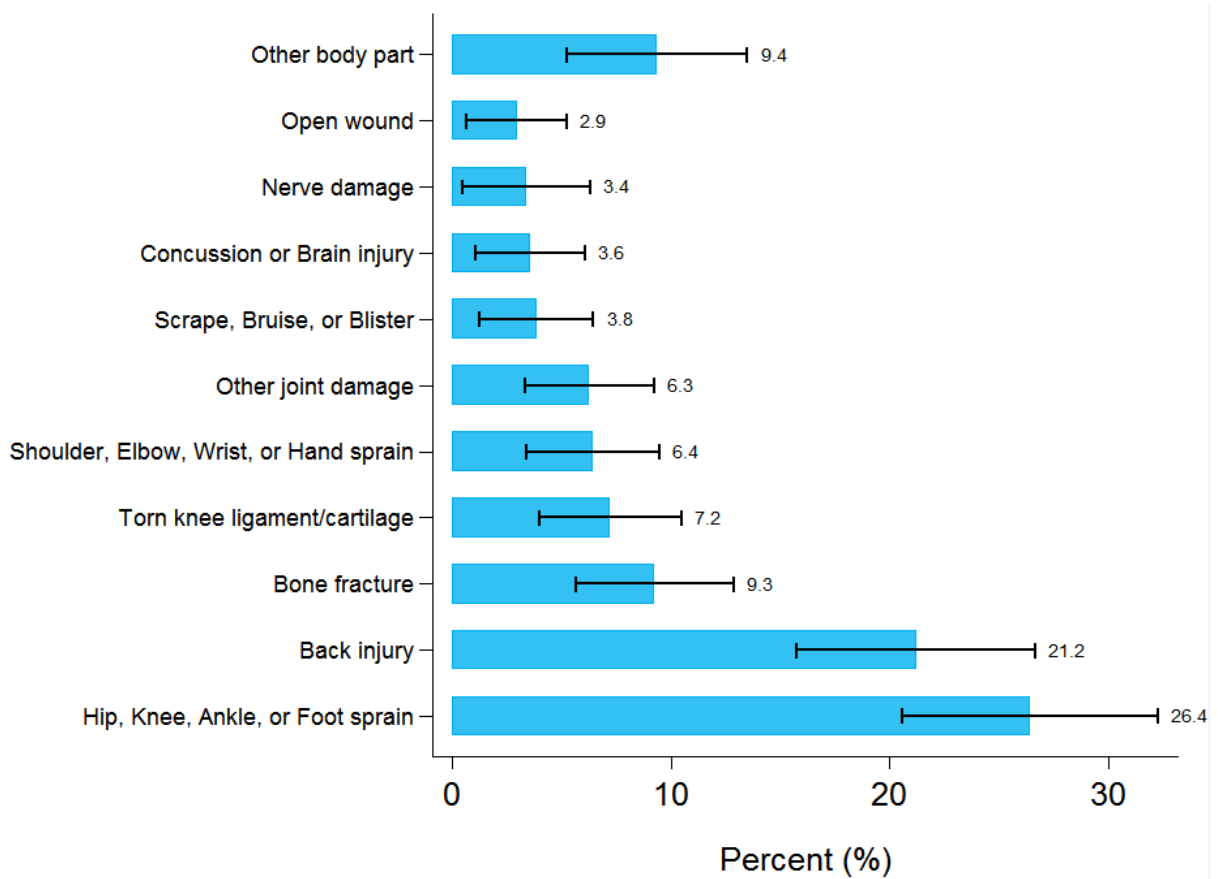


Figure 3-5: Most serious acute injury suffered in the last 12 months, among Regular Force personnel who suffered at least one acute injury during that time.

When they sustained their most serious acute injury in the last 12 months, 31.5% of injured Regular Force personnel were participating in sports, and another 20.5% were participating in military training (Figure 3-6). It is, therefore, unsurprising that the majority of the most serious acute injuries suffered in the last 12 months occurred in either: (1) areas used for military training or PT; or (2) sports or athletic areas (Figure 3-7). As previously mentioned, jogging was the physical activity associated with the greatest number of injuries, and ice hockey was the physical activity associated with the greatest risk of injury (see Chapter 7).



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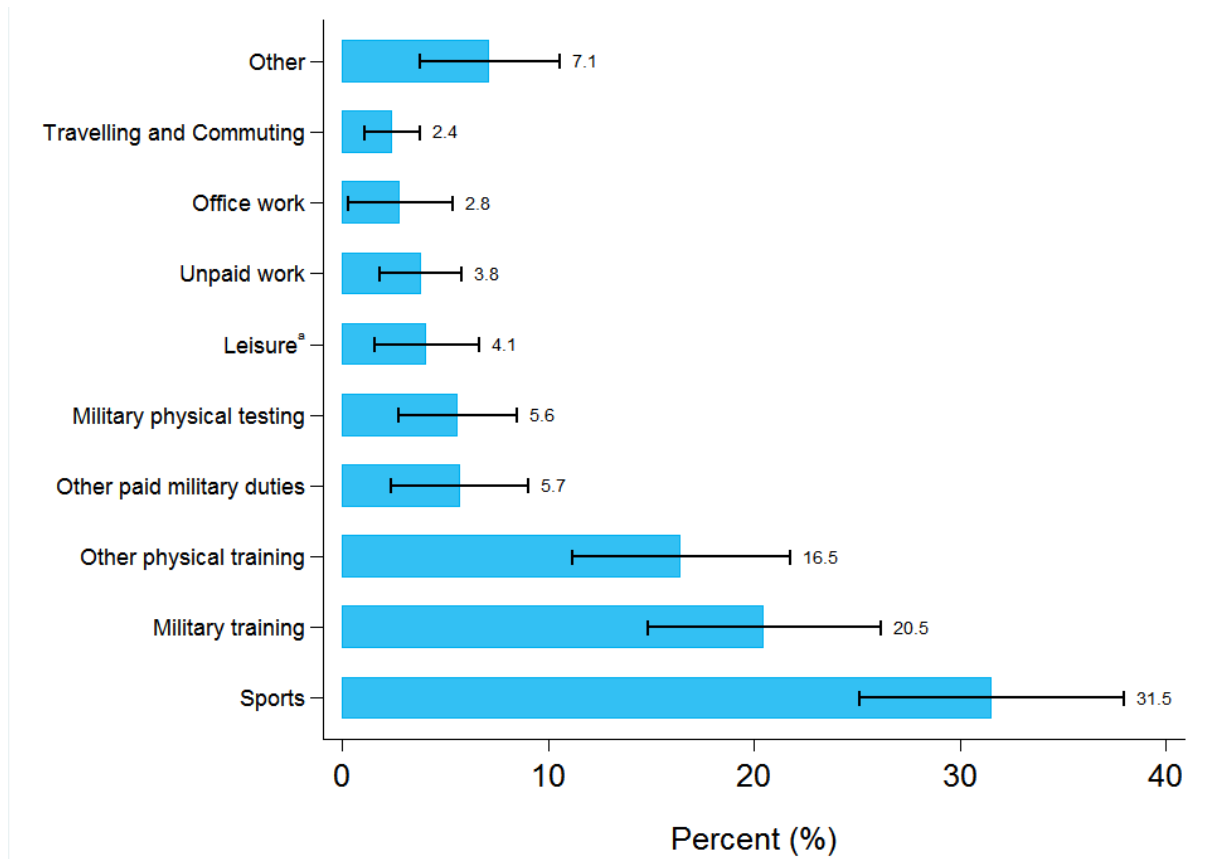


Figure 3-6: Type of activity in which Regular Force personnel were engaged when they suffered their most serious acute injury in the last 12 months, among those who suffered at least one acute injury during that time.

^a Leisure activities excluding sports, adventure training, or physical training.

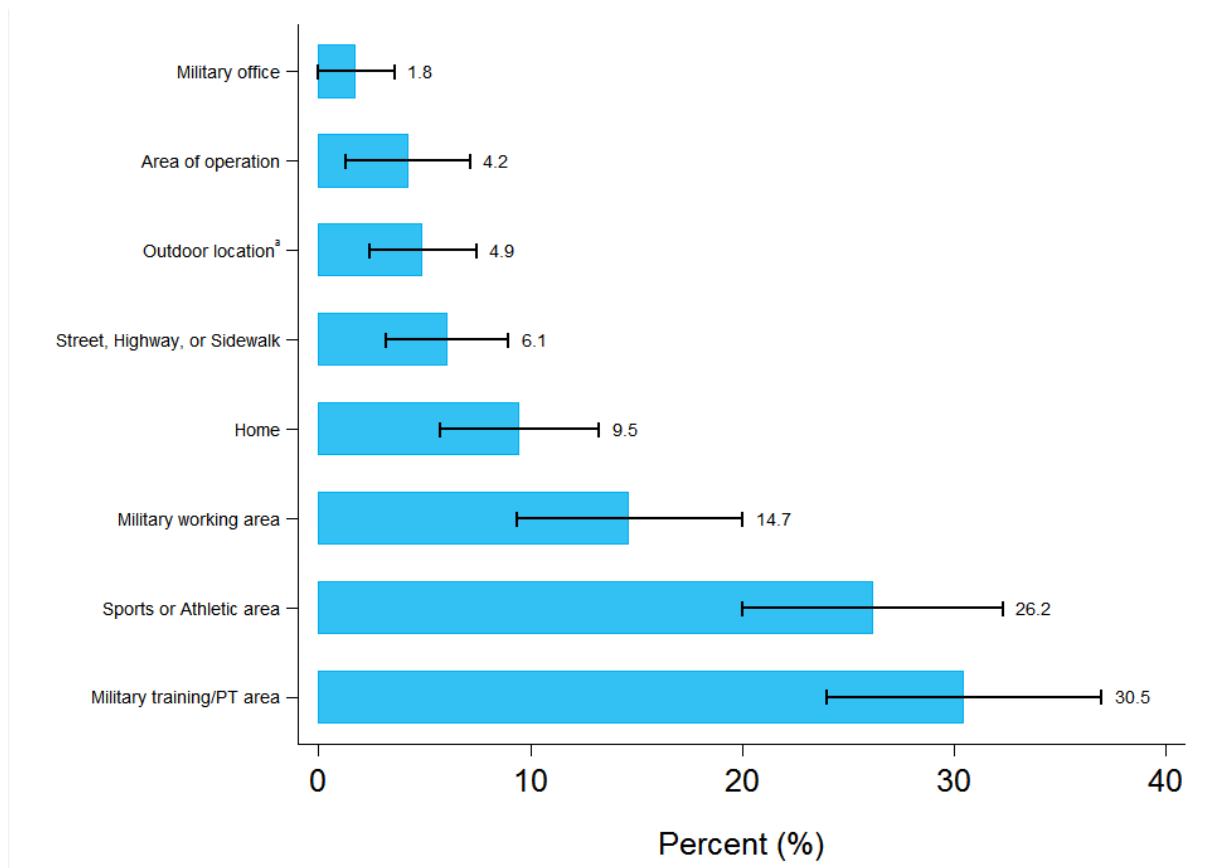


Figure 3-7: Location where Regular Force personnel suffered their most serious acute injury in the last 12 months, among those who suffered at least one acute injury during that time.

^a Outdoor locations include: countryside, forests, lakes, beaches, parks, and mountains.

Overexertion and/or fatigue contributed to 46.6% of the most serious acute injury sustained by Regular Force personnel in the last 12 months (Figure 3-8). In fact, overexertion in a military training area accounted for 12.3% of the most serious acute injuries suffered in the last 12 months (Figure 3-9). Similarly, overexertion during military training accounted for 7.4% of the most serious acute injuries sustained in the last 12 months (Figure 3-10).



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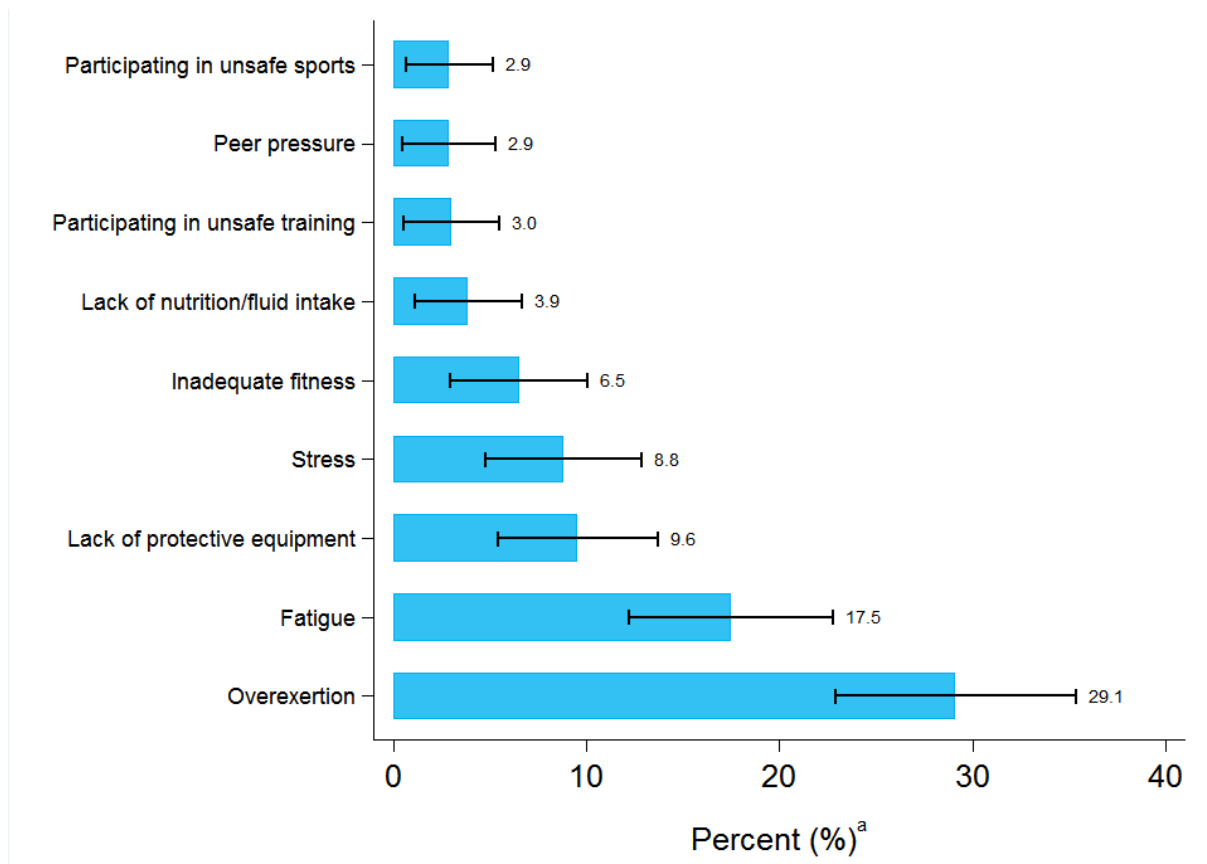


Figure 3-8: Factors reported by Regular Force personnel that contributed to their most serious acute injury sustained in the last 12 months.

^a Note that survey respondents could only report one acute injury as their most serious in the last 12 months. However, some respondents reported multiple contributing factors for their most serious injury; others reported no contributing factor. Percents may not sum to 100%.

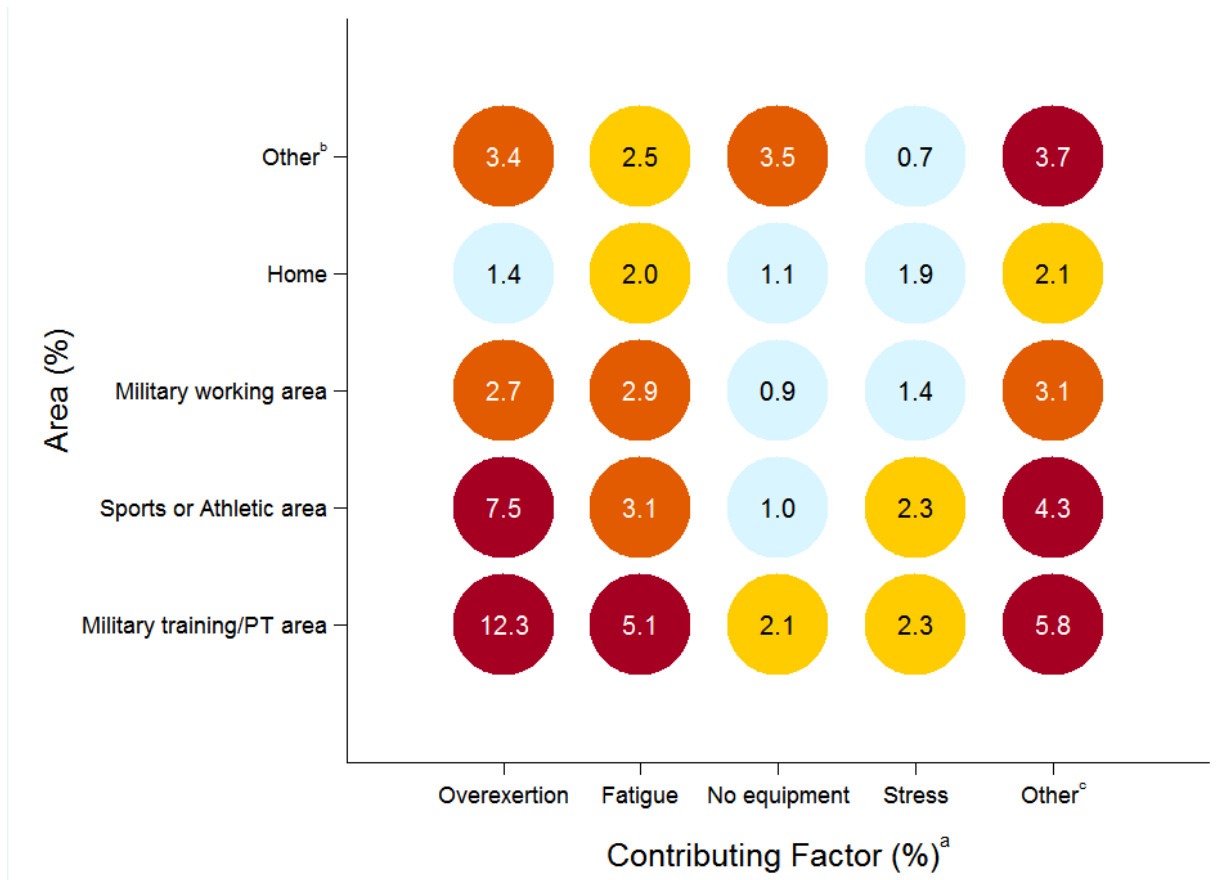


Figure 3-9: Percentage of most serious acute injuries suffered in the last 12 months that can be attributed to a particular combination of contributing factor and geographical location.

^a Note that survey respondents could only report one acute injury as their most serious of the last 12 months. However, some respondents reported multiple contributing factors for their most serious injury; others reported no contributing factor. Percents may not sum to 100%.

^b Other areas include: area of operation, military office, street/sidewalk, civilian buildings, and farm.

^c Other contributing factors include: lack of nutrition or fluid intake, alcohol use, drug use, peer pressure, inadequate fitness, and participating in unsafe training.



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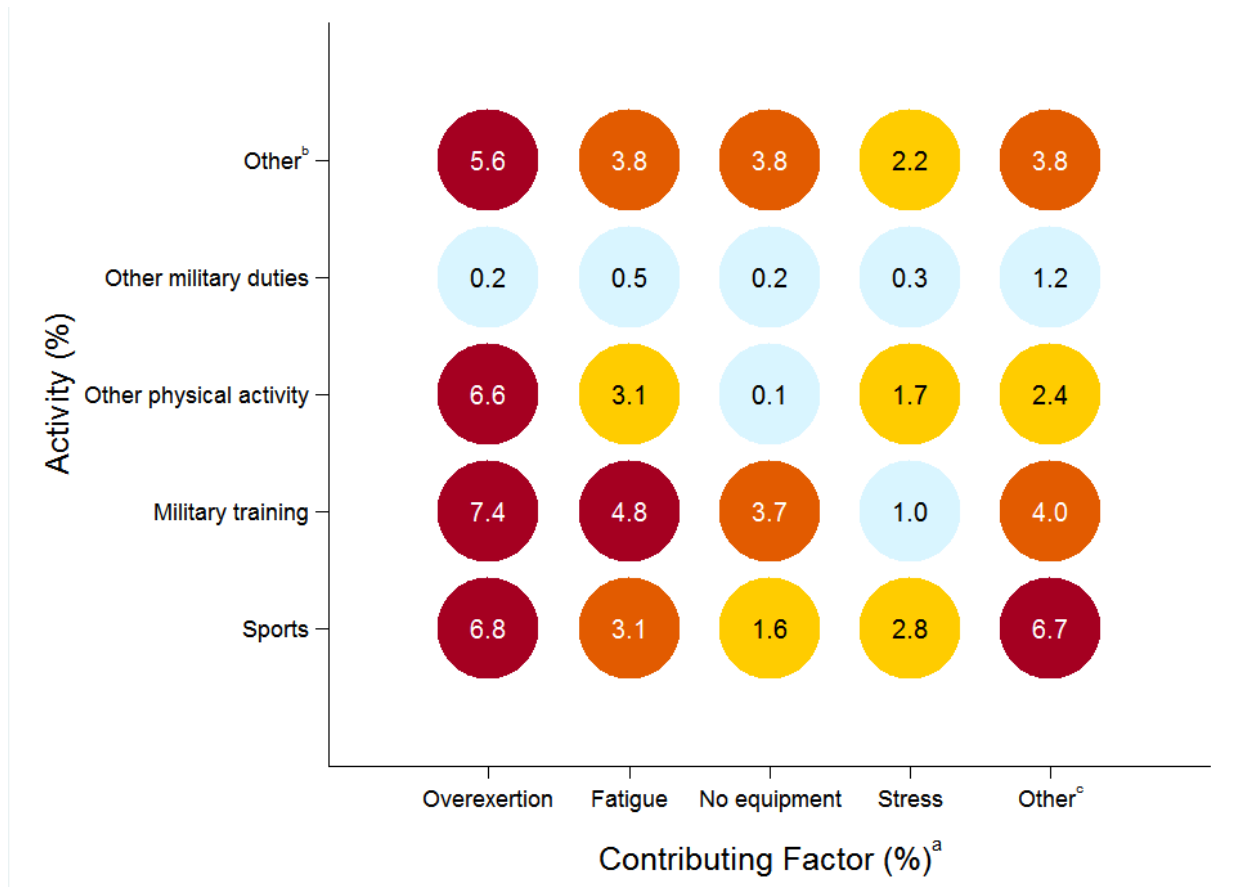


Figure 3-10: Percentage of most serious acute injuries suffered in the last 12 months that can be attributed to a particular combination of contributing factor and type of activity.

^a Note that survey respondents could only report one acute injury as their most serious in the last 12 months. However, some respondents reported multiple contributing factors for their most serious injury; others reported no contributing factor. Percents may not sum to 100%.

^b Other activities include: battle-related activities, physical testing, adventure training, travelling, unpaid work, leisure activities, and other paid duties.

^c Other contributing factors include: lack of nutrition or fluid intake, alcohol use, drug use, peer pressure, inadequate fitness, and participating in unsafe training.

Among Regular Force personnel who suffered their most serious acute injury in the last 12 months during sports or physical training, 73.4% (95% CI: 64.7%, 80.7%) reported that the activity was supervised (e.g., unit PT, league sport). The fact that many injuries are occurring during supervised activities provides an opportunity to optimize injury prevention interventions.

6.3% (95% CI: 3.6%, 10.6%) of all Regular Force personnel who suffered at least one acute injury in the last 12 months were admitted to a hospital overnight because of their most serious acute injury during that time.



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3.4 Bicycle Helmet Use

Bicycling is one of the most popular physical activities among Regular Force personnel (see Chapter 7). It is also an efficient mode of transportation with cardiovascular and environmental benefits (Ivers, 2007). However, bicycle-related head injuries are a serious risk to cyclists. In Canada, more injuries are associated with cycling than with any other summer sport, and head injuries are the most common type of bicycle-related injuries (Cripton, 2014).

Bicycle helmets are an effective injury prevention device. Proper helmet use has been shown to reduce the risk of bicycle-related head injuries by as much as 88% (Ivers, 2007). Despite being aware of their safety benefits, many adult cyclists refuse to wear bicycle helmets on a regular basis, due in part to lack of comfort and unappealing appearance (Villamor, 2008). The frequency of bicycle helmet use among cyclists is, therefore, an interesting measure of injury prevention behaviour and risk propensity.

Bicycle helmet laws vary across Canada. British Columbia, New Brunswick, Nova Scotia, and Prince Edward Island have legislated mandatory use of helmets for cyclists of all ages. In 2009, the Canadian Community Health Survey (CCHS) found that 36.5% of all Canadian cyclists aged 12 years and older always wear a helmet when riding a bicycle (Statistics Canada, 2011). This percentage was obtained through phone interviews rather than self-administered questionnaires, and comes from a population in which the age, health status, education levels, and socioeconomic realities vary much more than in the CAF. It also reflects bicycle helmet use in the general Canadian population five years before the HLIS 2013/14 was administered. Bicycle helmet use in the CAF should, therefore, not be directly compared to this CCHS estimate.

82.0% (95% CI: 79.8%, 84.1%) of all Regular Force personnel reported riding a bicycle at least occasionally. Only 54.7% of Regular Force cyclists reported always wearing a helmet when riding a bicycle (Figure 3-11). Always wearing a helmet when riding a bicycle was increasingly more likely with increasing age. Always wearing a helmet when riding a bicycle was also more likely in: (1) females compared to males; (2) officers compared to NCMs; and (3) Sea personnel compared to Air and Land personnel (Table 3-5). Of note, the two largest Canadian naval bases (i.e., CFB Halifax and CFB Esquimalt) are located in provinces with legislated mandatory use of helmets for adult cyclists.



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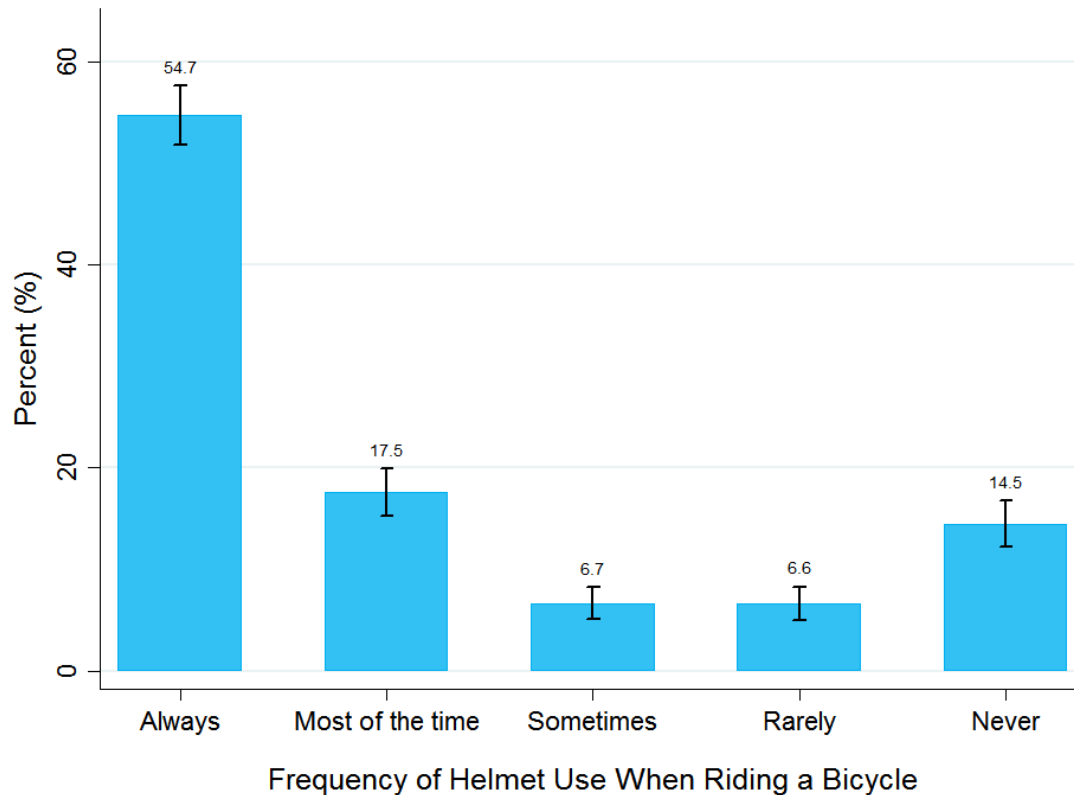


Figure 3-11: Frequency of helmet use in Regular Force cyclists.

Table 3-5: Percentage of Regular Force personnel who always wear a helmet when riding a bicycle

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		54.7	(51.7, 57.6)		
Age (years)	18 – 29	39.4	(33.9, 45.2)	Reference	
	30 – 39	52.6	(46.8, 58.3)	1.71	(1.23, 2.38)
	40 – 49	64.9	(59.7, 69.8)	2.85	(2.06, 3.95)
	50 – 60	74.2	(69.5, 78.3)	4.42	(3.18, 6.15)
Sex	Female	65.5	(61.7, 69.0)	Reference	
	Male	53.0	(49.7, 56.3)	0.60	(0.48, 0.73)
Rank	NCM	49.8	(46.1, 53.6)	Reference	
	Officer	67.7	(64.1, 71.2)	2.11	(1.69, 2.64)
Service element	Air	57.3	(52.2, 62.2)	Reference	
	Sea	71.4	(64.4, 77.5)	1.86	(1.27, 2.73)
	Land	47.2	(43.0, 51.5)	0.67	(0.51, 0.87)



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3.5 Conclusion

Overall, 44.4% (95% CI: 41.6%, 47.1%) of all Regular Force personnel sustained an acute and/or a RSI in the 12 months preceding the HLIS 2013/14.

Nearly one-third of all Regular Force personnel sustained a RSI in the 12 months preceding the HLIS 2013/14. The rate of RSIs increased from 2008/9. The cause of this increase is unknown. However, the majority of RSIs occurred during physical training and sports, and affected the lower back and/or other lower body parts.

Nearly twenty percent of all Regular Force personnel sustained an acute injury in the 12 months preceding the HLIS 2013/14. The rate of acute injury remained unchanged from 2008/9. Activities that were associated with a large proportion of reported RSIs – such as sports, military training, and physical training – were also associated with the majority of most serious acute injuries sustained in the last 12 months. Furthermore, the vast majority of personnel who sustained an acute injury during sports or physical training reported that the activity during which they were injured was supervised. Physical training, military training, and sports activities could be further examined to identify potential injury reduction measures. The fact that many injuries are occurring during supervised activities provides an opportunity to optimize injury prevention interventions.

3.6 References

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Chapter 4 – Health Promotion

4.1 Introduction

Health promotion is the process of enabling people to increase control over – and to improve – their health (WHO, 1986). Health promotion interventions aim to maximize current health status, enabling all people to achieve their fullest health potential by ensuring equal opportunities and resources.

The Canadian Armed Forces (CAF) recognizes that health promotion is a responsibility shared between individuals, the CAF leadership, the health services community, and other health partners. Ultimately, individuals are responsible for achieving and maintaining their own health, but their health-related choices are strongly influenced by the environment in which they work. The Surgeon General, therefore, provides comprehensive health promotion programming for the CAF through the *Strengthening the Forces* (StF) program. The StF program was designed to enable CAF personnel to achieve the goals of improving overall health and well-being, thereby sustaining a strong, healthy, and fit force.

The HLIS 2013/14 queried participants about their awareness of the StF program and some of its campaigns. It also queried participants on the actions they believe would have a positive impact on their health and well-being.

4.2 The *Strengthening the Forces* Program

Over ten years ago, the CAF embarked on comprehensive restructuring of their health care system, through a reform project titled Rx2000. One of the four health care reform objectives of Rx2000 was to “establish programs for the mitigation of preventable injuries and illnesses thereby protecting CAF personnel and meeting requirements of DND/CF” (Barrington Research Group, 2005). The StF program is an initiative of the Directorate of Force Health Protection (DFHP) and was created to help achieve this objective. Through the StF program, DFHP subject-matter experts provide advice, teach, develop policies, undertake research, and train both leadership and health promotion staff to implement health promotion interventions. These interventions are delivered to CAF personnel on 26 bases and wings across Canada, with satellite support to bases and wings without a dedicated Health Promotion Delivery Office (e.g., Goose Bay, Yellowknife, Europe). StF interventions fall into four broad categories:

- Addiction Awareness and Prevention (i.e., alcohol and/or drug abuse, tobacco use cessation, and problem gambling and gaming);
- Injury Prevention and Active Living (i.e., prevention of acute and repetitive strain injuries, and promotion of physical activity);
- Nutritional Wellness (i.e., healthy eating, weight management, diabetes and heart disease prevention); and
- Social Wellness (i.e., stress management, anger management, family violence awareness and education, suicide awareness and education, and effective communication).

Overall, 71.5% of Regular Force personnel reported having heard of the StF program. Awareness of the StF program was higher in: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; (3) officers compared to NCMs; and (4) Air personnel compared to Sea and Land



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personnel (Table 4-1). Awareness of the StF program had increased substantially from the HLIS 2004 and the HLIS 2008/9 (Table 4-2).

Table 4-1: Percentage of Regular Force personnel who have heard of the *Strengthening the Forces* program

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		71.5	(69.0, 74.0)		
Age (years)	18 – 29	58.0	(52.7, 63.2)	Reference	
	30 – 39	75.5	(70.8, 80.1)	2.23	(1.60, 3.11)
	40 – 49	77.8	(73.6, 82.0)	2.54	(1.84, 3.51)
	50 – 60	79.2	(75.5, 83.0)	2.77	(2.02, 3.79)
Sex	Female	82.6	(80.1, 85.1)	Reference	
	Male	69.7	(66.9, 72.6)	0.49	(0.39, 0.61)
Rank	NCM	68.7	(65.5, 71.9)	Reference	
	Officer	79.8	(77.0, 82.6)	1.80	(1.43, 2.27)
Service element	Air	76.9	(72.8, 80.9)	Reference	
	Sea	67.2	(61.1, 73.4)	0.62	(0.43, 0.89)
	Land	69.1	(65.3, 72.9)	0.67	(0.50, 0.90)

Table 4-2: Percentage of Regular Force personnel who have heard of the *Strengthening the Forces* program, by survey year

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	36.3	(33.9, 38.8)	0.23	(0.19, 0.27)
2008/9	56.2	(52.6, 59.9)	0.51	(0.42, 0.62)
2013/14	71.5	(69.0, 74.0)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

4.2.1 *Strengthening the Forces* Campaigns

StF holds select health promotion campaigns throughout the year to raise awareness, increase knowledge, and challenge CAF personnel to make healthy lifestyle choices. These campaigns are delivered in the form of social marketing, contests, newspaper articles, events, and other promotions. The 2013/14 HLIS asked participants if they were aware of four recent StF campaigns, and if these campaigns had: (1) impacted their awareness of specific health-related issues; and/or (2) helped them make changes to improve their health.



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4.2.1.1 Nutrition Campaigns

Overall, 71.3% of Regular Force personnel had heard of the StF nutrition campaigns, including *Vegetable and Fruit*, and *Set Your Sights on Healthy Eating* (Table 4-3). Awareness of the StF nutrition campaign was higher in: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; and (3) officers compared to NCMs. Personnel who self-reported fair or poor eating habits – and who could theoretically benefit the most from health promotion interventions targeting nutrition – were less likely to have heard of the StF nutrition campaigns than personnel with excellent eating habits (Table 4-3). Awareness of these campaigns was not different by service element, or body mass index.

Table 4-3: Percentage of Regular Force personnel who have heard of the *Strengthening the Forces* nutrition campaigns

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		71.3	(68.8, 73.9)		
Age (years)	18 – 29	64.6	(59.4, 69.8)	Reference	
	30 – 39	69.7	(64.7, 74.7)	1.26	(0.91, 1.75)
	40 – 49	77.1	(72.9, 81.2)	1.84	(1.33, 2.55)
	50 – 60	80.0	(76.3, 83.7)	2.19	(1.59, 3.03)
Sex	Female	82.1	(79.4, 84.8)	Reference	
	Male	69.6	(66.7, 72.6)	0.50	(0.40, 0.63)
Rank	NCM	69.4	(66.1, 72.6)	Reference	
	Officer	77.1	(74.1, 80.2)	1.49	(1.18, 1.88)
Eating habits	Excellent	76.3	(67.6, 85.0)	Reference	
	Very good	77.3	(73.3, 81.2)	1.06	(0.62, 1.80)
	Good	68.8	(64.8, 72.9)	0.69	(0.41, 1.15)
	Fair or poor	63.1	(56.0, 70.2)	0.53	(0.30, 0.94)

Of the 71.3% of Regular Force personnel who had heard of the StF nutrition campaigns, 50.7% reported that these campaigns had increased their awareness of nutrition issues. The StF nutrition campaigns had been more effective at increasing awareness of nutrition issues in: (1) personnel aged 50 – 60 years compared to personnel aged 18 – 29 years; (2) NCMs compared to officers; and (3) personnel with fair or poor eating habits compared to personnel with excellent eating habits (Table 4-4). The impact of StF nutrition campaigns on awareness of nutrition issues, among Regular Force personnel who had heard of these campaigns, was not different by sex, service element, or body mass index.



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Table 4-4: Percentage of Regular Force personnel^a who reported that the *Strengthening the Forces* nutrition campaigns increased their awareness of nutrition issues

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		50.7	(47.5, 53.9)		
Age (years)	18 – 29	47.7	(41.1, 54.2)	Reference	
	30 – 39	46.2	(39.9, 52.5)	0.94	(0.65, 1.36)
	40 – 49	54.7	(49.2, 60.2)	1.32	(0.94, 1.87)
	50 – 60	60.3	(55.3, 65.4)	1.67	(1.19, 2.34)
Rank	NCM	52.5	(48.4, 56.7)	Reference	
	Officer	45.8	(41.7, 49.9)	0.76	(0.61, 0.96)
Eating habits	Excellent	39.4	(29.0, 49.8)	Reference	
	Very good	50.3	(45.2, 55.5)	1.56	(0.96, 2.52)
	Good	51.0	(45.9, 56.1)	1.60	(0.99, 2.59)
	Fair or poor	56.8	(47.9, 65.7)	2.02	(1.15, 3.56)

^a Only includes personnel who had heard of the nutrition campaigns.

Of the 71.3% of Regular Force personnel who had heard of the StF nutrition campaigns, 30.8% reported that these campaigns had helped them make positive lifestyle changes. The StF nutrition campaigns had been more effective at helping individuals make positive lifestyle changes for: (1) personnel aged 50 – 60 years compared to personnel aged 18 – 29 years; and (2) NCMs compared to officers (Table 4-5). The impact of StF nutrition campaigns on lifestyle changes, among Regular Force personnel who had heard of these campaigns, was not different by sex, service element, self-reported eating habits, or body mass index.

Table 4-5: Percentage of Regular Force personnel^a who reported that the *Strengthening the Forces* nutrition campaigns helped them make positive lifestyle changes

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		30.8	(27.9, 33.8)		
Age (years)	18 – 29	29.9	(23.8, 35.9)	Reference	
	30 – 39	25.2	(19.7, 30.7)	0.79	(0.52, 1.19)
	40 – 49	33.5	(28.2, 38.8)	1.18	(0.81, 1.72)
	50 – 60	42.7	(37.6, 47.8)	1.75	(1.23, 2.50)
Rank	NCM	33.2	(29.4, 37.0)	Reference	
	Officer	24.4	(21.0, 27.9)	0.65	(0.50, 0.84)

^a Only includes personnel who had heard of the nutrition campaigns.



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4.2.1.2 Take a Stand Against Family Violence

Military Family Resource Centres (MFRCs) are third-party, not-for-profit organizations that first appeared on CAF bases and wings during the 1990s. Although MFRCs operate outside the CAF command structure, they are funded by the Department of National Defence (DND), and are managed by the Directorate of Military Family Services (DMFS). As part of its program for military families, DMFS ensures that MFRCs are properly resourced to deliver the *Take a Stand Against Family Violence* (TSAFV) campaign. The TSAFV campaign is therefore run by DMFS, but benefits from support from StF subject-matter experts.

Overall, 51.3% of Regular Force personnel had heard of the TSAFV campaign (Table 4-6). Awareness of the TSAFV campaign was higher in: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 39 years; (2) females compared to males; (3) officers compared to NCMs; (4) Air personnel compared to Sea and Land personnel; (5) personnel living with dependents compared to personnel not living with dependents; and (6) married and common-law personnel compared to single personnel (Table 4-6). Being in an abusive relationship (i.e., a romantic relationship in which at least one of the two partners inflicted physical or sexual violence on the other in the last 12 months) was not associated with awareness of the TSAFV campaign.

Table 4-6: Percentage of Regular Force personnel who have heard of the *Take a Stand Against Family Violence* campaign

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		51.3	(48.6, 54.1)		
Age (years)	18 – 29	42.5	(37.2, 47.7)	Reference	
	30 – 39	47.9	(42.7, 53.2)	1.25	(0.92, 1.69)
	40 – 49	61.5	(56.7, 66.2)	2.16	(1.61, 2.90)
	50 – 60	61.0	(56.4, 65.5)	2.12	(1.59, 2.82)
Sex	Female	62.8	(59.5, 66.2)	Reference	
	Male	49.6	(46.5, 52.7)	0.58	(0.48, 0.70)
Rank	NCM	49.8	(46.4, 53.2)	Reference	
	Officer	55.9	(52.4, 59.5)	1.28	(1.05, 1.56)
Service element	Air	57.8	(53.2, 62.4)	Reference	
	Sea	48.8	(42.4, 55.2)	0.70	(0.50, 0.96)
	Land	48.5	(44.5, 52.6)	0.69	(0.54, 0.88)
Lives with dependents	No	46.6	(42.7, 50.6)	Reference	
	Yes	55.5	(51.7, 59.3)	1.43	(1.14, 1.79)
Marital status	Married or common-law	54.6	(51.3, 57.9)	Reference	
	Widowed, separated, or divorced	46.7	(37.9, 55.6)	0.73	(0.50, 1.07)
	Single	43.3	(37.4, 49.2)	0.64	(0.48, 0.84)



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Of the 51.3% of Regular Force personnel who had heard of the TSAFV campaign, 47.3% reported that this campaign had increased their awareness of family violence issues. The TSAFV campaign had been more effective at increasing awareness of family violence issues in personnel aged 50 – 60 years compared to personnel aged 18 – 29 years (Table 4-7). The impact of the TSAFV campaign on awareness of family violence issues, among Regular Force personnel who had heard of this campaign, did not differ by sex, rank, service element, living with dependents, or being in an abusive relationship.

Table 4-7: Percentage of Regular Force personnel^a who reported that the *Take a Stand Against Family Violence* campaign increased their awareness of family violence issues

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		47.3	(43.6, 51.1)		
Age (years)	18 – 29	44.4	(36.4, 52.4)	Reference	
	30 – 39	42.3	(34.9, 49.8)	0.92	(0.59, 1.43)
	40 – 49	51.3	(44.9, 57.6)	1.31	(0.87, 1.98)
	50 – 60	56.1	(50.1, 62.0)	1.60	(1.06, 2.39)

^a Only includes personnel who had heard of *Take a Stand Against Family Violence*.

The objective of the TSAFV campaign is to increase awareness of family violence issues. It is not an intervention focused on behaviour change – and yet, 6.7% (95% CI: 5.1%, 9.0%) of Regular Force personnel who had heard of the TSAFV campaign reported that this campaign had helped them make positive changes to their lifestyle.

4.2.1.3 Addiction Awareness Week

Overall, 63.5% of Regular Force personnel had heard of the *Addiction Awareness Week* (Table 4-8). Awareness of the *Addiction Awareness Week* was higher in: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; and (3) Air personnel compared to Land personnel (Table 4-8). Awareness of the *Addiction Awareness Week* did not differ by rank, hazardous drinking behaviour⁶, or current smoking status.

⁶ Hazardous drinking was assessed using the AUDIT scale (Babor, 2001). See Chapter 9 for more details.



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Table 4-8: Percentage of Regular Force personnel who have heard of the *Addiction Awareness Week*

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		63.5	(60.8, 66.2)		
Age (years)	18 – 29	54.9	(49.5, 60.2)	Reference	
	30 – 39	61.1	(55.9, 66.3)	1.29	(0.95, 1.75)
	40 – 49	73.0	(68.6, 77.3)	2.22	(1.63, 3.02)
	50 – 60	70.7	(66.4, 74.9)	1.98	(1.47, 2.67)
Sex	Female	72.0	(68.9, 75.1)	Reference	
	Male	62.2	(59.1, 65.2)	0.64	(0.52, 0.78)
Service element	Air	67.2	(62.8, 71.6)	Reference	
	Sea	65.3	(59.0, 71.6)	0.92	(0.65, 1.29)
	Land	60.4	(56.4, 64.4)	0.74	(0.57, 0.97)

Of the 63.5% of Regular Force personnel who had heard of the *Addiction Awareness Week*, 50.2% reported that this campaign had increased their awareness of addiction issues. The *Addiction Awareness Week* had been more effective at increasing awareness of addiction issues in: (1) personnel aged 50 – 60 years compared to personnel aged 18 – 29 years; (2) smokers compared to non-smokers; and (3) non-hazardous drinkers compared to hazardous drinkers (Table 4-9). It is concerning that so few hazardous drinkers who had heard of the *Addiction Awareness Week* reported learning about addiction issues because of this campaign. This finding may highlight a lack of perceived health risks associated with hazardous drinking, and/or denial among Regular Force personnel.



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Table 4-9: Percentage of Regular Force personnel^a who reported that the *Addiction Awareness Week* increased their awareness of addiction issues

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		50.2	(46.7, 53.8)		
Age (years)	18 – 29	49.5	(41.9, 57.1)	Reference	
	30 – 39	43.9	(36.9, 50.9)	0.80	(0.53, 1.21)
	40 – 49	53.3	(47.4, 59.3)	1.16	(0.79, 1.71)
	50 – 60	61.2	(55.6, 66.8)	1.61	(1.10, 2.36)
Current smoker	No	48.2	(44.2, 52.1)	Reference	
	Yes	61.5	(52.4, 70.5)	1.72	(1.14, 2.59)
Hazardous drinking	No	52.6	(48.6, 56.6)	Reference	
	Yes	39.9	(30.9, 48.9)	0.60	(0.40, 0.90)

^a Only includes personnel who had heard of *Addiction Awareness Week*.

As its name implies, the *Addiction Awareness Week* is designed to increase awareness of addiction issues. It is not an intervention focused on behaviour change. Yet, 9.9% (95% CI: 8.0%, 12.2%) of Regular Force personnel who had heard of the *Addiction Awareness Week* reported that this campaign had helped them make positive changes to their lifestyle.

4.2.1.4 Canadian Forces Health and Wellness Challenges

Overall, 65.4% of Regular Force personnel had heard of the *CF Health and Wellness Challenges* (Table 4-10). Awareness of the *CF Health and Wellness Challenges* was higher in: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; (3) officers compared to NCMs; and (4) Air personnel compared to Land personnel (Table 4-10).



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Table 4-10: Percentage of Regular Force personnel who have heard of the *Canadian Forces Health and Wellness Challenges*

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		65.4	(62.7, 68.0)		
Age (years)	18 – 29	54.7	(49.3, 60.0)	Reference	
	30 – 39	64.8	(59.7, 69.9)	1.52	(1.12, 2.08)
	40 – 49	73.6	(69.2, 78.0)	2.31	(1.70, 3.16)
	50 – 60	75.4	(71.4, 79.4)	2.55	(1.88, 3.45)
Sex	Female	73.8	(70.7, 76.9)	Reference	
	Male	64.0	(61.0, 67.0)	0.63	(0.51, 0.78)
Rank	NCM	63.4	(60.1, 66.8)	Reference	
	Officer	71.1	(67.8, 74.4)	1.42	(1.14, 1.76)
Service element	Air	71.5	(67.2, 75.7)	Reference	
	Sea	69.4	(63.3, 75.6)	0.91	(0.63, 1.30)
	Land	59.9	(55.9, 63.9)	0.60	(0.46, 0.78)

Of the 65.4% of Regular Force personnel who had heard of the *CF Health and Wellness Challenges*, 47.2% reported that this campaign had increased their awareness of healthy lifestyle issues. The *CF Health and Wellness Challenges* had been more effective at increasing awareness of healthy lifestyle issues in: (1) personnel aged 50 – 60 years compared to personnel aged 18 – 29 years; and (2) Air personnel compared to Land personnel (Table 4-11).



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Table 4-11: Percentage of Regular Force personnel^a who reported that the *Canadian Forces Health and Wellness Challenges* increased their awareness of healthy lifestyle issues

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		47.2	(43.6, 50.8)		
Age (years)	18 – 29	48.8	(40.9, 56.6)	Reference	
	30 – 39	38.8	(31.8, 45.7)	0.66	(0.43, 1.02)
	40 – 49	50.8	(44.7, 56.8)	1.08	(0.73, 1.61)
	50 – 60	58.8	(53.2, 64.5)	1.50	(1.01, 2.22)
Service element	Air	51.9	(46.0, 57.8)	Reference	
	Sea	49.5	(41.3, 57.8)	0.91	(0.60, 1.36)
	Land	42.7	(37.2, 48.1)	0.69	(0.50, 0.96)

^a Only includes personnel who had heard of the *Canadian Forces Health and Wellness Challenges*.

Of the 65.4% of Regular Force personnel who had heard of the *CF Health and Wellness Challenges*, 25.4% reported that these challenges helped them make positive lifestyle changes. The *CF Health and Wellness Challenges* had been more effective at helping individuals make positive lifestyle changes for: (1) personnel aged 50 – 60 years compared to personnel aged 18 – 29 years; and (2) females compared to males (Table 4-12).

Table 4-12: Percentage of Regular Force personnel^a who reported that the *Canadian Forces Health and Wellness Challenges* helped improve their health

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		25.4	(22.3, 28.5)		
Age (years)	18 – 29	24.3	(17.4, 31.2)	Reference	
	30 – 39	22.3	(16.5, 28.2)	0.89	(0.54, 1.48)
	40 – 49	25.8	(20.6, 31.0)	1.08	(0.68, 1.72)
	50 – 60	35.1	(29.8, 40.5)	1.68	(1.08, 2.62)
Sex	Female	34.1	(30.0, 38.2)	Reference	
	Male	23.7	(20.1, 27.3)	0.60	(0.46, 0.79)

^a Only includes personnel who had heard of the *Canadian Forces Health and Wellness Challenges*.

4.3 Actions to Improve Health

A central theme in effective health promotion interventions is encouraging behaviour change. Behaviour change is often conceptualized as a process involving distinct stages (i.e., pre-contemplation, contemplation, preparation, action, and maintenance) (Velicer, 1998). Individuals are often found to be in different stages of



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health-related behaviour change. A proper understanding of where CAF personnel are in this process can inform program strategies that appeal to a broader population and help optimize health promotion interventions targeting groups that are ready to benefit from such interventions.

4.3.1 Reduce Tobacco Use

As discussed in Chapter 9, 18.2% of all Regular Force personnel were current smokers. The vast majority (84.5% [95% CI: 78.8%, 88.8%]) of current smokers believed that reducing or quitting tobacco use would have a positive impact on their health; this finding highlights good awareness of the health impact of tobacco use among Regular Force personnel. Furthermore, 71.7% (95% CI: 65.0%, 77.6%) of all current smokers intended to reduce their tobacco use within the next year.

Of note, 15.0% (95% CI: 13.1%, 17.2%) of all Regular Force personnel believed that reducing or quitting their tobacco use would have a positive impact on their health, and 12.5% (95% CI: 10.8%, 14.7%) intended to reduce or quit their tobacco use within the next year (Figure 4-1).

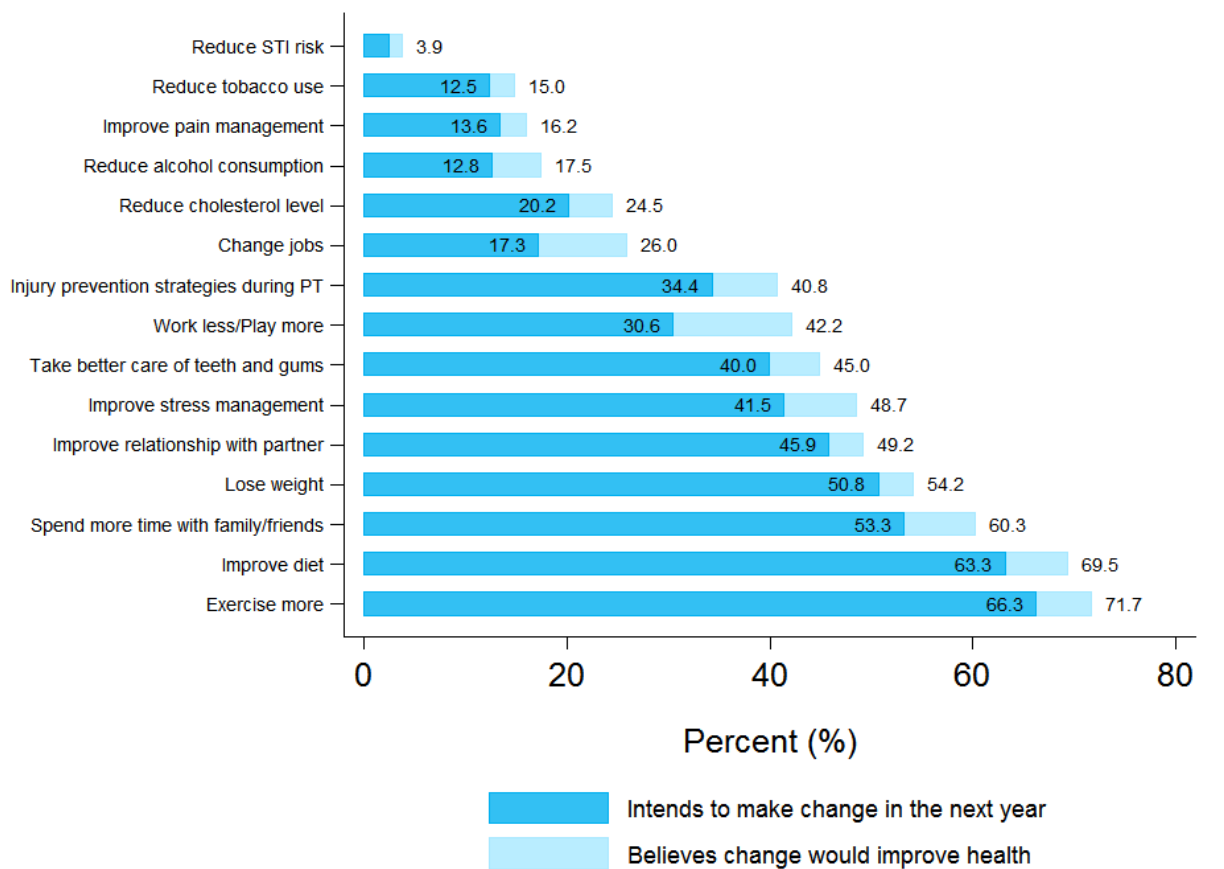


Figure 4-1: Percentage of Regular Force personnel who believe that different actions would help improve their health, and percentage of Regular Force personnel who intend to make various lifestyle changes within the next year.



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4.3.2 Exercise More

As discussed in Chapter 7, 7.2% of all Regular Force personnel were physically inactive⁷. The vast majority (90.8% [95% CI: 83.7%, 95.0%]) of inactive personnel believed that exercising more would help improve their health. Furthermore, 84.5% (95% CI: 76.3%, 90.3%) of inactive personnel intended to start exercising more within the next year. This finding highlights the strong fitness culture of the CAF, in which the positive impact of physical activity on health and well-being is continually reinforced.

Of note, 71.7% (95% CI: 69.0%, 74.1%) of all Regular Force personnel believed that exercising more would have a positive impact on their health, and 66.3% (95% CI: 63.6%, 68.9%) intended to start exercising more within the next year (Figure 4-1). Exercising more was, therefore, the health-promoting action that the greatest number of Regular Force personnel intended to take within the next year.

4.3.3 Injury Prevention Techniques During Sports and Fitness Training

As discussed in Chapter 7, 10.1% of all Regular Force personnel reported sustaining a serious injury⁸ while participating in a physical activity in the last four months. Only 55.1% (95% CI: 46.5%, 63.4%) of these recently injured individuals believed that incorporating injury prevention techniques in their sports and fitness training would have a positive impact on their health. Furthermore, only 49.8% (95% CI: 41.2%, 58.4%) of personnel having recently sustained a serious injury while participating in physical activity intended to increase their use of injury prevention strategies in their sports and fitness training within the next year. These findings highlight the need for further education on the importance of injury prevention techniques in Regular Force personnel.

Of note, 40.8% (95% CI: 38.2%, 43.6%) of all Regular Force personnel believed that incorporating injury prevention techniques in their sports and fitness training would have a positive impact on their health, and 34.4% (95% CI: 31.8%, 37.1%) of all Regular Force personnel intended to increase their use of injury prevention strategies in their sports and fitness training within the next year (Figure 4-1).

4.3.4 Improve Diet

As discussed in Chapter 8, 16.7% of all Regular Force personnel reported fair or poor eating habits. The vast majority (93.2% [95% CI: 88.7%, 96.0%]) of Regular Force personnel with self-reported fair or poor eating habits believed that improving their diet would have a positive impact on their health. Furthermore, 83.9% (95% CI: 77.8%, 88.6%) of Regular Force personnel with self-reported fair or poor eating habits intended to improve their diet within the next year. This finding highlights good awareness of the association between diet and well-being among Regular Force personnel.

Of note, 69.5% (95% CI: 66.9%, 71.9%) of all Regular Force personnel believed that improving their diet would have a positive impact on their health, and 63.3% (95% CI: 60.5%, 65.9%) intended to improve their diet within the next year (Figure 4-1).

⁷ Physical activity level measured using the Godin Leisure-Time Exercise Questionnaire. See Chapter 7 for more details.

⁸ In instructions provided to survey respondents, a serious injury was defined as an injury that limited one's normal activities for at least one week.



4.3.5 Lose Weight

As discussed in Chapter 8, 25.0% of all Regular Force personnel were obese. The vast majority (90.4% [95% CI: 86.5%, 93.3%]) of obese personnel believed that losing weight would have a positive impact on their health. Furthermore, 87.1% (95% CI: 82.7%, 90.5%) of obese personnel intended to lose weight within the next year. This finding highlights good awareness of the negative health impact of obesity among Regular Force personnel. This finding also suggests that obesity statistics are mainly driven by excess body fat rather than by large muscle mass in the Regular Force population (see Chapter 8 for a more thorough discussion of muscle mass as a potential confounder for obesity in military populations).

On the other hand, 49.0% of all Regular Force personnel were overweight, but only 55.8% (95% CI: 51.7%, 59.9%) of them believed that losing weight would have a positive impact on their health. Furthermore, only 51.5% (95% CI: 47.4%, 55.6%) of overweight personnel intended to lose weight within the next year. These findings suggest that a proportion of Regular Force personnel classified as overweight may have an elevated body mass index (BMI) because of large muscle mass rather than excess body fat. See Chapter 8 for more details.

Of note, 54.2% (95% CI: 51.4%, 56.9%) of all Regular Force personnel believed that losing weight would have a positive impact on their health, and 50.8% (95% CI: 48.0%, 53.5%) intended to lose weight within the next year (Figure 4-1).

4.3.6 Reduce Alcohol Consumption

As discussed in Chapter 9, 19.9% of all Regular Force personnel had hazardous drinking habits. Only 52.6% (95% CI: 45.9%, 59.3%) of personnel with hazardous drinking habits believed that reducing their alcohol consumption would have a positive impact on their health. Furthermore, only 38.1% (95% CI: 31.7%, 44.9%) of personnel with hazardous drinking habits intended to reduce their alcohol consumption within the next year. This finding highlights a need for further education on the health impacts of hazardous drinking among Regular Force personnel.

Of note, only 17.5% (95% CI: 15.5%, 19.7%) of all Regular Force personnel believed that reducing their alcohol consumption would have a positive impact on their health, and only 12.8% (95% CI: 11.0%, 14.8%) intended to reduce their alcohol consumption within the next year (Figure 4-1).

4.3.7 Improve Stress Management Abilities

As discussed in Chapter 2, 12.9% of all Regular Force personnel reported fair or poor stress management abilities. The vast majority (85.4% [95% CI: 78.9%, 90.2%]) of personnel with fair or poor stress management abilities believed that improving these abilities would have a positive impact on their health. Furthermore, 75.6% (95% CI: 68.1%, 81.8%) of personnel with fair or poor stress management abilities intended to improve these abilities within the next year.

Of note, 48.7% (95% CI: 45.9%, 51.4%) of all Regular Force personnel believed that improving their stress management abilities would have a positive impact on their health, and 41.5% (95% CI: 38.8%, 44.3%) intended to improve their stress management abilities within the next year (Figure 4-1).



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4.3.8 Spend More Time with Family and Friends

Sixty percent (60.3% [95% CI: 57.6%, 63.0%]) of all Regular Force personnel believed that spending more time with family and friends would have a positive impact on their health, and 53.3% (95% CI: 50.5%, 56.0%) intended to spend more time with their family and friends within the next year, in an effort to improve their health (Figure 4-1).

4.3.9 Improve Relationship with Partner

As discussed in Chapter 2, 86.5% of all Regular Force personnel were involved in a romantic relationship in the last 12 months. Only 54.7% (95% CI: 51.7%, 57.6%) of personnel who had been involved in a romantic relationship in the last 12 months believed that improving their relationship with their partner would have a positive impact on their health. Furthermore, 51.3% (95% CI: 48.3%, 54.3%) of Regular Force personnel who had been involved in a romantic relationship in the last 12 months intended to improve their relationship with their partner within the next year.

Of note, 49.2% (95% CI: 46.5%, 53.5%) of all Regular Force personnel believed that improving their relationship with their partner would have a positive impact on their health, and 45.9% (95% CI: 43.2%, 48.7%) intended to improve their relationship with their partner within the next year (Figure 4-1).

4.4 Conclusion

Awareness of the StF program among Regular Force personnel increased significantly over the past ten years. Current StF campaigns and courses appear to be better at reaching personnel aged 40 – 60 years, females, and officers than personnel aged 18 – 29 years, males, and NCMs respectively. Furthermore, the content of these campaigns appears to be more effective at increasing awareness of health-related issues and enabling healthy lifestyle changes in older personnel compared to those aged 18 – 29 years.

More than half of all Regular Force personnel intended to exercise more, improve their diet, spend more time with family and friends, and/or lose weight within the next year, in an effort to improve their health. However, very few hazardous drinkers intended to reduce their alcohol consumption within the same time frame. Regular Force personnel may be underestimating the risks of hazardous drinking.

4.5 References

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Chapter 5 – Women’s Health

5.1 Introduction

When the present survey was administered, females represented about 13% of the entire Canadian Armed Forces (CAF) Regular Force population. An important proportion of CAF personnel are, therefore, faced with some unique health issues. The HLIS 2013/14 asked female participants about women-specific health issues including pregnancies, urinary incontinence, and cancer screening.

5.2 Pregnancy

Among all Regular Force female personnel, 5.1% were pregnant at the time of HLIS 2013/14 survey completion (Table 5-1). The percentage of pregnant Regular Force females was higher in 2013/14 compared to 2004, but unchanged from 2008/9 (Table 5-1). It is important to note that only members of the Regular Force’s effective strength were included in the HLIS. Women on maternity leave or related sick leave were excluded from all surveys; the statistics presented herein are, therefore, likely to underestimate the percentage of pregnant females in the entire Regular Force.

Table 5-1: Percentage of Regular Force women^a pregnant at time of survey

HLIS	Percent	(95% CI)^b	Odds Ratio	(95% CI)
2004	2.3	(1.6, 3.3)	0.44	(0.27, 0.72)
2008/9	4.7	(3.2, 6.8)	0.92	(0.56, 1.53)
2013/14	5.1	(3.7, 6.9)	Reference	

^a Women currently on maternity leave or related sick leave were excluded from the Health and Lifestyle Information Survey.

^b Estimates are standardized to the age, and rank distribution of the 2013 female Regular Force population.

5.3 Urinary Incontinence

Urinary incontinence (UI) is a common problem, characterized by an involuntary loss of urine. It can negatively impact one’s physical, emotional and sexual well-being (Heidler, 2011). Females are more likely to experience UI than males (Heidler, 2011). This sex difference is thought to be due to anatomical differences in the urinary tract, and to the added stresses of pregnancy, and childbirth on the pelvic muscles (NIDDKD, 2007).

The HLIS 2013/14 asked respondents if they suffered from UI during: (a) strenuous physical activity; (b) light physical activity; and/or (c) everyday activities. Overall, 23.2% of Regular Force women suffered from UI in at least one of these three contexts (Table 5-2). Of note, among Regular Force women who were suffering from UI, 79.3% (95% CI: 72.7%, 84.7%) only experienced this problem during strenuous physical activity, and only 2.2% (95% CI: 1.4%, 3.5%) of all Regular Force women suffered from UI during everyday activities. Being physically fit is a key employment requirement for CAF personnel, and urinary incontinence could have a negative impact on physical activity level. Using the Godin Leisure-Time Exercise Questionnaire, physical activity level was compared between women with and without reported urinary incontinence in 2013/14 and no association was found between UI and physical activity level. Therefore, although 23.3% of



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Regular Force women reported suffering from UI, it didn't limit their ability to be classified as sufficiently active.

Table 5-2: Percentage of Regular Force women with urinary incontinence

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		23.2	(20.4, 26.2)		
Age (years)	18 – 29	12.9	(9.5, 17.2)	Reference	
	30 – 39	19.1	(14.5, 24.8)	1.60	(1.00, 2.57)
	40 – 49	33.5	(27.5, 40.2)	3.42	(2.19, 5.32)
	50 – 60	32.2	(26.4, 38.5)	3.21	(2.07, 4.97)

Reported UI was more likely in women aged 40 – 60 years than in those who were younger than 40 years of age (Table 5-2). This result is not surprising, given that the risk of UI is known to increase with age (Hannestad, 2000). The percentage of women with UI did not differ between categories of rank or service element.

In the HLIS 2008/9, only 12.0%⁹ of Regular Force women reported suffering from UI. However, the HLIS 2008/9 only asked women respondents whether or not they suffered from UI, without asking about the different contexts in which this problem might occur. It is conceivable that women who only suffered from UI during strenuous physical activity might not have thought to self-report it as a current health issue in the 2008/9 survey. The 2008/9 and 2013/14 estimates are, therefore, not comparable.

5.4 Cancer Screening

5.4.1 Breast Cancer Screening

Breast cancer is the most common type of non-skin cancer in Canadian women, with more than 23,000 new diagnoses and 5,000 deaths annually (PHAC, 2011).

Mammography is an effective screening tool for breast cancer in some women. Regular screening in females aged 50 – 69 years has been shown to significantly reduce the risk of mortality associated with breast cancer (CTFPHC, 2011). The current national guidelines for breast cancer screening, published in 2011, recommend that all women in this age group have a mammogram once every two to three years (CTFPHC, 2011). However, this recommended change in screening frequency was not immediately incorporated into provincial breast cancer screening programs; when the HLIS 2013/14 was administered, most provincial programs were still screening women at two-year intervals.

Of all Regular Force women aged 50 years and older, 74.4% reported having a mammogram in the last two years. An additional 19.5% of women in this age group reported ever having a mammogram, but had last been screened for breast cancer over two years ago (Figure 5-1). These percentages did not differ between NCMs and officers.

⁹ Estimates from previous surveys were standardized to the age, and rank distribution of the 2013 female Regular Force population.



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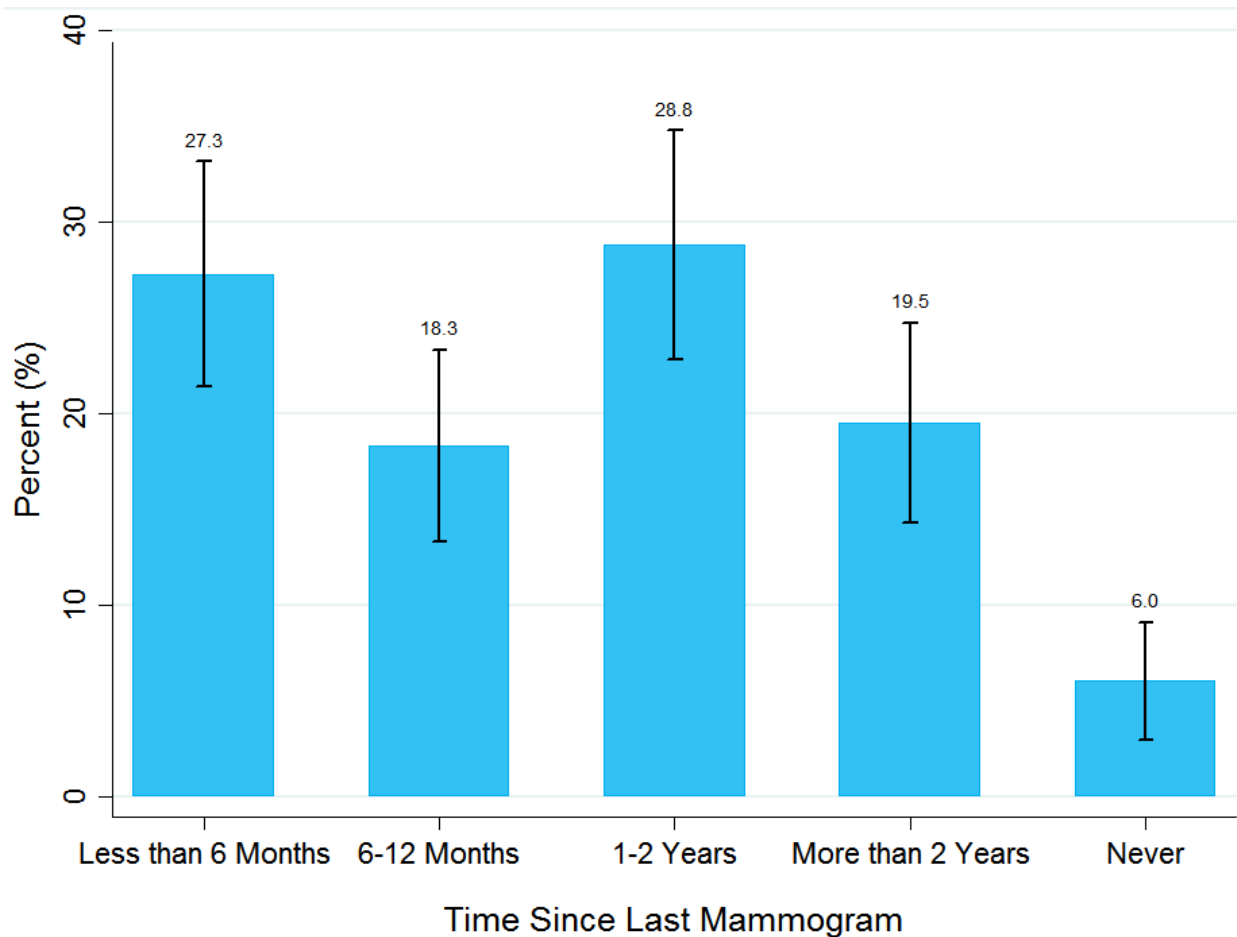


Figure 5-1: Time since last mammogram in Regular Force women 50 – 60 years of age.

One-quarter (25.5%) of all Regular Force women aged 50 years and older had not had a mammogram in the last two years. Within this sub-group, the most commonly cited reasons for not getting a mammogram were: (1) a doctor thought a mammogram was not necessary; (2) the patient did not get around to it; and (3) the patient thought a mammogram was not necessary. These reasons were, respectively, cited by 38.6%, 37.9% and 12.5% of females aged 50 years and older who had not had a mammogram in the last two years. Educating Regular Force women on the value of regular breast cancer screening might further improve screening rates.

It should be noted that the HLIS 2008/9 did not include questions on mammography, so no comparison is possible.

The Public Health Agency of Canada recommends that provincial breast cancer screening programs should aim for a participation rate of at least 70% (Doyle, 2011). Breast cancer screening rates in the CAF are, therefore, exceeding national targets. While cancer screening rates cannot be directly compared between military and civilian populations, it is informative to note that, in 2011 – 2012, 60% of Ontario women aged 50 – 74 years were screened for breast cancer through the Ontario Breast Screening Program (CCO, 2015).



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Similarly, in 2012 – 2013, 58% of Alberta women aged 50 – 69 years were screened for breast cancer through the Alberta Breast Cancer Screening Program (AHS, 2012), and in 2014, 52% of British-Columbia women aged 50 – 69 years were screened through the Screening Mammography Program (BC Cancer Agency, 2014). It is unclear if these provincial rates include screening conducted outside of provincial breast cancer screening programs. In addition, provincial breast cancer screening programs include a wider age group (i.e., women aged 50 – 69 years) than the CAF, which might partially explain differences in screening rates.

5.4.2 Cervical Cancer Screening

Cervical cancer is the second most common female-specific cancer across the world. It accounts for 1% of all female cancer deaths in Canada (PHAC, 2014). Most cervical cancer is caused by a sexually-transmitted virus known as human papillomavirus (WHO, 2013). Over many years, chronic infection with this virus can cause lesions, which in turn develop into invasive cervical cancer if left untreated (WHO, 2013).

Fortunately, invasive cervical cancer can be prevented. Papanicolau (Pap) smear tests are used to detect cervical lesions before they progress to a cancerous stage, enabling early treatment. Effective screening programs that rely on Pap smear tests and effective recall systems have been shown to prevent up to 80% of all invasive cervical cancer cases (CTFPHC, 2013).

The current national guidelines for cervical cancer screening, published in 2013, recommend administering a Pap smear test every three years to all women aged 25 – 69 years. Routine Pap smear tests are not recommended for women who have never been sexually active, have had a hysterectomy or who are younger than 25 years of age. The recommended screening frequency might be different for women who have had abnormal Pap smear test results in the past, or who are experiencing cervical cancer symptoms (CTFPHC, 2013). It should be noted that these national guidelines were only published a few months before survey completion. Prior to the publication of these national guidelines, recommendations related to cervical cancer screening varied slightly between provinces (PHAC, 2009).

Because of the current Canadian guidelines on cervical cancer screening, all women who have ever had a hysterectomy, and all women younger than 25 years of age have been excluded from the following results.

Ninety-five percent (94.7%) of Regular Force women have ever had a Pap smear test in the past. This percentage did not differ between categories of age, rank, or service element. However, this percentage was lower than the 98.7% of women who had ever had a Pap smear test in 2008/9 (Table 5-3).

Table 5-3: Percentage of Regular Force women^a who have had a Pap smear test

	Percent (95% CI)	
	HLIS 2008/9 ^b	HLIS 2013/14
Ever had a Pap smear test	98.7 (97.6, 99.3)	94.7 (92.8, 96.2)
Had a Pap smear test in last 3 years	95.1 (93.2, 96.5)	89.5 (86.9, 91.6)

^a Only includes women who (1) are 25 years of age or older, and (2) have never had a hysterectomy.

^b Estimates are standardized to the age, and rank distribution of the 2013 female Regular Force population.



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Ninety percent (89.5%) of Regular Force women had a Pap smear test in the last three years (Figure 5-2). Women aged 25 – 29 years were more likely to have had a Pap smear test more recently than women aged 40 – 49 years and 50 – 60 years (Figure 5-3). There were no differences between categories of rank, or service element.

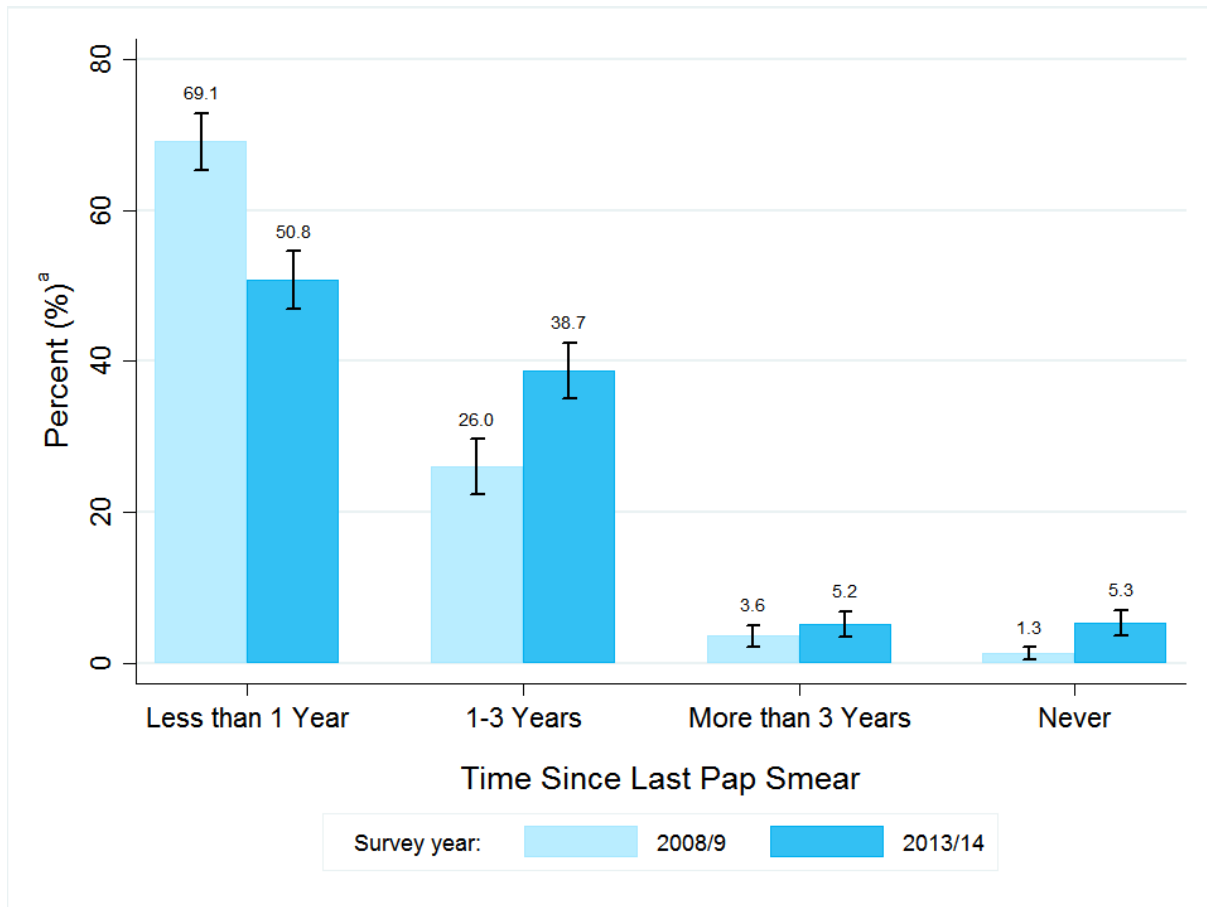


Figure 5-2: Time since last Pap smear test in Regular Force women who have never had a hysterectomy and who are 25 years of age or older.

^a Estimates are standardized to the age, and rank distribution of the 2013 female Regular Force population.



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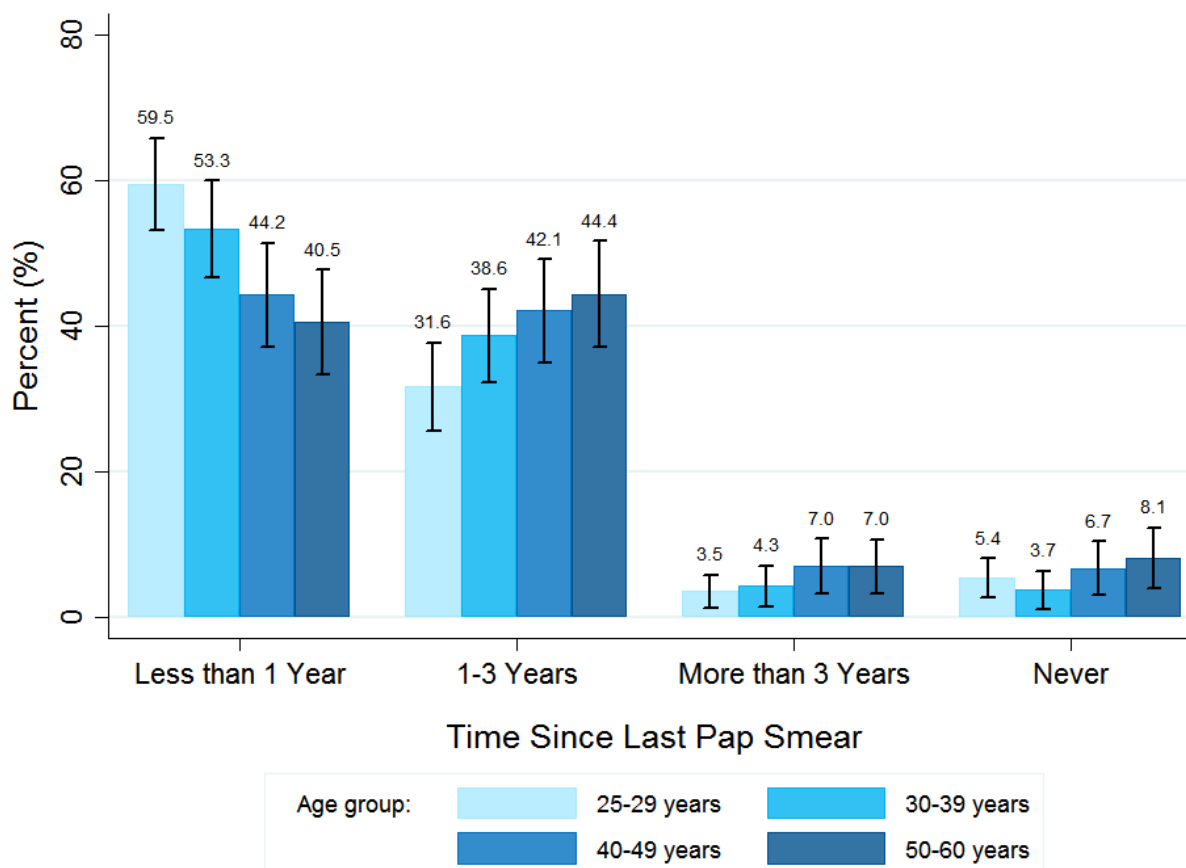


Figure 5-3: Time since last Pap smear test in Regular Force women who have never had a hysterectomy.

A lower percentage of women had been screened for cervical cancer in the three years preceding the HLIS 2013/14 than in the three years preceding the HLIS 2008/9 (Figure 5-2). It is unclear if new policy recommendations are the reason for this decrease in recent cervical cancer screening in the female Regular Force population aged 25 years and older.

Cancer Care Ontario recommends that cervical cancer screening programs in Ontario should aim for a participation rate of at least 85% (CCO, 2014). Cervical cancer screening rates in the CAF are, therefore, exceeding this recommendation. While cancer screening rates cannot be directly compared between military and civilian populations, it is informative to note that, between 2009 and 2011, only 65% of Ontario women aged 20 – 69 years who had never had a hysterectomy had been screened for cervical cancer (CCO, 2014).

5.5 Conclusion

Nearly one-quarter of all Regular Force women are currently suffering from urinary incontinence. However, the majority of women with urinary incontinence only suffer from this problem during periods of strenuous physical activity. Discussing the issue at medical appointments could help direct women to appropriate treatment.



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The breast and cervical cancer screening rates among Regular Force women compare favourably to some provincial results. There remain some Regular Force women who are not being screened for female-specific cancers. Furthermore, cervical cancer screening rates, although still very high, were lower in 2013/14 than in 2008/9. Implementation of a recall system could maximize the breast and cervical cancer screening programs. Adding an educational component to these programs could further increase screening uptake by increasing awareness of the benefits of regular screening.

5.6 References

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Chapter 6 – Health Care Utilization

6.1 Introduction

The Canadian Forces Health Services Group (CF H Svcs Gp) delivers health care to Canadian Armed Forces (CAF) personnel in garrison and on deployment. Regular Force personnel are not covered under the Canada Health Act; therefore the CAF must provide personnel with comprehensive health care. However, specialty care is generally provided through referral to the provincial/territorial health care system. The overall intent of CF H Svcs Gp is to maintain a force that is physically fit, employable, and deployable (CF H Svcs Gp, 2014).

Data on health systems aid in the identification of health services that have improved over time and health services that require remediation. Health care utilization and satisfaction data provide decision makers with quantitative measures to inform future policy decisions and resource allocation. This chapter describes the utilization of primary, specialist, and civilian healthcare through measures of accessibility, availability, quality, and satisfaction.

6.2 Canadian Armed Forces Health Care

6.2.1 Canadian Armed Forces Health Care Utilization

Three-quarters (75.4%) of Regular Force personnel sought medical attention from a CAF medical facility in the past 12 months. Seeking CAF medical services was more likely in: (1) personnel aged 50 – 60 years compared to personnel aged 18 – 29 years; and (2) females compared to males (Table 6-1). There were no differences by rank, or service element. There was no change in utilization of CAF medical facilities from previous HLIS surveys completed in 2004 and 2008/9.

Table 6-1: Percentage of Regular Force personnel who sought Canadian Armed Forces medical attention

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		75.4	(73.0, 77.8)		
Age (years)	18 – 29	71.5	(66.6, 76.4)	Reference	
	30 – 39	75.0	(70.3, 79.6)	1.20	(0.85, 1.69)
	40 – 49	77.2	(73.1, 81.4)	1.35	(0.97, 1.89)
	50 – 60	83.0	(79.6, 86.5)	1.95	(1.39, 2.75)
Sex	Female	87.8	(85.6, 90.1)	Reference	
	Male	73.5	(70.7, 76.3)	0.38	(0.30, 0.50)

When Regular Force personnel went to a CAF medical facility, the practitioners they saw most frequently were: (1) a physician; (2) a nurse practitioner; and (3) a physician assistant. The type of practitioner seen was similar to previous survey years. However, in 2013/14 more Regular Force personnel saw a nurse practitioner most frequently than in previous survey years (Figure 6-1).

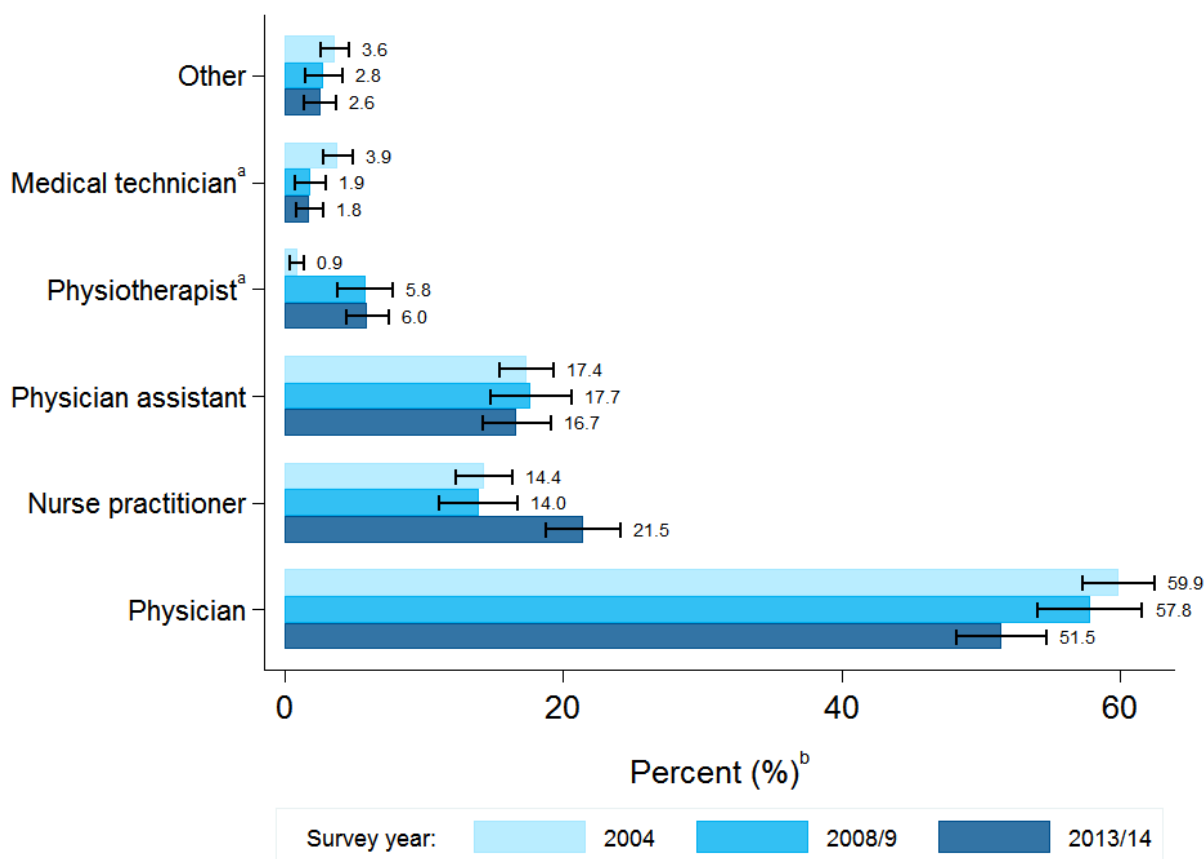


Figure 6-1: Type of health care practitioner most frequently seen by Regular Force personnel who used Canadian Armed Forces medical services in the past 12 months.

^a Not included as response options in Health and Lifestyle Information Survey 2004. Health and Lifestyle Information Survey 2004 data extracted from the “other: please specify” free text field.

^b Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

6.2.2 Quality of Canadian Armed Forces Health Care

Quality care aims to deliver the best possible care, to achieve the best possible outcomes. In line with the CF H Svcs Gp dimensions of quality, Regular Force personnel indicated if the care they received was available, continuous, timely, and appropriate.

6.2.2.1 Availability of Canadian Armed Forces Health Care in the First Official Language of Choice

Available care is more than having access to a health care provider. The patient must be able to communicate his or her needs to the health care professional. Almost all Regular Force personnel (91.4%) reported that CF Health Services were always or usually provided in their first official language of choice. There were no differences by age, sex, rank, or service element. There was no difference in satisfaction with access to health services in the language of choice across the eight largest bases/wings. However, francophones were less likely to report always or usually receiving health services in the language of their choice compared to anglophones (Table 6-2).



6.2.2.2 Continuity of Canadian Armed Forces Health Care

Improving continuity of care was one of the goals of the Primary Care Renewal Initiative (PCRI), a component of Rx 2000, a major health care reform initiated by the Department of National Defence in 2000 (OAG, 2007). More than half (58.5%) of personnel always or usually saw the same medical practitioner when using CAF medical facilities for medical attention or follow-up. Seeing the same practitioner more often was more likely in: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 29 years; and (2) females compared to males (Table 6-3). There were no differences by rank or service element.

This finding is likely a conservative estimate of continuity of care; the goal of the PCRI was to ensure that CAF personnel were seen at the same Care Delivery Unit (CDU) at each visit rather than by the same practitioner. CDUs are teams of multidisciplinary, collaborative providers, focusing on delivery of optimized care (CF H Svcs Gp, 2014).

6.2.2.3 Timeliness of Canadian Armed Forces Health Care

Timely access to care is important. Research suggests that long wait times are associated with negative health impacts such as increased anxiety, stress, and pain (CIHI, 2012). The Rx 2000 and the PCRI were implemented to ensure timely access to quality health care for CAF personnel (OAG, 2007).

Participants were asked to recall the past 12 months and report, on average, how long it took to schedule an appointment for a routine, non-urgent health care problem (e.g., blood pressure follow-up). The majority (55.4%) of Regular Force personnel reported waiting two weeks or longer for an appointment for a routine, ongoing, non-urgent health problem. In comparison, results from the 2013 International Health Policy Survey in Eleven Countries, conducted by The Commonwealth Fund, suggests that only 33.0% of Canadians had to wait over six days to see their primary care provider (Commonwealth Fund, 2013). The Canadian Institute for Health Information reported that the average Canadian waited 2 days to see their family physician for a routine ongoing health problem (CIHI, 2012). These numbers suggest that a more detailed review of CAF health services wait times is warranted, to better understand the longer wait times reported by Regular Force personnel.

Wait times were more likely to be longer in: (1) personnel aged 30 – 49 years compared to personnel aged 18 – 29 years; and (2) females compared to males (Table 6-4). There were no differences by rank, or service element. There was no difference in wait times for an appointment for a routine, on-going, non-urgent health problem between the 2008/9 and 2013/14 surveys.



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Table 6-2: Percentage of Regular Force personnel who reported that Canadian Forces Health Services were always or usually provided in their first official language of choice

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		91.4	(89.4, 93.0)		
First official language	French	70.2	(64.3, 75.6)	Reference	
	English	99.0	(97.7, 95.0)	2.54	(2.25, 2.87)

Table 6-3: Percentage of Regular Force personnel who saw the same health care practitioner at each Canadian Armed Forces medical encounter for medical attention or follow-up

Variable	Category	Always		Usually		Sometimes		Rarely – Never		Odds Ratio	(95% CI) ^a
		Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)		
Overall		15.8	(13.5, 18.2)	42.7	(39.6, 45.9)	21.3	(18.7, 23.9)	20.2	(17.4, 22.9)		
Age (years)	18 – 29	12.2	(7.7, 16.7)	38.4	(31.8, 45.0)	22.7	(17.0, 28.3)	26.7	(20.4, 32.9)	Reference	
	30 – 39	13.3	(8.9, 17.7)	44.9	(38.7, 51.1)	20.1	(15.2, 24.9)	21.7	(16.4, 26.9)	1.29	(0.91, 1.83)
	40 – 49	20.0	(15.5, 24.5)	40.9	(35.5, 46.4)	22.8	(18.2, 27.4)	16.2	(11.9, 20.5)	1.69	(1.21, 2.37)
	50 – 60	20.0	(16.0, 24.0)	49.7	(44.6, 54.8)	18.3	(14.3, 22.2)	12.0	(8.6, 15.4)	2.14	(1.56, 2.94)
Sex	Female	18.0	(15.0, 20.8)	47.0	(43.2, 50.8)	22.3	(19.1, 25.4)	12.8	(10.3, 15.3)	Reference	
	Male	15.4	(12.6, 18.1)	41.9	(38.2, 45.6)	21.1	(18.1, 24.1)	21.6	(18.4, 24.8)	0.72	(0.60, 0.87)

^a Odds ratios computed from ordinal logistic regression. See the Methods section for more details.



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Table 6-4: Percentage of Regular Force personnel reporting wait times for a routine, ongoing, non-urgent medical appointment

Variable	Category	0 – 2 days		3-7 Days		> 1 Wk. to < 2 Wks.		2 Weeks to < 1 Month		1 Month or Longer		Odds Ratio	(95% CI) ^a
		Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)		
Overall		11.5	(8.9, 14.0)	15.5	(12.8, 18.2)	17.7	(14.8, 20.6)	27.8	(24.4, 31.1)	27.6	(24.2, 31.0)		
Age (years)	18 – 29	17.7	(10.9, 24.4)	13.7	(8.4, 18.9)	23.2	(16.2, 30.1)	21.6	(15.1, 28.1)	23.8	(16.9, 30.8)	Reference	
	30 – 39	11.3	(6.3, 16.3)	13.3	(8.3, 18.3)	15.5	(10.2, 20.8)	31.0	(24.3, 37.7)	28.7	(22.1, 35.4)	1.53	(1.01, 2.32)
	40 – 49	7.9	(4.5, 11.4)	16.9	(12.0, 21.9)	16.9	(12.1, 21.8)	28.7	(22.8, 34.5)	29.4	(23.5, 35.4)	1.55	(1.05, 2.28)
	50 – 60	9.2	(5.7, 12.7)	21.4	(11.4, 26.5)	15.8	(11.4, 20.1)	27.4	(22.2, 32.7)	26.2	(20.9, 31.5)	1.28	(0.87, 1.87)
Sex	Female	6.1	(4.0, 8.2)	12.5	(9.8, 15.3)	16.2	(13.2, 19.2)	35.2	(31.3, 39.2)	29.9	(26.0, 33.8)	Reference	
	Male	12.7	(9.6, 15.9)	16.2	(12.7, 19.4)	18.1	(14.6, 21.6)	25.9	(21.9, 29.9)	27.0	(22.9, 31.1)	0.68	(0.55, 0.85)

^a Odds ratios computed from ordinal logistic regression. See the Methods section for more details.



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Half (50.3%) of Regular Force personnel were satisfied with the wait time for an appointment for a routine, ongoing, non-urgent health problem. There were no differences by age, sex, rank, or service element. Personnel surveyed in 2013/14 were more likely to be satisfied with wait time for an appointment for a routine, ongoing, non-urgent health problem than personnel surveyed in 2008/9 (Figure 6-2).

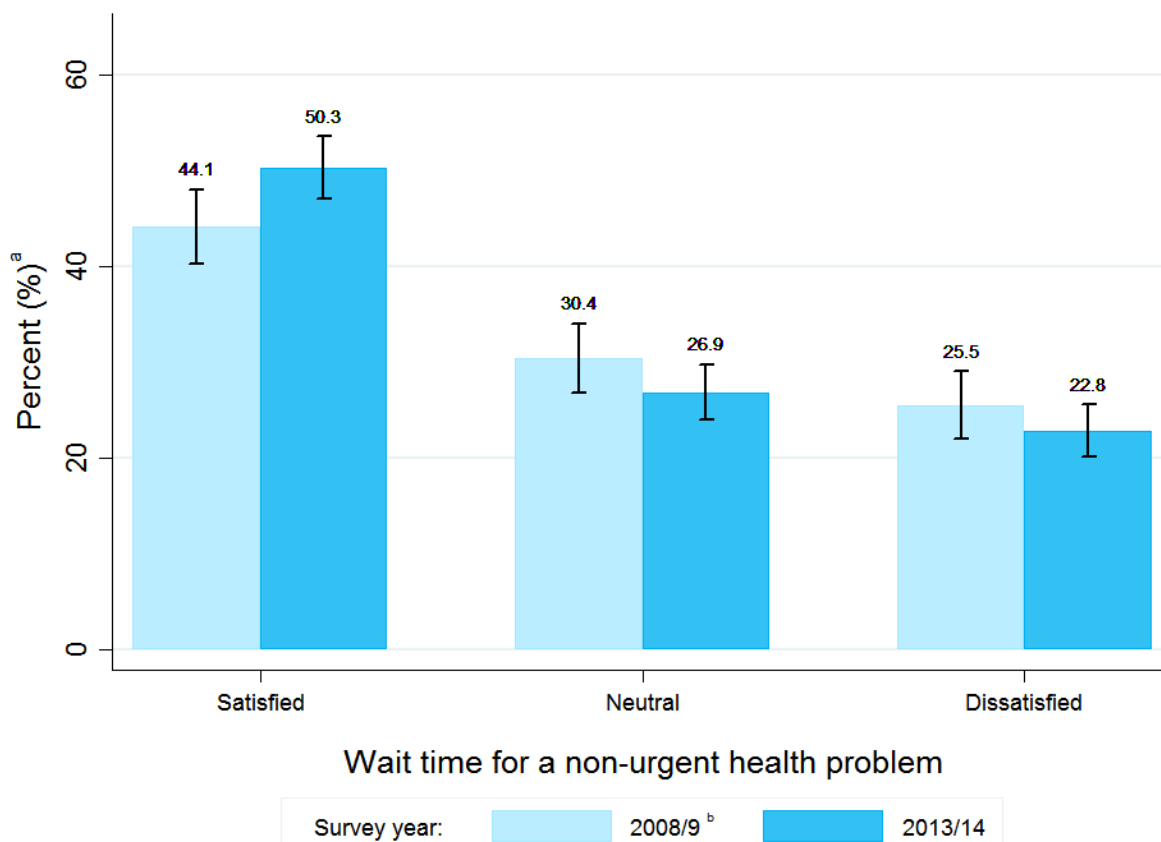


Figure 6-2: Regular Force personnel's satisfaction with wait time for an appointment for a routine, ongoing, non-urgent health problem over the past 12 months.

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

^b Satisfaction levels were higher in 2013/14 than in 2008/9 (Odds ratio: 1.24; 95% Confidence interval: 1.02, 1.50).

Regular Force Personnel have access to sick parade, which is similar in concept to a civilian walk-in clinic. Personnel should only report to sick parade if symptoms are less than 24 hours in duration and affect their ability to perform their daily tasks. However, almost one quarter (22.3%) of personnel who have ever required care for a routine, ongoing, non-urgent health problem reported that they would seek such care at sick parade. Regular Force personnel who required care for non-urgent matters were less likely to misuse sick parade in 2013/14 than in 2008/9 (Table 6-5).



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Table 6-5: Percentage of Regular Force personnel who would choose sick parade for a non-urgent appointment

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2008/9	28.7	(24.8, 32.6)	1.41	(1.09, 1.81)
2013/14	22.3	(19.4, 25.2)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

Going to sick parade rather than booking an appointment for routine, ongoing, non-urgent health problems was more likely to be reported by: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; and (2) males compared to females (Table 6-6). There were no differences by rank, or service element. It is possible that young males are using this option more frequently because they might misunderstand the purpose of sick parade. They might also postpone seeking medical care until the health issue worsens or becomes severe enough that immediate attention is required, or be more likely to require immediate certification of illness. Younger personnel are also more likely to spend time away from home and may not have access to their regular CDU while away on military duties (see Chapter 11). A more detailed analysis of this issue would help elucidate which factors are associated with the misuse of sick parade.

Table 6-6: Percentage of Regular Force personnel who would report to sick parade for a routine, ongoing, non-urgent medical issue

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Age (years)	18 – 29	30.3	(23.6, 37.0)	Reference	
	30 – 39	20.9	(15.3, 26.5)	0.61	(0.38, 0.97)
	40 – 49	17.2	(12.7, 21.7)	0.48	(0.30, 0.75)
	50 – 60	21.8	(17.3, 26.3)	0.64	(0.43, 0.97)
Sex	Female	10.7	(8.3, 13.3)	Reference	
	Male	24.7	(21.2, 28.1)	2.71	(1.97, 3.73)

When medical tests or procedures were ordered for Regular Force personnel, the majority (83.3%) reported that they received the results within the time frame they were given. Receiving test results within the expected time frame was more likely in: (1) personnel aged 50 – 60 years compared to personnel aged 18 – 29 years; and (2) officers compared to NCMs (Table 6-7). There were no differences by sex, or service element. Personnel who reported that their CDU only calls with test results if the test is abnormal (9.4%), and personnel who said that they did not have any procedures done (21.0%), were not included in the analysis. Personnel were more likely to report receiving their test results on time in 2013/14 and 2008/9 compared to 2004 (Table 6-8).



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Table 6-7: Percentage of Regular Force personnel who received test results within the expected time frame

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		83.3	(80.5, 86.2)		
Age (years)	18 – 29	81.9	(75.5, 88.2)	Reference	
	30 – 39	83.9	(78.5, 89.4)	1.16	(0.64, 2.08)
	40 – 49	81.4	(76.4, 86.5)	0.97	(0.56, 1.67)
	50 – 60	88.9	(85.4, 92.3)	1.77	(1.02, 3.08)
Rank	NCM	81.2	(77.5, 84.9)	Reference	
	Officer	89.2	(86.2, 92.2)	1.91	(1.29, 2.83)

Table 6-8: Percentage of Regular Force personnel who received test results within the expected time frame, by survey year

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	75.7	(73.1, 78.4)	0.62	(0.49, 0.80)
2008/9	84.4	(80.8, 87.9)	1.08	(0.77, 1.52)
2013/14	83.3	(80.5, 86.2)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

6.2.3 Patient Satisfaction with Canadian Armed Forces Health Care

6.2.3.1 Patient Satisfaction that Needs were Adequately Met

Overall patient satisfaction with care can be improved if patients feel that their needs were adequately met. Most (83.8%) Regular Force personnel felt that all of their concerns were addressed during their appointment time. There were no differences by age, sex, rank, or service element. Regular Force personnel were more likely to say that the practitioner addressed their concerns during the appointment in 2008/9 than in 2004, however this improvement was not sustained in 2013/14 (Table 6-9).

Table 6-9: Percentage of Regular Force personnel who felt their practitioner addressed all their needs

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	83.8	(81.7, 85.9)	1.00	(0.79, 1.26)
2008/9	87.8	(85.1, 90.6)	1.40	(1.03, 1.91)
2013/14	83.8	(81.4, 86.1)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.



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6.2.3.2 Patient Satisfaction with Care Delivery

Over two-thirds (70.3%) of Regular Force personnel reported being satisfied or very satisfied with the way they received health services. Satisfaction levels were higher in: (1) personnel aged 50 – 60 years compared to personnel aged 18 – 29 years; and (2) officers compared to NCMs (Table 6-10). There were no differences by sex, or service element.

6.2.3.3 Patient Assessment of Quality of Canadian Armed Forces Health Care

Most (79.2%) Regular Force personnel felt that the quality of care they received from physicians at CF Health Services was good, very good, or excellent. Quality of care received from physicians was more highly rated by: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 29 years; and (2) officers compared to NCMs (Table 6-11). There were no differences by sex, or service element.

Quality ratings for the care received from CF Health Services in general were very similar to the quality ratings given to physicians specifically. Quality of care from all CF Health Services was more highly rated by: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 29 years; and (2) officers compared to NCMs (Table 6-12). There was no difference by sex, or service element. Similar ratings might be expected because physicians were the health professional with whom the majority of Regular Force personnel interacted with most frequently in the past 12 months.



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Table 6-10: Regular Force personnel's satisfaction with Canadian Forces Health Services

Variable	Category	Very Satisfied		Satisfied		Neutral		Dissatisfied (or Very)		Odds Ratio	(95% CI) ^a
		Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)		
Overall		17.4	(15.2, 19.6)	52.9	(49.8, 56.0)	20.0	(17.4, 22.6)	9.7	(7.8, 11.7)		
Age (years)	18 – 29	11.6	(7.8, 15.4)	57.7	(51.6, 63.9)	21.1	(15.9, 26.3)	9.6	(5.8, 13.3)	Reference	
	30 – 39	14.2	(10.1, 18.3)	51.6	(45.5, 57.6)	22.5	(17.3, 27.7)	11.7	(7.7, 15.7)	0.94	(0.69, 1.29)
	40 – 49	21.4	(17.0, 25.9)	50.1	(44.6, 55.6)	19.0	(14.6, 23.4)	9.4	(6.2, 12.7)	1.36	(1.00, 1.86)
	50 – 60	31.1	(26.3, 35.8)	52.2	(47.2, 57.3)	11.9	(8.7, 15.2)	4.8	(2.6, 6.9)	2.55	(1.90, 3.42)
Rank	NCM	15.0	(12.3, 17.7)	52.7	(48.7, 56.6)	22.1	(18.7, 25.4)	10.3	(7.8, 12.7)	Reference	
	Officer	24.4	(20.9, 27.9)	53.6	(49.5, 57.6)	14.0	(11.1, 16.8)	8.0	(5.7, 10.3)	1.73	(1.39, 2.16)

^a Odds ratios computed from ordinal logistic regression. See the Methods section for more details.

Table 6-11: Regular Force personnel's rating of the quality of Canadian Forces Health Services' physicians

Variable	Category	Excellent		Very Good		Good		Fair/Poor		Odds Ratio	(95% CI) ^a
		Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)		
Overall		17.2	(14.9, 19.5)	34.2	(21.3, 37.1)	27.8	(24.9, 30.7)	20.8	(18.1, 23.5)		
Age (years)	18 – 29	13.0	(8.9, 17.2)	32.4	(26.6, 38.3)	31.6	(25.7, 37.5)	22.9	(17.5, 28.4)	Reference	
	30 – 39	13.9	(9.7, 18.1)	31.7	(26.3, 37.3)	29.2	(23.7, 34.8)	25.0	(19.6, 30.4)	0.98	(0.71, 1.34)
	40 – 49	21.3	(16.8, 25.7)	34.3	(29.2, 39.6)	25.9	(21.1, 30.8)	18.3	(14.0, 22.7)	1.52	(1.12, 2.07)
	50 – 60	26.8	(22.4, 31.3)	45.3	(40.1, 50.4)	18.8	(14.8, 22.7)	9.1	(6.2, 12.0)	2.67	(2.01, 3.53)
Rank	NCM	15.8	(13.1, 18.7)	31.3	(27.6, 34.8)	29.2	(25.6, 32.9)	23.6	(20.1, 27.3)	Reference	
	Officer	21.1	(17.8, 24.3)	42.8	(38.8, 47.0)	23.4	(19.9, 26.9)	12.7	(9.9, 15.5)	1.80	(1.47, 2.21)

^a Odds ratios computed from ordinal logistic regression. See the Methods section for more details.



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Table 6-12: Regular Force personnel’s rating of the quality of Canadian Forces Health Services in general

Variable	Category	Excellent		Very Good		Good		Fair/Poor		Odds Ratio	(95% CI) ^a
		Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)		
Overall		13.2	(11.3, 15.1)	38.8	(35.8, 41.8)	30.2	(27.3, 33.1)	17.8	(15.3, 20.3)		
Age (years)	18 – 29	9.2	(5.8, 12.6)	35.8	(29.8, 41.7)	34.8	(28.8, 40.8)	20.2	(15.0, 25.3)	Reference	
	30 – 39	9.9	(6.4, 13.4)	37.7	(31.9, 43.4)	32.0	(26.4, 37.7)	20.4	(15.3, 25.4)	1.07	(0.79, 1.45)
	40 – 49	16.1	(12.1, 20.0)	41.2	(35.8, 46.6)	27.1	(22.2, 32.0)	15.5	(11.5, 20.4)	1.62	(1.20, 2.18)
	50 – 60	25.9	(21.4, 30.3)	43.6	(38.5, 48.6)	20.1	(16.8, 25.1)	9.6	(6.7, 12.6)	2.89	(2.15, 3.89)
Rank	NCM	11.1	(8.8, 13.5)	36.7	(33.0, 40.5)	32.3	(28.6, 36.0)	19.7	(16.6, 23.0)	Reference	
	Officer	19.1	(16.0, 22.2)	44.8	(40.8, 48.9)	24.0	(20.6, 27.4)	12.0	(9.4, 14.7)	1.90	(1.54, 2.33)

^a Odds ratios computed from ordinal logistic regression. See the Methods section for more details.



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6.2.4 Pharmacy Services

CAF pharmacy services are available to all Regular Force personnel. CF H Svcs Gp pharmacists dispense medication and provide drug therapy assessments in the context of one's medical history, collaborating with primary care providers. CF H Svcs Gp pharmacies provide cost avoidance with statistically significantly lower medication processing fees than civilian pharmacies (CF H Svcs Gp, 2014). The most frequently reported sources of medications were: (1) military pharmacy; and (2) civilian pharmacy (Figure 6-3). Note that some personnel said they received their medication through mail order; these responses were excluded due to insufficient observations.

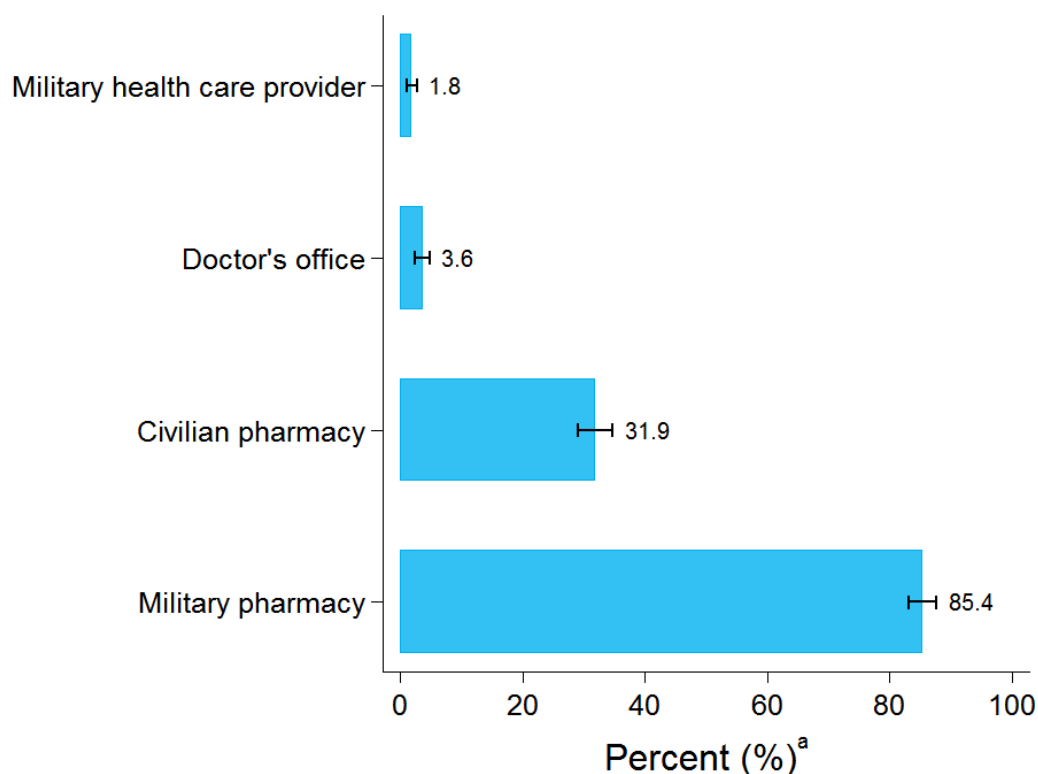


Figure 6-3: Source of medication obtained by Regular Force personnel in the previous year.

^a Personnel could select more than one option. Percents may sum to more than 100%.

6.3 Specialist and Civilian Health Care Utilization

6.3.1 Consultations with Medical Specialists

Access to health care specialists (e.g., psychiatrists, surgeons, cardiologists, urologists) is an important factor in providing a full spectrum of quality care. A commonly used indicator of access to health care services is individual satisfaction with, and perceived barriers to obtaining specialty care.

In the past 12 months, 43.2% of all Regular Force personnel required a visit with a medical specialist for a diagnosis or a consultation. The percentage of personnel requiring a specialist visit increased with increasing



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age. Females were also more likely than males to require a specialist visit (Table 6-13). There were no differences by rank, or service element. The percentage of Regular Force personnel requiring a visit with a medical specialist was unchanged from 2008/9.

Table 6-13: Percentage of Regular Force personnel who required a specialist visit in the past 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		43.2	(40.5, 45.9)		
Age (years)	18 – 29	32.8	(27.8, 37.8)	Reference	
	30 – 39	43.6	(38.4, 48.8)	1.58	(1.16, 2.15)
	40 – 49	47.9	(43.0, 52.7)	1.88	(1.40, 2.53)
	50 – 60	58.8	(54.3, 63.4)	2.93	(2.18, 3.93)
Sex	Female	59.4	(56.0, 62.8)	Reference	
	Male	40.7	(37.7, 43.7)	0.47	(0.39, 0.57)

Among Regular Force personnel who required a specialist visit in the past 12 months, 27.5% reported experiencing difficulties getting the specialist care they needed. Experiencing difficulties in getting specialist care was more likely in: (1) personnel aged 18 – 49 years compared to personnel aged 50 – 60 years; and (2) Land personnel compared to Air personnel (Table 6-14). There was no difference by sex, or rank. The percentage of Regular Force personnel experiencing difficulties in getting specialist care was unchanged from 2008/9.

Table 6-14: Percentage of Regular Force personnel who experienced difficulties obtaining specialist care, among personnel who required such care in the last 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		27.5	(23.8, 31.2)		
Age (years)	18 – 29	24.6	(16.6, 32.5)	Reference	
	30 – 39	31.8	(24.4, 39.3)	1.44	(0.83, 2.49)
	40 – 49	29.7	(23.2, 36.3)	1.30	(0.76, 2.21)
	50 – 60	15.7	(11.4, 20.1)	0.57	(0.33, 0.98)
Service element	Air	22.5	(16.9, 28.0)	Reference	
	Sea	27.6	(18.3, 37.0)	1.32	(0.75, 2.32)
	Land	31.0	(25.2, 36.8)	1.55	(1.02, 2.36)



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Barriers to obtaining specialist health care might indicate structural, operational, or geographical limitations to care. The most commonly reported barriers to accessing specialist care were: (1) waiting too long between booking the appointment and the visit; (2) difficulty getting an appointment; and (3) difficulty getting a referral from a primary care provider. These barriers were also the three most commonly reported difficulties in getting specialist care in 2008/9 (Figure 6-4).

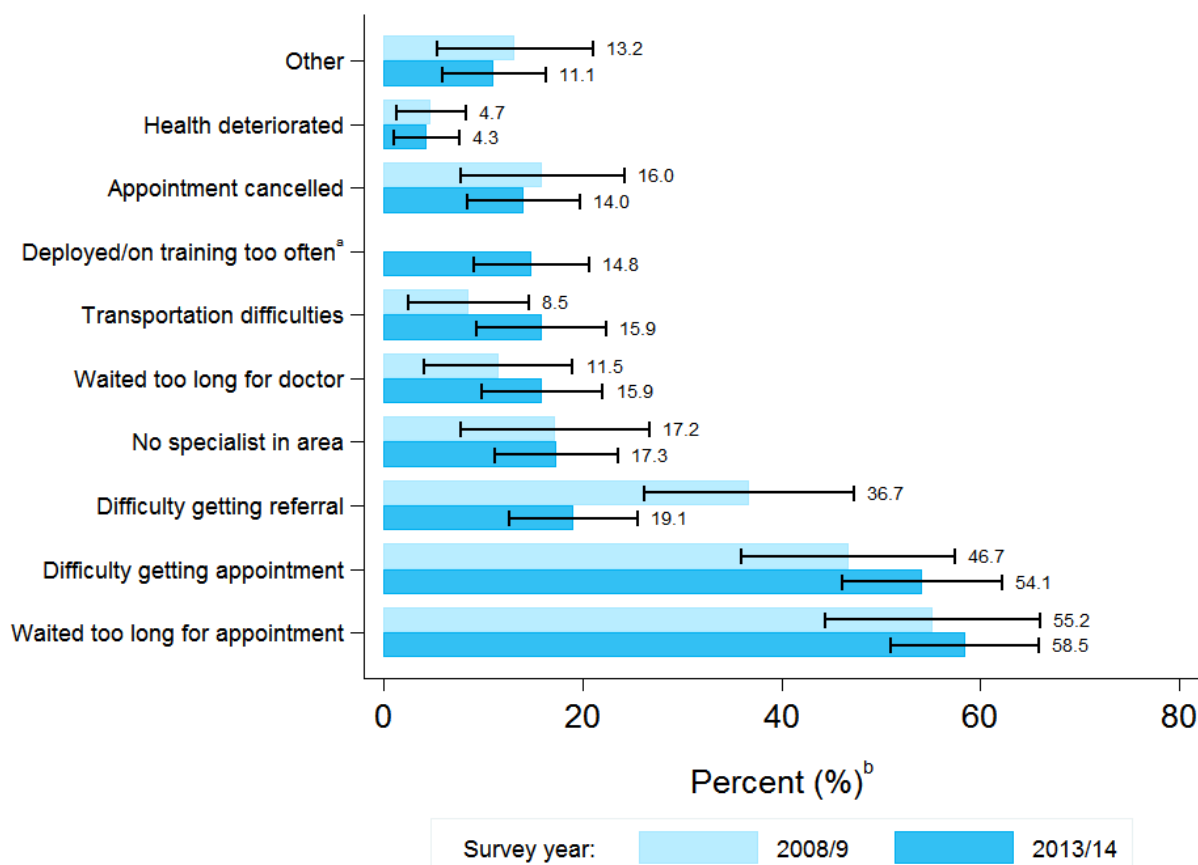


Figure 6-4: Difficulties experienced by Regular Force personnel who required a specialist visit in the past 12 months, by survey year.

^a Data not collected in Health and Lifestyle Information Survey 2008/9.

^b Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

Note that although DND has some clinical specialists, the vast majority of specialty care must be provided through the respective provincial or territorial health care systems. DND does not have any control over the availability of these specialty services across the country.

6.3.2 Accessing Civilian Health Services

In the past 12 months, few (7.8%) Regular Force personnel accessed a civilian physician for purposes other than when they were referred by a CF clinic or needed after-hours medical care. Personnel aged 50 – 60 years were less likely than personnel aged 18 – 29 years to seek civilian physician services (Table 6-15).



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There were no differences by sex, rank, or service element. There was also no difference between 2004, 2008/9, and 2013/14.

Table 6-15: Percentage of Regular Force personnel who visited a civilian physician in the past 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		7.8	(6.3, 9.4)		
Age (years)	18 – 29	8.3	(5.3, 11.3)	Reference	
	30 – 39	9.5	(6.3, 12.6)	1.15	(0.67, 1.97)
	40 – 49	6.4	(4.1, 8.7)	0.75	(0.43, 1.29)
	50 – 60	4.7	(2.7, 6.7)	0.55	(0.30, 0.98)

Personnel, who visited a civilian physician, saw a physician an average of 4.0 (95% CI: 3.0, 5.1) times in the past 12 months. Among personnel who saw a civilian physician, the mean number of visits by females was more than twice the mean number of visits by males (Table 6-16). There were no differences by age, rank, or service element. There was no difference by survey year.

Table 6-16: Number of visits to a civilian physician, among Regular Force personnel who visited a civilian physician in the past 12 months

Variable	Category	Mean	(95% CI)
Overall		4.0	(3.0, 5.1)
Sex	Female	8.5	(4.9, 12.1) ^a
	Male	3.3	(2.2, 4.4) ^b

^a Reference category.

^b Significantly different from the reference category, at the 99% confidence level ($p < 0.01$).

The most common reasons for visiting a civilian physician in the past 12 months were: (1) personnel felt that the care provided by a military health care facility would be inadequate; (2) personnel thought that military health care wait times were too long; and (3) personnel needed to access services that were not covered by the CAF (Figure 6-5). Males and females shared the same top three reasons for visiting a civilian physician in the past 12 months; however, males were more likely to have visited a civilian physician because they thought CAF care would be inadequate, and less likely to have visited a civilian physician for services that are not covered by the CAF compared to females (Figure 6-5).

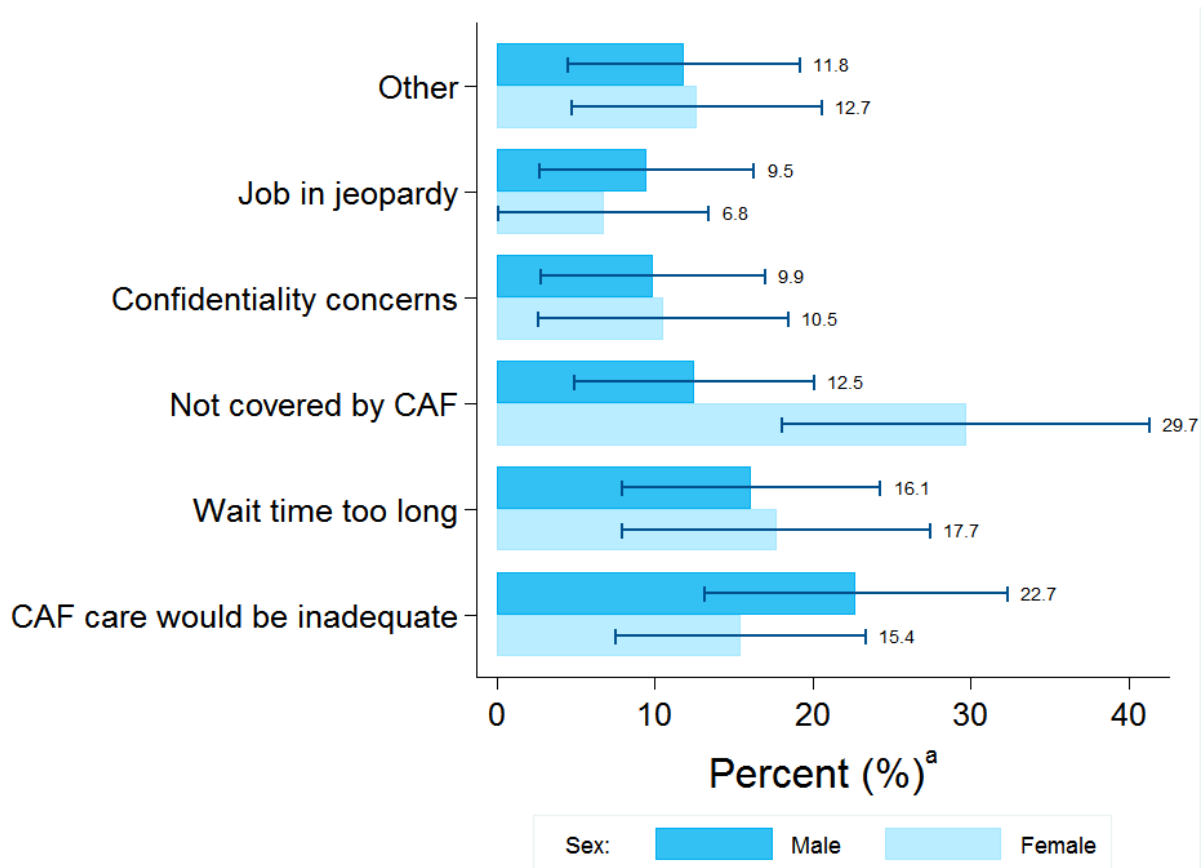


Figure 6-5: Reasons for visiting a civilian physician, among Regular Force personnel who sought care at a civilian health care facility in the last 12 months.

^a Personnel could select more than one option. Percents may sum to more than 100%.

Less than one-fifth (18.4% [95% CI: 16.4%, 20.7%]) of Regular Force personnel received after-hours care or weekend care at a civilian facility in the past 12 months. The civilian facilities most frequently visited for after-hours care were: (1) the emergency department; (2) civilian walk-in clinics; and (3) private clinics (Figure 6-6).



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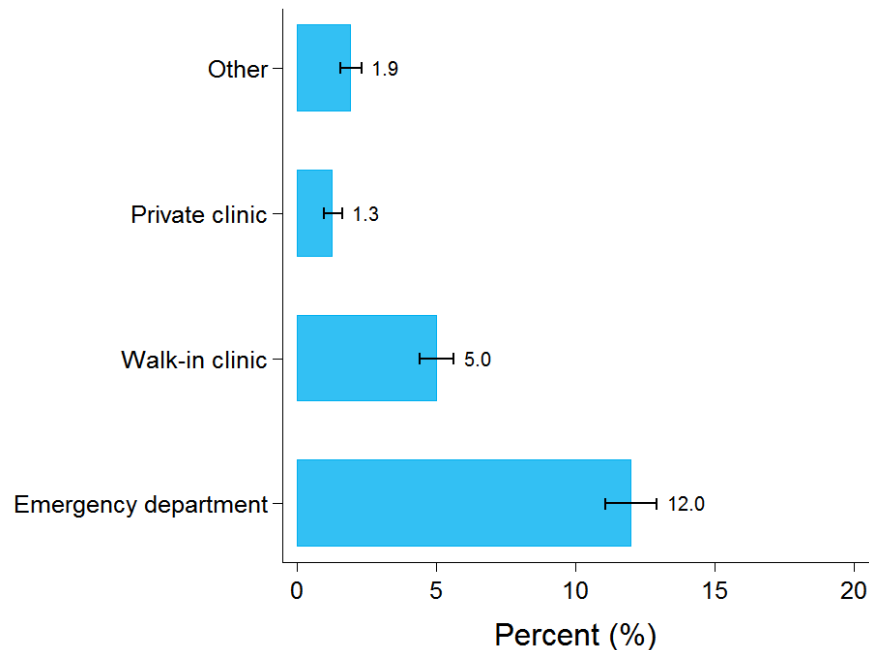


Figure 6-6: Percentage of Regular Force personnel who accessed civilian facilities for after-hours or weekend care in the past 12 months.

6.3.3 Knowledge of Emergency Health Services

Most (90.4%) Regular Force personnel knew where to seek emergency medical attention after hours. Knowing where to seek emergency medical attention after hours was more likely for: (1) personnel aged 30 – 39 years and 50 – 60 years compared to personnel aged 18 – 29 years; and (2) Air personnel compared to Land personnel (Table 6-17). There were no differences by sex, or rank.

Table 6-17: Percentage of Regular Force personnel who know where to seek emergency medical attention

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		90.4	(88.8, 92.0)		
Age (years)	18 – 29	86.9	(83.3, 90.4)	Reference	
	30 – 39	91.9	(89.1, 94.8)	1.72	(1.05, 2.82)
	40 – 49	90.2	(87.2, 93.1)	1.39	(0.88, 2.19)
	50 – 60	95.6	(93.8, 97.3)	3.27	(1.94, 5.51)
Service element	Air	92.4	(90.1, 94.7)	Reference	
	Sea	92.2	(88.7, 95.7)	0.97	(0.54, 1.74)
	Land	88.2	(85.6, 90.9)	0.61	(0.41, 0.93)



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More than half (64.0%) of respondents knew where to seek urgent mental health care after hours. Knowing where to seek urgent mental health care after hours was more likely in: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; and (2) females compared to males (Table 6-18). There were no differences by rank, or service element. Personnel who reported currently suffering from a stress, emotional, alcohol, drug, or family problem were not more likely to know where to seek urgent mental health care than personnel not suffering from such mental health problems. Furthermore, only 50.9% of personnel who reported having seriously considered suicide at some point in the last 12 months knew where to seek urgent mental health care after hours (Table 6-18). It is important that Regular Force personnel with acute mental health problems know where to find urgent care at all times of the day.

Table 6-18: Percentage of Regular Force personnel who knew where to seek emergency mental health care services

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		64.0	(61.4, 66.7)		
Age (years)	18 – 29	57.7	(52.4, 63.0)	Reference	
	30 – 39	65.2	(60.1, 70.3)	1.37	(1.01, 1.87)
	40 – 49	67.9	(63.4, 72.5)	1.55	(1.15, 2.10)
	50 – 60	67.5	(63.2, 71.8)	1.52	(1.14, 2.04)
Sex	Female	68.1	(64.9, 71.4)	Reference	
	Male	63.4	(60.4, 66.4)	0.81	(0.67, 0.99)
Suicide ideation in the last 12 months	No	64.8	(62.0, 67.5)	Reference	
	Yes	50.9	(36.4, 65.3)	0.56	(0.31, 1.02)

It should be noted that mental health has already been recognized as a key health issue among CAF personnel. Since the release of the Surgeon General’s Mental Health Strategy in late 2013, resources have been allocated for educating personnel on how to seek help. The effect of these recent initiatives is unlikely to be reflected in the findings described above.

6.3.4 Canadian Forces Member Assistance Program Utilization

The Canadian Forces Member Assistance Program (CFMAP) is a voluntary and confidential short-term problem solving service that provides counselling to all CAF personnel and their families; open 24 hours a day, 365 days per year. The service addresses all concerns related to personal well-being as well as work performance. The professional counsellors employed by this service can provide referrals for long-term or more specialized services as required.

Less than half (44.3%) of Regular Force personnel were aware of the CFMAP. Being aware of CFMAP was more likely in: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29; (2) females compared to males; and (3) officers compared to NCMs (Table 6-19). There were no differences by service element.



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Table 6-19: Percentage of Regular Force personnel who were aware of the Canadian Forces Member Assistance Program

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		44.3	(41.7, 46.8)		
Age (years)	18 – 29	23.1	(18.9, 27.3)	Reference	
	30 – 39	48.0	(42.7, 53.3)	3.07	(2.24, 4.22)
	40 – 49	57.3	(52.5, 62.1)	4.47	(3.28, 6.08)
	50 – 60	55.9	(51.3, 60.5)	4.22	(3.12, 5.70)
Sex	Female	55.1	(51.7, 58.5)	Reference	
	Male	42.6	(39.7, 45.5)	0.60	(0.50, 0.73)
Rank	NCM	41.5	(38.3, 44.7)	Reference	
	Officer	52.6	(49.0, 56.2)	1.57	(1.29, 1.90)

Approximately one-quarter (24.1% [95% CI: 20.8%, 27.6%]) of personnel aware of the CFMAP had ever used the service. Program utilization did not differ by age, sex, rank, or service element. Most personnel (67.6%) who utilized the program were either very satisfied or satisfied with the service they received. Satisfaction levels were higher in: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 39 years; and (2) officers compared to NCMs (Table 6-20). There were no differences by sex, or service element.



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Table 6-20: Regular Force personnel's satisfaction with the Canadian Forces Member Assistance Program

Variable	Category	Very Satisfied		Satisfied		Neutral		Dissatisfied/ Very Dissatisfied		Odds Ratio	(95% CI) ^a
		Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)	Percent	(95% CI)		
Overall		21.3	(15.9, 26.8)	46.3	(38.2, 54.4)	17.7	(11.1, 24.2)	14.7	(8.8, 20.5)		
Age (years)	18 – 39	9.3	(3.0, 15.6) ^b	50.6	(37.5, 63.7)	24.9	(13.1, 36.7)	15.2	(6.1, 24.3)	Reference	
	40 – 60	32.8	(24.1, 41.6)	42.3	(32.5, 52.0)	10.8	(4.7, 16.8) ^b	14.1	(6.8, 21.5)	2.50	(1.40, 4.47)
Rank	NCM	17.2	(10.4, 24.0)	45.0	(33.9, 56.1)	21.5	(12.2, 30.9) ^b	16.3	(8.1, 24.4) ^b	Reference	
	Officer	29.5	(20.5, 38.5)	48.9	(38.8, 59.0)	10.1	(3.9, 16.3)	11.5	(5.2, 17.8)	2.03	(1.20, 3.45)

^a Odds ratios computed from ordinal logistic regression. See the Methods section for more details.

^b Fewer than 20 unweighted observations, values may be unstable; interpret with caution.



6.4. Physiotherapy

The incidence of injuries and the associated morbidity is high among CAF personnel. Almost half of all sick parade visits (45%) and medical releases (43%) are the result of a musculoskeletal (MSK) injury (CF H Svcs Gp, 2014). Physiotherapy has been associated with a faster recovery time for MSK injuries and the prevention of related chronic conditions, which decrease morbidity and increase operational readiness. The benefits of physiotherapy are enhanced when interventions are early or preventive (Hébert, 2007).

The vision of CAF Physiotherapy is to provide physical and measurable solutions to operational readiness through assessment, education, and treatment (CAF, 2014). The program’s mandate is to facilitate the reintegration of meaningful activity for military personnel who have sustained injury or illness. The physiotherapy team’s objective is to help CAF personnel return to full, active duty as quickly as possible (CF H Svcs Gp, 2014).

6.4.1 Utilization of Canadian Forces Health Services Provided Physiotherapy

In the past two years, almost half (48.5%) of the Regular Force accessed physiotherapy services through CF Health Services. Receiving physiotherapy was more likely in: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 29 years; and (2) females compared to males (Table 6-21). There were no differences by rank, or service element.

Table 6-21: Percentage of Regular Force personnel who accessed Canadian Armed Forces physiotherapy services in the past 2 years

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		48.5	(45.7, 51.2)		
Age (years)	18 – 29	42.5	(37.2, 47.7)	Reference	
	30 – 39	47.3	(42.1, 52.5)	1.21	(0.90, 1.64)
	40 – 49	52.4	(47.6, 57.3)	1.49	(1.12, 1.99)
	50 – 60	58.4	(53.9, 63.0)	1.90	(1.43, 2.53)
Sex	Female	62.0	(58.6, 65.3)	Reference	
	Male	46.4	(43.3, 49.5)	0.53	(0.44, 0.64)

The majority of personnel (68.1% [95% CI: 63.9%, 72.0%]) who reported accessing physiotherapy services in the past two years, received their most recent treatment on base/wing. There were no differences in physiotherapy services location (on base versus civilian facility) by age, sex, rank, or service element. There was also no difference in service provision location across the eight largest bases/wings.

6.4.2 Reasons for Withdrawing from Physiotherapy

The majority of Regular Force personnel (82.3% [95% CI: 79.4%, 84.8%]) who reported accessing physiotherapy services in the past two years, had finished receiving physiotherapy for their most recent referral at the time of the survey.



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One-third of the personnel (31.7% [95% CI: 27.8%, 35.9%]), who were no longer receiving physiotherapy, chose to stop receiving treatment on their own; remaining personnel were discharged by their physiotherapist. The most common reasons for choosing to end treatment were: (1) patient was not seeing any improvement; (2) scheduling difficulties or a lack of time; and (3) feeling better (Figure 6-7).

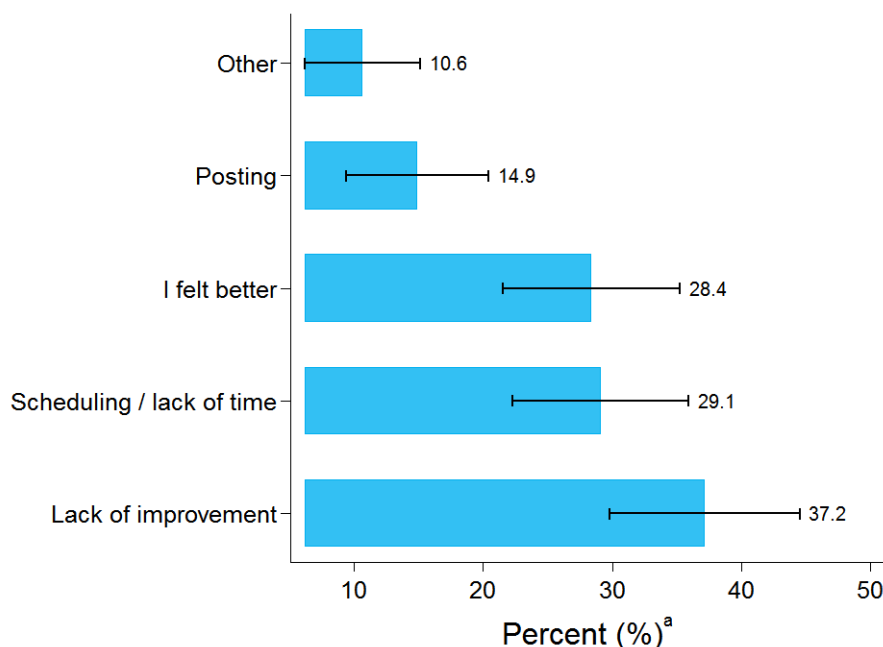


Figure 6-7: Reasons for stopping physiotherapy treatment, among physiotherapy patients who stopped receiving treatment but were not discharged by their physiotherapist.

^a Personnel could select more than one option. Percents may sum to more than 100%.

In addition to the treatment barriers identified by the Regular Force personnel surveyed, other barriers can include: increased pain level during exercise; poor social support; or anxiety and depression. Any combination of these factors can lead to low treatment adherence, which is associated with negative health outcomes and can cause increased healthcare costs (Jack, 2010). Current research suggests that strategies to increase adherence only have short-term efficacy and that more research on the barriers to treatment is needed to facilitate the development of long-term solutions (McLean, 2010).

6.4.3 Functionality Before and After Physiotherapy

CAF physiotherapists work hard to return personnel to full duties. Regular Force personnel, who had completed their physiotherapy treatments, were asked to rate their level of function, from 0 to 100 (where 100% is perfect) before they started their most recent physiotherapy treatment, as well as after treatment had concluded. The average pre-treatment rating of functionality was 58.7% (95% CI: 56.8%, 60.6%). After physiotherapy, the average rating of functionality was 85.0% (95% CI: 83.7%, 86.3%). Therefore Regular Force personnel who underwent physiotherapy treatment reported an average of 26.3% absolute improvement in function from before to after treatment.



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Slightly less than half of personnel (44.2% [95% CI: 40.5%, 48.1%]) who used CF Health Services physiotherapy in the past two years (whether their treatment was still continuing or concluded) felt that they had a lower chance of re-injury after physiotherapy as compared to before they were injured. Officers (53.1% [95% CI: 48.0%, 58.1%]) were more likely than NCMs (41.2% [95% CI: 36.5%, 46.1%]) to believe that they had a lower chance of re-injury after physiotherapy. There were no differences by age, sex, or service element.

6.5 Oral Health Care

The vision of the Royal Canadian Dental Corps (RCDC) is to provide full spectrum, operationally focused, dental care that contributes to operational readiness and quality of life for the CAF. Regular Force personnel are entitled to comprehensive dental treatment that is necessary and available to establish masticatory efficiency and freedom from pain (DND, 2014). Regular Force personnel are required to receive annual dental fitness exams, in order to determine their dental fitness status for operational deployability purposes.

6.5.1 Booking Appointments with Canadian Armed Forces Dental Services

Although they are required to undergo annual dental exams, only 77.9% of Regular Force personnel reported needing an appointment for a non-urgent dental issue (e.g., exams, cleaning, or follow-up care) in the past 12 months. Reporting a need for non-urgent dental care was more likely in: (1) personnel aged 50 – 60 years compared to personnel aged 18 – 29 years; and (2) females compared to males. There were no differences by rank, or service element (Table 6-22). Further research is needed to understand why nearly a quarter of Regular Force personnel did not perceive a need for non-urgent dental care, given that such care includes an annual dental fitness exam to determine deployability status.

Table 6-22: Percentage of Regular Force personnel who felt a need for non-urgent dental care (e.g., exams, cleaning, or follow-up care) in the past 12 months

Variable	Category	Percent (95% CI)	Odds Ratio (95% CI)
Overall		77.9 (75.5, 80.2)	
Age (years)	18 – 29	75.4 (70.3, 79.9)	Reference
	30 – 39	79.0 (74.2, 83.1)	1.23 (0.84, 1.78)
	40 – 49	77.6 (73.2, 82.5)	1.13 (0.80, 1.61)
	50 – 60	82.5 (78.7, 85.7)	1.54 (1.08, 2.19)
Sex	Female	85.4 (82.7, 87.7)	Reference
	Male	76.8 (74.0, 79.4)	0.67 (0.44, 0.73)

Of the 77.9% of Regular Force personnel who perceived a need for non-urgent dental care in the past 12 months, 93.1% (95% CI: 91.3%, 94.6%) booked an appointment and the other 6.9% (95% CI: 5.4%, 8.7%) reported to sick parade instead. In other words, 72.6% (95% CI: 70.0%, 75.0%) of all Regular Force personnel booked an appointment with CAF dental services in the last 12 months, and 5.4% (95% CI: 4.2%, 6.8%) reported to sick parade instead. As discussed in Section 6.2.2.3, personnel should only report to sick parade if



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symptoms are less than 24 hours in duration, and affect their ability to perform their daily tasks. Reporting to sick parade rather than booking an appointment for a non-urgent dental issue was more likely in NCMs compared to officers (Table 6-23). There were no differences by age, sex, or service element. Further research is needed to better understand why Regular Force personnel reported to sick parade for non-urgent medical and/or dental care rather than scheduling an appointment.

Table 6-23: Percentage of Regular Force personnel^a who reported to sick parade rather than book an appointment for non-urgent dental problems in the past 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		6.9	(5.4, 8.7)		
Rank	NCM	7.7	(5.8, 10.1)	Reference	
	Officer	4.5	(3.1, 6.6)	0.57	(0.35, 0.93)

^a Only includes personnel who felt a need for non-urgent dental care in the past 12 months.

6.5.2 Timeliness of Canadian Armed Forces Dental Services

Of the 72.6% of Regular Force personnel who accessed CAF dental services for non-urgent dental problems in the past 12 months, 16.4% reported waiting one week or less for their appointment, and 44.6% reported waiting more than one month (Figure 6-8). There were no differences in wait time by age, sex, rank, or service element.

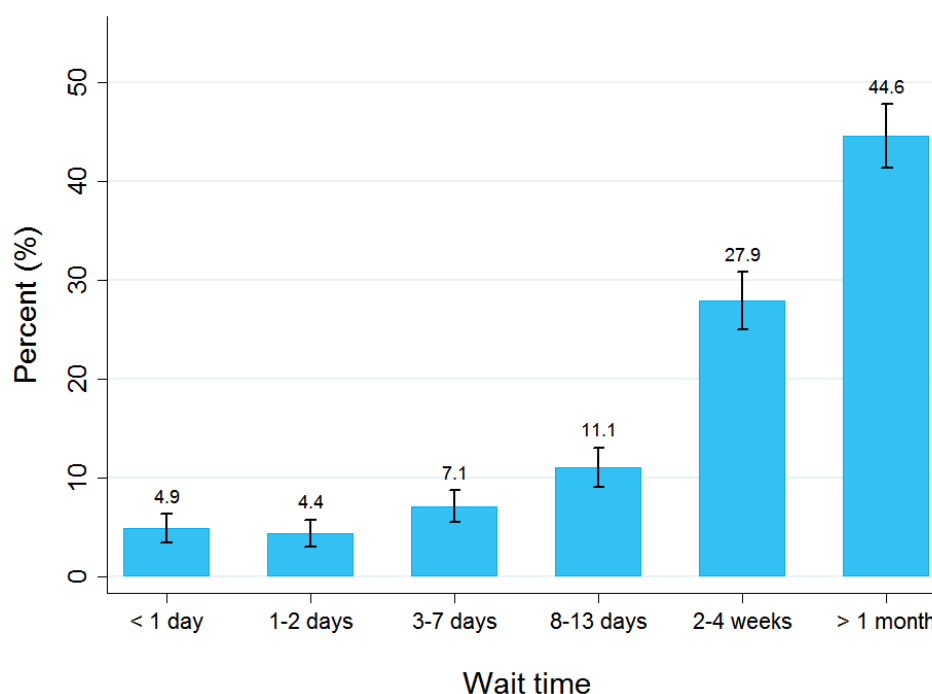


Figure 6-8: Reported wait times for appointments for non-urgent dental problems in the last 12 months.



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Of the 72.6% of Regular Force personnel who accessed CAF dental services for non-urgent dental problems in the past 12 months, 43.3% were either satisfied or very satisfied with the wait time to get an appointment. Personnel aged 40 – 60 years were more likely to report higher levels of satisfaction with the wait time for non-urgent dental appointments compared to personnel aged 18 – 29 years (Table 6-24). This finding is intriguing, given that all age groups reported similar wait times for non-urgent dental appointments. There were no differences in satisfaction levels by sex, rank, or service element.

Of the 72.6% of Regular Force personnel who accessed CAF dental services for non-urgent dental problems, 55.1% believed that the reasonable maximum amount of time one should wait to get an appointment was two weeks or less. Officers were more likely than NCMs to believe that longer wait times were acceptable (Table 6-25). There were no differences by age, sex, or service element. Of note, 38.8% (95% CI: 34.5%, 43.3%) of Regular Force personnel who believed that one should not have to wait more than two weeks for a non-urgent dental appointment actually received non-urgent dental care within that time frame.



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Table 6-24: Regular Force personnel's satisfaction with non-urgent dental appointment wait times

Variable	Category	Percent (95% CI)					Odds Ratio	(95% CI) ^a
		Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied		
Overall		13.6 (11.6, 16.0)	29.7 (26.9, 32.7)	26.8 (24.0, 29.8)	18.5 (16.0, 21.1)	11.4 (9.5, 13.6)		
Age (years)	18 – 29	11.7 (8.4, 16.1)	21.7 (17.0, 27.2)	32.5 (26.8, 38.7)	21.5 (16.7, 27.3)	12.6 (8.9, 17.5)		Reference
	30 – 39	14.5 (10.5, 19.6)	28.1 (23.0, 34.0)	25.7 (20.6, 31.6)	18.5 (14.1, 23.8)	13.1 (9.6, 17.8)	1.26	(0.92, 1.73)
	40 – 49	13.2 (9.9, 17.4)	37.9 (32.4, 43.7)	24.6 (19.8, 30.0)	15.5 (11.8, 20.2)	8.8 (6.1, 12.4)	1.67	(1.25, 2.22)
	50 – 60	16.9 (13.2, 21.3)	34.6 (29.6, 39.9)	21.4 (17.3, 26.2)	17.9 (14.1, 22.5)	9.2 (6.4, 12.9)	1.71	(1.27, 2.30)

^a Odds ratios computed from ordinal logistic regression. See the Methods section for more details.

Table 6-25: Regular Force personnel's reported maximum reasonable wait time for non-urgent dental appointments

Variable	Category	Percent (95% CI)			Odds Ratio	(95% CI) ^a
		0 – 7 Days	1 – 2 Weeks	More than 2 Weeks		
Overall		19.6 (16.9, 22.2)	35.5 (32.3, 38.7)	44.9 (41.7, 48.1)		
Rank	NCM	22.0 (18.6, 25.5)	36.7 (32.6, 40.8)	41.3 (37.2, 45.4)		Reference
	Officer	12.9 (10.1, 15.7)	32.3 (28.4, 36.2)	54.8 (50.7, 59.0)	1.76	(1.41, 2.21)

^a Odds ratios computed from ordinal logistic regression. See the Methods section for more details.



6.5.3 Satisfaction with Quality of Dental Services

Over three-quarters (77.4%) of Regular Force personnel who accessed dental services in the past 12 months, reported that the quality of dental care that they received at their current base, wing, unit or formation was either excellent or good, rather than fair or poor. Quality of dental care received at one's current base, wing, unit, or formation was more highly rated by: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; and (3) officers compared to NCMs (Table 6-26). There was no difference by service element.

Table 6-26: Percentage of Regular Force personnel who reported that the quality of dental services on their current base, wing, unit, or formation was either excellent or good, among those who accessed Canadian Armed Forces dental services in the last 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		77.4	(74.6, 80.2)		
Age (years)	18 – 29	66.4	(60.3, 72.6)	Reference	
	30 – 39	78.3	(72.9, 83.7)	1.82	(1.20, 2.77)
	40 – 49	84.0	(79.6, 88.4)	2.65	(1.73, 4.08)
	50 – 60	87.1	(83.3, 90.8)	3.40	(2.21, 5.23)
Sex	Female	81.7	(78.5, 84.8)	Reference	
	Male	76.7	(73.4, 80.0)	0.74	(0.56, 0.97)
Rank	NCM	74.8	(71.2, 78.5)	Reference	
	Officer	84.8	(81.8, 87.9)	1.88	(1.38, 2.55)

Ratings of the quality of dental care in the CAF in general were very similar to ratings of the quality of dental care received on personnel's current base, wing, unit or formation. Quality of dental care in the CAF in general was more highly rated by: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 29 years; and (2) officers compared to NCMs (Table 6-27). There were no differences by sex, or service element.

Table 6-27: Percentage of Regular Force personnel who reported that the quality of dental services in the Canadian Armed Forces, in general, was either excellent or good, among those who accessed Canadian Armed Forces dental services in the last 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		75.2	(72.3, 78.1)		
Age (years)	18 – 29	66.6	(60.5, 72.8)	Reference	
	30 – 39	73.6	(67.9, 79.4)	1.40	(0.93, 2.10)
	40 – 49	81.6	(77.1, 86.2)	2.23	(1.48, 3.36)
	50 – 60	85.5	(81.7, 89.4)	2.97	(1.95, 4.51)
Rank	NCM	72.7	(68.9, 76.5)	Reference	
	Officer	82.1	(78.9, 85.2)	1.72	(1.29, 2.29)



6.5.4 Satisfaction with Availability of Dental Services

Of the 72.6% of Regular Force personnel who accessed CAF dental services for non-urgent dental problems in the last 12 months, 59.6% thought that the availability of dental services at their current base, wing, unit, or formation was either excellent or good. Similarly, 63.5% of Regular Force personnel who accessed CAF dental services for non-urgent dental problems in the last 12 months thought that the availability of dental services in the CAF in general was either excellent or good. Availability of CAF dental services was more highly rated by personnel aged 30 – 60 years compared to personnel aged 18 – 29 years (Table 6-28). This finding is consistent with the fact that older personnel were more satisfied with their wait time for a non-urgent appointment than younger personnel. There was no difference by sex, rank, or service element.



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Table 6-28: Percentage of Regular Force personnel who reported that the availability of dental services was either excellent or good, among those who accessed Canadian Armed Forces dental services in the last 12 months

Variable	Category	At Current Base/Wing				In CAF in General			
		Percent	(95% CI)	Odds Ratio	(95% CI)	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		59.6	(56.3, 62.8)			63.5	(60.3, 66.7)		
Age (years)	18 – 29	48.6	(42.2, 54.9)		Reference	50.8	(44.4, 57.3)		Reference
	30 – 39	59.6	(53.3, 65.8)	1.56	(1.09, 2.25)	65.7	(59.7, 71.7)	1.85	(1.28, 2.69)
	40 – 49	67.0	(61.5, 72.6)	2.15	(1.51, 3.08)	69.9	(64.5, 75.3)	2.24	(1.56, 3.23)
	50 – 60	69.9	(64.8, 75.0)	2.46	(1.74, 3.50)	72.2	(67.2, 77.1)	2.51	(1.75, 3.58)



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6.6 Routine Health Assessment

Evidence-based preventive screening is an important component of a quality health care system. Identifying health issues early results in timely interventions, such as lifestyle changes and medical treatments, often leading to improved health outcomes. High screening coverage, within the recommended time frame, is necessary for a successful screening program.

6.6.1 Periodic Health Assessment

Routine health assessments help to assess and maintain the operational readiness of the CAF Regular Force, ensuring all personnel are medically fit for military duty. The Periodic Health Assessment (PHA) is an individualized, risk-related, preventive health care tool used to determine the overall health status of military personnel, and to screen them for a variety of health issues. Regular Force personnel under the age of 40 are required to complete a PHA every five years, and personnel aged 40 years and older are required to complete a PHA every two years.

Overall, health assessment compliance has improved over time. In 2013/14, 91.8% of all Regular Force personnel reported having a PHA within the prescribed time period compared to 85.7% in 2004 and 88.4% in 2008/9 (Table 6-29).

Table 6-29: Percentage of Regular Force personnel who completed a Periodic Health Assessment within the recommended time period, by survey year

Age (years)	HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
Overall	2004	85.7	(84.0, 87.4)	0.53	(0.42, 0.67)
(18 – 60)	2008/9	88.4	(85.9, 90.5)	0.68	(0.51, 0.90)
	2013/14	91.8	(90.3, 93.1)	Reference	
18 – 39	2004	92.5	(90.4, 94.1)	0.53	(0.33, 0.84)
	2008/9	93.6	(90.4, 95.8)	0.63	(0.35, 1.13)
	2013/14	95.9	(94.1, 97.2)	Reference	
40 – 60	2004	74.4	(71.2, 77.3)	0.51	(0.39, 0.67)
	2008/9	79.7	(75.4, 83.3)	0.69	(0.50, 0.96)
	2013/14	85.0	(82.1, 87.6)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

Personnel aged 18 – 39 years were more likely to have completed a PHA within the prescribed time period than personnel aged 40 – 60 years (Table 6-30). Furthermore, compliance with recommended PHA screening intervals was lowest in personnel aged 40 – 44 years (Figure 6-9). This finding is not surprising, given that individuals aged 40 – 44 years are in a transition period, having to adjust to shorter screening intervals. In fact, PHA compliance rebounds in personnel aged 45 – 60 years; however, screening rates in personnel aged 45 – 60 years remain lower than in personnel aged 18 – 39 years, who are only required to be screened every five years (Figure 6-9).



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Table 6-30: Percentage of Regular Force personnel who completed a Periodic Health Assessment within the recommended time period

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		91.8	(90.4, 93.2)		
Age (years)	18 – 29	95.0	(92.6, 97.4)	Reference	
	30 – 39	96.6	(94.7, 98.5)	1.50	(0.69, 3.25)
	40 – 49	84.4	(80.9, 88.0)	0.29	(0.16, 0.51)
	50 – 60	86.7	(83.6, 89.8)	0.34	(0.19, 0.61)
Service element	Air	94.8	(92.9, 96.7)	Reference	
	Sea	93.3	(90.4, 96.1)	0.75	(0.41, 1.37)
	Land	89.3	(86.9, 91.6)	0.45	(0.29, 0.72)

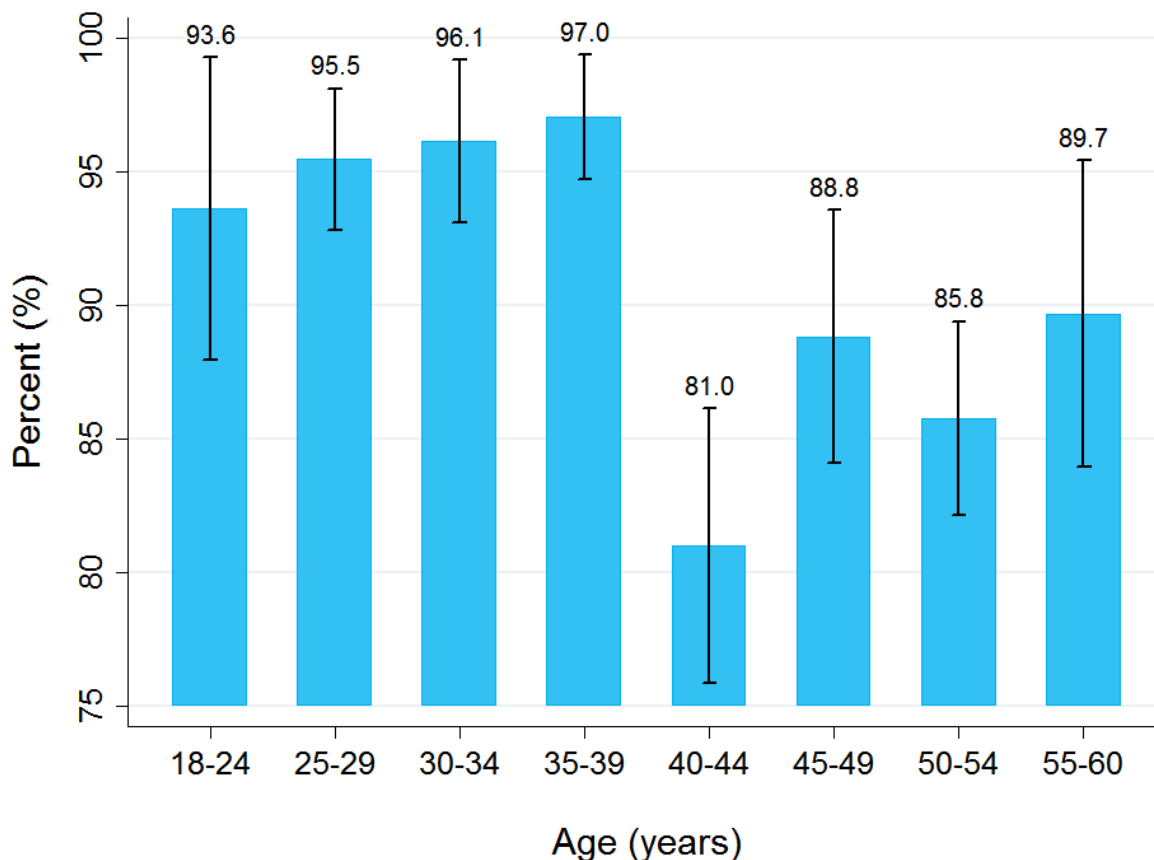


Figure 6-9: Percentage of Regular Force personnel who completed a Periodic Health Assessment within the recommended time period (i.e., within the last five years for personnel aged 18 – 39 years, and within the last two years for personnel aged 40 – 60 years).



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Air personnel were more likely to report having a PHA within the prescribed time period than Land personnel (Table 6-30). This difference might be due to certain occupations within the Air and Sea element which require regular medical screenings, such as aircrew and divers. There were no differences in reported PHA screening rates by sex, or rank.

Eight percent (8.2% [95% CI: 6.9%, 9.7%]) of Regular Force personnel did not complete a PHA within the recommended time period for their age group. The most commonly reported reasons for not completing a PHA within the prescribed time period were: (1) patient did not think it was necessary; (2) doctor did not think it was necessary; and (3) patient did not get around to it (Figure 6-10).

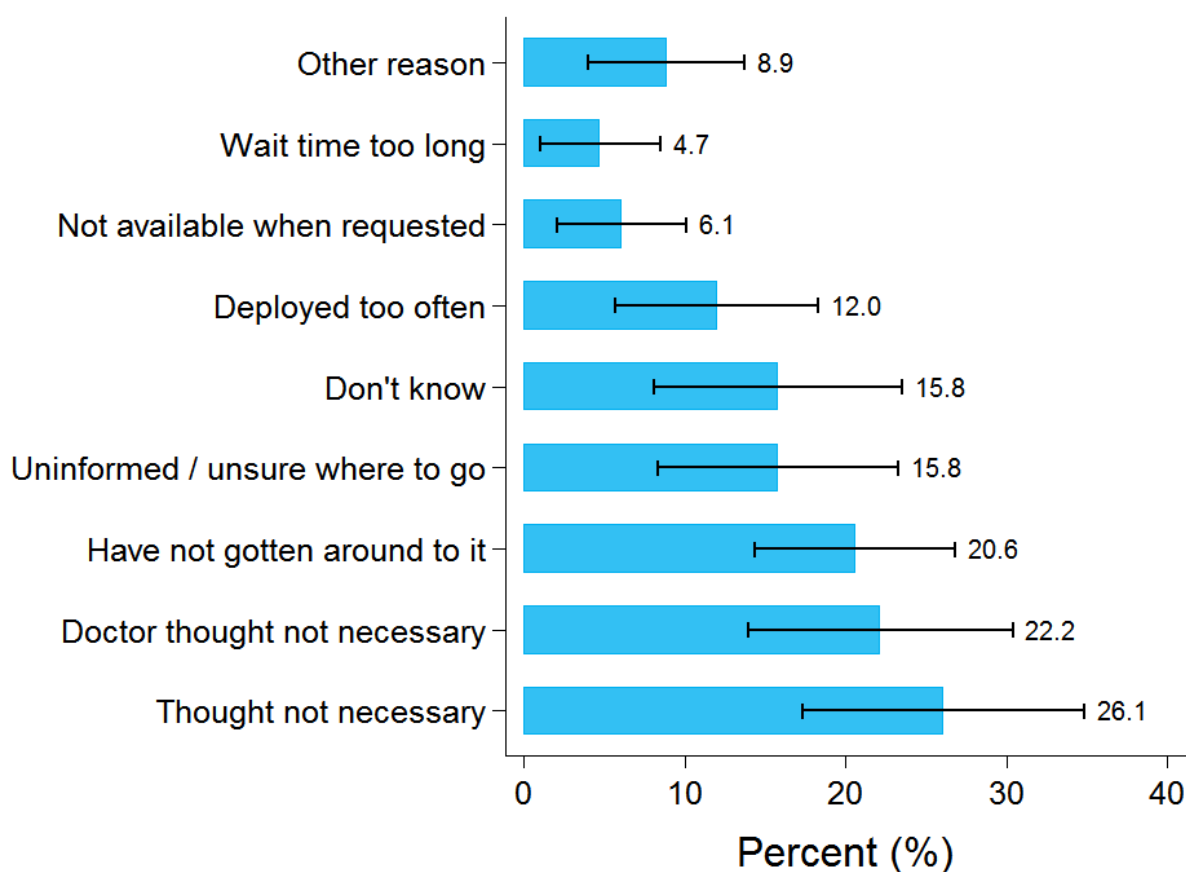


Figure 6-10: Reasons for which Regular Force personnel had not completed a Periodic Health Assessment, among those who had not completed a Periodic Health Assessment within the recommended time period.

Although routine health screening rates are high, it may be possible to improve them further through education initiatives focused on disseminating information on appropriate screening intervals by age as well as information on PHA accessibility through the appropriate Care Delivery Unit (CDU). These initiatives may be most beneficial if they are targeted towards personnel who are transitioning from five-year screening intervals to two-year intervals.



6.6.2 Colorectal Cancer Screening

In Canada, colorectal cancer is the third most commonly diagnosed form of cancer and it is the second most common cause of death from cancer, accounting for 12% of all cancer mortality in 2014. Based on 2009 estimates, 1 in 13 males and 1 in 16 females are expected to be diagnosed with colorectal cancer in their lifetime. One in 28 males and 1 in 32 females are expected to die from colorectal cancer (Canadian Cancer Society, 2014).

Colorectal cancer is highly treatable, if caught early. It is recommended that persons age 50 and over, who are not in a high-risk category, be screened for colorectal cancer every two years with a fecal occult blood test (FOBT). This simple, non-invasive, method of screening aims to detect blood in the stool from polyps or tumours in the large intestine. It can help to identify certain types of polyps before they become cancerous. Alternatively, persons can opt to be screened via colonoscopy every 10 years, if the resources are available in their area. Colonoscopies are performed to visually search the bowel for early signs of cancer. This test requires preparation of the colon and has a higher risk of complications because of its invasive nature (Canadian Task Force on Preventive Health Care, 2001).

61.5% (95% CI: 56.6%, 66.3%) of all Regular Force personnel aged 50 years or older had completed colorectal cancer screening in the recommended time frame (i.e., they had either completed a FOBT in the last 2 years, and/or a colonoscopy in the last 10 years). There were no differences by age, sex, rank, or service element. Among Regular Force personnel aged 50 years or older who had completed colorectal cancer screening in the recommended time frame, 68.1% had only completed a FOBT, 17.6% had only completed a colonoscopy, and the remaining 14.3% had completed both screening tests.

Reported colorectal cancer screening rates were higher among Regular Force personnel compared to the Canadian population. On average, 51.1% of Canadians aged 50 – 74 are appropriately screened for colorectal cancer (CCDP, 2014). However, this percentage is based on actual tests received and does not account for the percentage of Canadians who complete screening outside of the organized screening program; as well, the Canadian percentage includes older individuals (aged 61 – 74). Nonetheless, screening rates are surprisingly low, given that organized screening programs have been implemented in all provinces since 2010 (CPAC, 2010). Colorectal cancer mortality could be reduced by 15% to 17% if 70% of Canadians aged 50 and above adhered to screening guidelines (Wilkins, 2009).

The Regular Force population might have higher screening rates as research indicates that individuals who speak with their doctor about screening are more likely to be screened. Military personnel may have more contact with their health care provider due to mandatory biennial exams, whereas the comparable Canadian population might go longer between visits. One-third of unscreened Canadians reported that not seeing their doctor or not being told by a doctor about screening was the reason why they were never screened (CPAC, 2010). Increasing routine health assessment compliance, developing educational interventions and implementing a reminder or recall system could increase screening rates in the CAF. Further research on barriers to achieving higher colorectal cancer screening among CAF personnel might improve future screening rates.

6.6.3 Breast and Cervical Cancer Screening

Of all Regular Force women aged 50 years and older, 74.4% reported having a mammogram in the last two years. Furthermore, 89.5% of all Regular Force women had a Pap smear test in the last three years. See Chapter 5 for more details on breast and cervical cancer screening in Regular Force women.



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6.7 Conclusion

In the past 12 months, 75.4% of all Regular Force personnel sought medical attention from a CAF medical facility, and 43.2% of all personnel required the attention of a medical specialist. These percentages were unchanged from 2004 and 2008/9. Most (79.2%) Regular Force personnel felt that the quality of care they received from physicians at CF Health Services was excellent, very good or good.

Among Regular Force personnel who sought care for a non-urgent health problem, 55.4% reported waiting two weeks or more for an appointment. Wait times for non-urgent appointments were unchanged from 2004 and 2008/9. However, only 50.3% of Regular Force personnel were satisfied with wait times for appointments for non-urgent problems. In contrast, research studies have highlighted the benefit of new health care models, such as the advanced access approach (Fournier, 2012), through which providers can reduce wait times to less than one day, without increasing costs.

Long wait times may partly account for misuse of sick parade. Personnel should only report to sick parade if they are experiencing symptoms that: (1) are less than 24 hours in duration; and (2) affect their ability to perform their daily tasks. However, 22.3% of personnel who have ever required care for a routine, ongoing, non-urgent health problem reported that they would seek such care at sick parade.

While 90.4% of Regular Force personnel knew where to seek emergency medical attention, only 64.0% knew where to seek urgent mental health care after hours. Furthermore, only 50.9% of personnel who reported having seriously considered suicide in the last 12 months knew where to seek urgent mental health care. There are always mental health services available to CAF personnel – such as the Canadian Forces Member Assistance Program (CFMAP) – but the lack of knowledge of these resources among Regular Force personnel may limit their impact.

In the past two years, 48.5% of Regular Force personnel accessed physiotherapy services through CF Health Services of which 68.1% received their most recent treatment on base. One-third of personnel who chose to stop receiving treatment sessions on their own did so most commonly because no improvement was seen, or they had scheduling difficulties or lack of time.

Although personnel are required to undergo annual dental exams, only 77.9% of Regular Force personnel reported needing an appointment for a non-urgent dental issue (e.g., exams, cleaning, or follow-up care) in the past 12 months. Furthermore, 6.9% of personnel who required non-urgent dental care in the past 12 months reported to sick parade rather than booking an appointment with CF Dental Services. Most (77.4%) Regular Force personnel who accessed CF Dental services in the past 12 months reported that the quality of dental care they received at their current base, wing, unit, or formation was either good or excellent.

The vast majority (95.9%) of Regular Force personnel aged 18 – 39 years completed a PHA within the past five years, and 85.0% of personnel aged 40 – 60 years completed a PHA within the past two years. PHA compliance increased in 2013/14 from 2004 and 2008/9, but remains lower in personnel aged 40 – 44 years, who are transitioning from a five-year to a two-year screening interval.

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Chapter 7 – Physical Activity

7.1 Introduction

The physical fitness of Canadian Armed Forces (CAF) personnel can influence the success or failure of military operations. Being physically fit is, therefore, a condition of employment in the CAF. It is also a key factor in career advancement for CAF personnel. CAF personnel are required to maintain a high level of fitness through regular participation in physical activities; current CAF guidelines call for one hour of physical activity, five times per week. Furthermore, the Chain of Command is required to ensure that all CAF personnel are provided with opportunities to participate in physical activities during normal work hours (DND, 2006a).

CAF personnel undergo annual physical fitness evaluations. The results of these annual tests can have profound repercussions on one's military career. Individuals who fail their annual fitness test are considered unable to perform military tasks commonly encountered in local and expeditionary operations, and cannot be deployed.

The HLIS 2013/14 asked participants to describe their current physical activity regimen, and their results on recent annual fitness tests. Information was also collected on the injuries recently sustained while participating in physical activities, and the perceived level of organizational support for personal fitness.

7.2 Physical Activities

7.2.1 Physical Activity Level

The physical activity level of HLIS 2013/14 participants was measured using the Godin Leisure-Time Exercise Questionnaire (Godin, 1985). This simple measurement tool asks participants to report how often they engage in strenuous, moderate, and mild physical activity for more than 15 minutes during a typical week. A formula is then used to convert these self-reported frequencies into a continuous, unitless score. Validation studies have shown strong correlation between physical activity scores and other measures of physical activity level (Godin, 1985; ACSM, 1997). Recommended cut-offs were used to categorize physical activity scores into one of three levels: (1) active; (2) moderately active; and (3) inactive (Godin, 2011).

Overall, 85.2% of Regular Force personnel were physically active in 2013/14. There was an increase in physical activity level of Regular Force personnel between the HLIS 2008/9 and the HLIS 2013/14¹⁰ (Table 7-1). Excluding pregnant women from the analysis had no effect on these numbers.

In 2013/14, higher levels of physical activity were more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 40 – 60 years; (2) Land personnel compared to Air or Sea personnel; and (3) normal weight personnel compared to obese personnel (Table 7-2). There were no differences by categories of sex, rank, current smoking status, or serious injuries (either repetitive strain or acute injuries) in the past 12 months¹¹.

¹⁰ Estimates were standardized to the age, sex and rank distribution of the 2013 Regular Force population.

¹¹ See Chapter 3 for more details on repetitive strain and acute injuries.



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Table 7-1: Physical activity level of Regular Force personnel, as estimated by two different measurement tools

Measurement Tool	HLIS	Percent (95% CI) ^a						Odds Ratio (95% CI) ^b
		Inactive		Moderately Active		Active		
Godin leisure-time exercise scale	2008/9	11.7	(9.2, 14.2)	9.6	(7.5, 11.6)	78.7	(75.7, 81.7)	0.63 (0.50, 0.80)
	2013/14	7.2	(5.8, 8.6)	7.6	(6.1, 9.0)	85.2	(83.3, 87.2)	Reference
Physical activity index	2004	29.4	(27.1, 31.7)	26.1	(23.9, 28.3)	44.5	(41.9, 47.1)	0.52 (0.45, 0.60)
	2008/9	34.0	(30.6, 37.5)	20.1	(17.4, 22.8)	45.9	(42.2, 49.6)	0.49 (0.41, 0.59)
	2013/14	17.9	(15.8, 20.0)	21.0	(18.8, 23.3)	61.1	(58.4, 63.7)	Reference

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

^b Odds ratios computed with ordinal logistic regression. See Methods section for more details.



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Table 7-2: Physical activity level of Regular Force personnel, estimated using the Godin Leisure-Time Exercise Scale

Variable	Category	Percent (95% CI)			Odds Ratio (95% CI) ^a
		Inactive	Moderately Active	Active	
Overall		7.2 (5.8, 8.6)	7.6 (6.1, 9.0)	85.2 (83.3, 87.2)	
Age (years)	18 – 29	4.5 (2.2, 6.8)	5.8 (3.3, 8.3)	89.7 (86.4, 93.0)	Reference
	30 – 39	6.7 (4.0, 9.4)	6.8 (4.2, 9.5)	86.5 (82.8, 90.1)	0.73 (0.45, 1.16)
	40 – 49	8.9 (6.1, 11.7)	9.0 (6.1, 11.8)	82.1 (78.3, 85.9)	0.52 (0.34, 0.81)
	50 – 60	11.8 (8.9, 14.6)	11.3 (8.4, 14.3)	76.9 (73.1, 80.7)	0.38 (0.25, 0.57)
Service element	Air	9.1 (6.4, 11.8)	10.2 (7.4, 13.0)	80.7 (77.0, 84.4)	Reference
	Sea	13.0 (8.4, 17.5)	10.4 (6.3, 14.5)	76.6 (71.0, 82.3)	0.77 (0.52, 1.14)
	Land	3.8 (2.4, 5.2)	5.0 (3.3, 6.6)	91.2 (89.1, 93.3)	2.48 (1.74, 3.53)
Body mass index	Normal weight	5.9 (3.4, 8.4)	6.5 (4.0, 8.9)	87.7 (84.3, 91.1)	Reference
	Overweight	6.7 (4.7, 8.7)	7.2 (5.2, 9.3)	86.1 (83.3, 88.8)	0.87 (0.59, 1.28)
	Obese	8.9 (5.7, 12.1)	9.9 (6.5, 13.4)	81.2 (76.7, 85.6)	0.61 (0.40, 0.94)

^a Odds ratios computed with ordinal logistic regression. See Methods section for more details.



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The HLIS 2004 did not include the Godin Leisure-Time Exercise Scale, and instead measured physical activity level using the Physical Activity Index (PAI). The PAI asked respondents to self-report their frequency and duration of participation in 35 different activities, over the last four months. Each of these activities was assigned an estimated energy cost, based on the Compendium of Physical Activity Tracking Guide (Ainsworth, 2011). Energy costs and self-reported frequencies of each activity were entered into a formula developed by the Canadian Fitness and Lifestyle Research Institute (CFLRI, 2007) to estimate daily energy expenditure. Based on daily energy expenditure, respondents were categorized as either: (1) active; (2) moderately active; or (3) inactive. However, the PAI is more difficult to self-administer accurately than the Godin scale, because it requires survey respondents to recall details of their participation in many different specific activities over a long time period. And, unlike the Godin scale, the PAI does not measure activity intensity directly. Given these limitations, PAI results are not considered as reliable as those of the Godin scale for HLIS purposes. Nevertheless, the PAI can still be useful to track physical activity trends over time. Its results suggest that physical activity levels of Regular Force personnel were higher in 2013/14 than they were in 2008/9 and in 2004 (Table 7-1).

7.2.2 Participation in Physical Activities

As mentioned in the previous section, HLIS 2013/14 participants were asked to report the physical activities in which they had participated over the last four months. Over 98% of all Regular Force personnel reported participating in at least one physical activity in this time frame. The most popular physical activities among Regular Force personnel were: (1) jogging and running; (2) walking for exercise; and (3) weight training (Figure 7-1). In the last four months, 10.1% (95% CI: 8.6%, 11.8%) of all Regular Force personnel reported sustaining a serious injury¹² while participating in a physical activity. This percentage was not different by categories of age, sex, rank, or service element.

¹² In instructions provided to survey respondents, a serious injury was defined as an injury that limited one's normal activities for at least one week.



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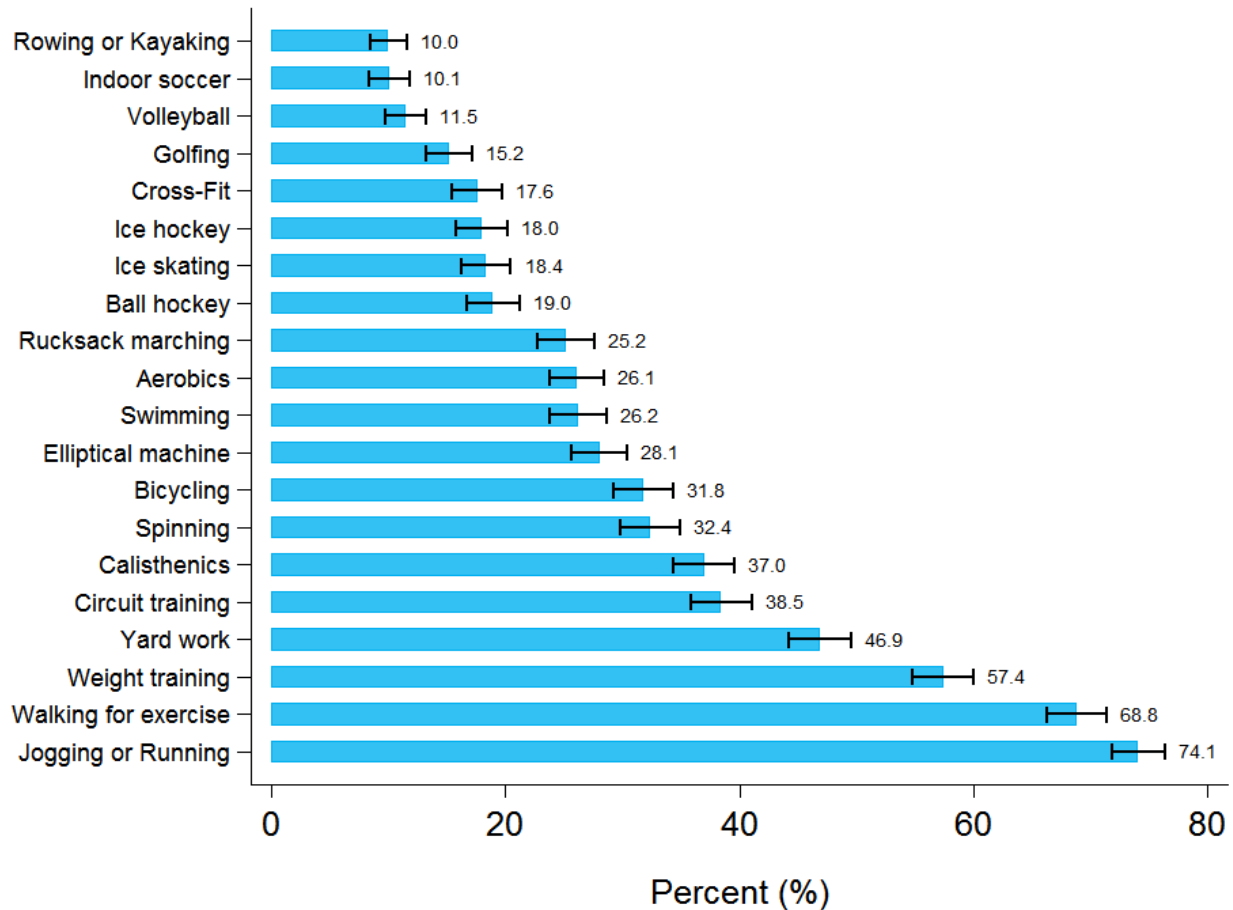


Figure 7-1: Regular Force personnel’s participation in various physical activities during the last four months.

From a population perspective, it is interesting to know which physical activities are responsible for the greatest number of injuries. The physical activities during which the greatest percentages of all Regular Force personnel sustained a serious injury in the last four months were: (1) jogging or running; (2) ice hockey; and (3) weight training (Table 7-3).

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Table 7-3: Regular Force personnel who were seriously injured while participating in physical activities in the last four months

Activity	Injured Personnel		Injury Rate	
	Percent	(95% CI)	Injuries per 1,000 Person-Hours	(95% CI)
Ice hockey	1.7	(1.1, 2.7)	5.5	(3.6, 8.6)
Rucksack marching	1.1	(0.7, 1.9)	4.9	(2.8, 8.7)
Jogging or running	3.0	(2.2, 4.1)	1.9	(1.4, 2.6)
Gardening or yard work	0.9	(0.5, 1.6)	1.4	(0.8, 2.6)
Weight training	1.3	(0.8, 2.1)	0.7	(0.4, 1.3)
Aerobics	0.3	(0.1, 0.8)	0.6	(0.2, 1.7)
Circuit training	0.3	(0.2, 0.7)	0.5	(0.3, 1.1)
Walking for exercise	0.9	(0.5, 1.5)	0.5	(0.3, 0.8)
Bicycling	0.2	(0.1, 0.5)	0.5	(0.2, 0.9)
Calisthenics	0.1	(0.1, 0.2)	0.2	(0.1, 0.3)

From an individual perspective, it is important to know which physical activities pose the greatest risk of injury. Some activities may be high-risk but contribute few injuries to the overall population, because they are only practiced by a small number of individuals. In the last four months, the physical activities associated with the highest rates of injury (i.e., number of injuries sustained per 1,000 hours) were: (1) ice hockey; (2) rucksack marching; and (3) jogging or running (Table 7-3).

7.2.3 Active Commuting to Work

Just over one-fifth of Regular Force personnel were walking, jogging, bicycling, using in-line skates, or using another mode of physical activity to commute to their place of work. Using physical activity as a way of commuting to work was more likely in: (1) males compared to females; (2) officers compared to NCMs; and (3) Sea personnel compared to Air and Land personnel (Table 7-4). There were no differences by age categories.



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Table 7-4: Percentage of Regular Force personnel who used physical activity to commute to their place of work

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		21.4	(19.1, 23.6)		
Sex	Female	17.8	(15.2, 20.3)	Reference	
	Male	21.9	(19.4, 24.5)	1.30	(1.03, 1.63)
Rank	NCM	19.7	(16.9, 22.5)	Reference	
	Officer	26.3	(23.1, 29.6)	1.46	(1.14, 1.85)
Service element	Air	19.7	(16.1, 23.3)	Reference	
	Sea	30.9	(24.9, 37.0)	1.82	(1.27, 2.62)
	Land	18.9	(15.8, 22.0)	0.95	(0.70, 1.29)
Base/Wing	CFSU Ottawa	27.5	(21.7, 33.2)	Reference	
	CFB Gagetown	13.0	(5.8, 20.2)	0.39	(0.20, 0.79)
	CFB Petawawa	18.3	(10.2, 26.4)	0.59	(0.32, 1.10)
	CFB Valcartier	15.6	(8.2, 22.9)	0.49	(0.26, 0.91)
	CFB Esquimalt	33.9	(23.6, 44.2)	1.35	(0.79, 2.33)
	CFB Halifax	26.3	(18.6, 34.0)	0.94	(0.58, 1.54)
	CFB Trenton	13.9	(5.2, 22.6)	0.43	(0.19, 0.93)
	CFB Edmonton	13.3	(5.3, 21.4)	0.41	(0.19, 0.86)

Note that the percentage of Regular Force personnel who commuted to work using physical activity varied between the eight most populous bases and wings (Table 7-4). These differences could be partly explained by local climate and built environments; bases and wings located in regions where bicycle paths and milder climate encourage active living may have a higher proportion of personnel using physical activity to commute to work.

7.2.4 Group Physical Training

While on base or wing, 52.1% of Regular Force personnel participated in group physical training (PT) at least once a week. Participating in group PT at least once a week while on base or wing was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; (2) NCMs compared to officers; and (3) Land personnel compared to Air or Sea personnel (Table 7-5). The percentage of Regular Force personnel participating in group PT at least once a week while on base or wing was lowest at CFSU Ottawa, and highest at CFB Valcartier (Table 7-5). The percentage of Regular Force personnel participating in group PT at least once a week while on base or wing did not differ between males and females.



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Table 7-5: Percentage of Regular Force personnel who participated in group physical training at least once a week, while on base/wing

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		52.1	(49.5, 54.8)		
Age (years)	18 – 29	65.3	(60.3, 70.3)	Reference	
	30 – 39	53.0	(47.8, 58.1)	0.60	(0.44, 0.81)
	40 – 49	43.4	(38.6, 48.2)	0.41	(0.30, 0.55)
	50 – 60	36.0	(31.7, 40.3)	0.30	(0.22, 0.40)
Rank	NCM	58.6	(55.2, 62.0)	Reference	
	Officer	32.7	(29.5, 36.0)	0.34	(0.28, 0.42)
Service element	Air	43.1	(38.6, 47.7)	Reference	
	Sea	33.8	(27.6, 39.9)	0.67	(0.48, 0.94)
	Land	64.2	(60.5, 67.9)	2.37	(1.84, 3.04)
Base/Wing	CFSU Ottawa	19.6	(13.9, 25.4)	Reference	
	CFB Gagetown	69.4	(59.5, 79.3)	9.30	(5.14, 16.84)
	CFB Petawawa	80.6	(71.9, 89.3)	17.01	(8.78, 32.94)
	CFB Valcartier	84.2	(77.3, 91.1)	21.80	(11.56, 41.11)
	CFB Esquimalt	31.3	(21.1, 41.5)	1.87	(1.03, 3.40)
	CFB Halifax	41.2	(32.7, 49.7)	2.87	(1.73, 4.77)
	CFB Trenton	47.8	(35.2, 60.3)	3.75	(2.02, 6.97)
	CFB Edmonton	74.9	(65.3, 84.5)	12.23	(6.53, 22.91)

While on deployment, 32.0% of Regular Force personnel participated in group PT at least once a week. Participating in group PT at least once a week while on deployment was more likely in: (1) females compared to males; and (2) Land personnel compared to Air personnel (Table 7-6). The percentage of Regular Force personnel participating in group PT at least once a week while on deployment was not different by categories of age or rank.

Table 7-6: Percentage of Regular Force personnel who participated in group physical training at least once a week, while on deployment

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		32.0	(27.5, 36.5)		
Sex	Female	41.3	(34.3, 48.3)	Reference	
	Male	30.9	(26.0, 35.9)	0.64	(0.44, 0.92)
Service element	Air	23.1	(16.3, 29.9)	Reference	
	Sea	30.1	(20.9, 39.3)	1.44	(0.80, 2.56)
	Land	38.9	(31.7, 46.1)	2.12	(1.30, 3.46)



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While on course, 58.4% of Regular Force personnel participated in group PT at least once a week. Participating in group PT at least once a week while on course was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; and (2) Land personnel compared to Air or Sea personnel (Table 7-7). The percentage of Regular Force personnel participating in group PT at least once a week while on course was not different by categories of sex or rank.

Table 7-7: Percentage of Regular Force personnel who participated in group physical training at least once a week, while on course

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		58.4	(54.4, 62.5)		
Age (years)	18 – 29	71.9	(65.2, 78.6)	Reference	
	30 – 39	56.2	(48.4, 63.9)	0.50	(0.32, 0.79)
	40 – 49	50.9	(43.0, 58.7)	0.40	(0.26, 0.64)
	50 – 60	37.9	(30.6, 45.3)	0.24	(0.15, 0.38)
Service element	Air	53.4	(46.3, 60.6)	Reference	
	Sea	42.0	(32.7, 51.4)	0.63	(0.39, 1.02)
	Land	67.8	(62.2, 73.4)	1.84	(1.25, 2.70)

While on military exercise, 21.1% of Regular Force personnel participated in group PT at least once a week. Participating in group PT at least once a week while on military exercise was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 39 years; and (2) females compared to males (Table 7-8). The percentage of Regular Force personnel participating in group PT at least once a week while on exercise was not different by categories of rank, or service element.

Table 7-8: Percentage of Regular Force personnel who participated in mandatory group physical training at least once a week, while on exercise

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		21.1	(17.4, 24.8)		
Age (years)	18 – 29	28.4	(20.6, 36.3)	Reference	
	30 – 39	14.1	(8.4, 19.9)	0.41	(0.22, 0.76)
	40 – 49	22.9	(15.9, 29.9)	0.75	(0.43, 1.30)
	50 – 60	18.0	(11.1, 24.8)	0.55	(0.30, 1.01)
Sex	Female	29.8	(23.6, 36.1)	Reference	
	Male	20.1	(16.0, 24.2)	0.59	(0.40, 0.88)



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7.2.5 Sedentary Activities

In 2013/14, Regular Force personnel spent 30.5 hours per week, on average, engaged in sedentary activities such as watching television, playing video games, surfing the internet, or reading (Table 7-9). The average amount of time spent engaged in sedentary activities was 3.24 hours/week greater than it was in 2008/9, and 6.35 hours/week greater than it was in 2004. This apparent increase in time spent engaged in sedentary activities is almost entirely driven by an increase in time spent using computers and surfing the internet (Figure 7-2).

Table 7-9: Leisure hours spent engaged in sedentary activities^a per week in Regular Force personnel

Variable	Category	Mean	(95% CI)	p-value
Overall		30.5	(29.5, 31.5)	
Age (years)	18 – 29	32.9	(30.7, 35.1) ^b	Reference
	30 – 39	29.3	(27.6, 31.1) ^d	0.01
	40 – 49	28.8	(27.0, 30.6) ^d	0.01
	50 – 60	32.3	(30.7, 33.9)	0.67
Sex	Female	28.7	(27.4, 30.0) ^b	Reference
	Male	30.8	(29.6, 31.9) ^c	0.02
Service element	Air	30.1	(28.6, 31.7) ^b	Reference
	Sea	34.4	(31.7, 37.1) ^d	0.01
	Land	29.4	(27.9, 30.8)	0.49

^a Sedentary activities included watching television, playing video games, surfing the internet, using a computer, and reading.

^b Reference category.

^c Significantly different from the reference category at the 95% confidence level ($p < 0.05$).

^d Significantly different from the reference category at the 99% confidence level ($p < 0.01$).



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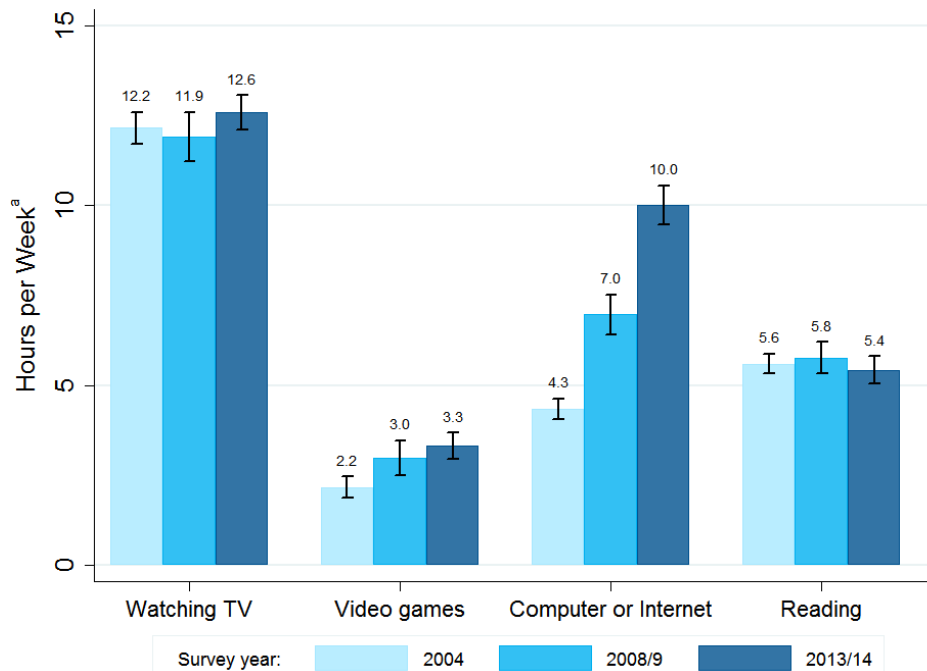


Figure 7-2: Average time spent engaged in various sedentary activities per week by Regular Force personnel while not at work.

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

However, as shown in Section 7.2.1 of the current chapter, Regular Force personnel had higher physical activity levels in 2013/14 than in previous surveys. The contradictory findings that both physical activity levels *and* time spent engaged in sedentary activities have increased in recent years could be partly explained by a dramatic increase in internet accessibility. The current Regular Force population might not actually be more sedentary than that of 2004 and 2008/9. Rather, the current Regular Force population might now be able to spend time using computers and surfing the internet while engaged in other sedentary activities that have never been captured in CAF surveys (e.g., sitting on the bus, waiting for appointments). It is conceivable that Regular Force personnel are simply spending more time surfing the internet and less time engaged in uncaptured sedentary activities than in the past.

In 2013/14, the average amount of time spent engaged in sedentary activities was higher in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 49 years; (2) males compared to females; and (3) Sea personnel compared to Air and Land personnel (Table 7-9). The average time per week spent engaged in sedentary activities was not different between NCMs and officers.

On a typical work day, Regular Force personnel spent an average of 5.0 hours sitting while at work. Sedentary hours while at work also tended to increase with increasing age. On average, females spent 0.9 more work hours per day sitting than males; officers spent 1.7 more work hours per day sitting than NCMs; Air personnel spent 0.6 more work hours per day sitting than Land personnel; and CFSU Ottawa personnel spent more work hours per day sitting than personnel at any of the seven other most populous CAF bases and wings (Table 7-10). This finding is not surprising; CFSU Ottawa personnel are more likely to be officers and in the 50 – 60 year age bracket than personnel of any other base or wing. They are also more likely to have



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administrative or policy-related tasks that require sitting at a desk for prolonged periods of time than personnel posted on other bases and wings (Table 7-10).

Table 7-10: Work hours spent sitting during a typical work day in Regular Force personnel

Variable	Category	Mean	(95% CI)
Overall		5.0	(4.9, 5.1)
Age (years)	18 – 29	4.4	(4.1, 4.6) ^a
	30 – 39	4.9	(4.7, 5.1) ^b
	40 – 49	5.5	(5.3, 5.7) ^b
	50 – 60	5.9	(5.7, 6.0) ^b
Sex	Female	5.8	(5.7, 6.0) ^a
	Male	4.9	(4.7, 5.0) ^b
Rank	NCM	4.6	(4.4, 4.7) ^a
	Officer	6.3	(6.2, 6.4) ^b
Service element	Air	5.3	(5.1, 5.5) ^a
	Sea	5.2	(4.9, 5.5)
	Land	4.7	(4.6, 4.9) ^b
Base/Wing	CFSU Ottawa	6.3	(6.0, 6.5) ^a
	CFB Gagetown	4.6	(4.0, 5.1) ^b
	CFB Petawawa	4.3	(3.7, 4.9) ^b
	CFB Valcartier	4.2	(3.7, 4.7) ^b
	CFB Esquimalt	4.9	(4.4, 5.4) ^b
	CFB Halifax	4.9	(4.6, 5.3) ^b
	CFB Trenton	4.9	(4.2, 5.5) ^b
	CFB Edmonton	4.5	(4.0, 5.0) ^b

^a Reference category.

^b Significantly different from the reference category at the 99% confidence level ($p < 0.01$).

7.2.6 Unsafe Physical Training

The health benefits of physical activity can be diminished when physical activities are not practiced safely. Despite reporting relatively high levels of physical activity, a substantial proportion of Regular Force personnel also reported engaging in unsafe training practices associated with an increased risk of injury.



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In the last 12 months, 65.8% (95% CI: 63.2%, 68.3%) of all Regular Force personnel reported engaging in at least one of the unsafe physical training practices listed in Figure 7-3. The most commonly reported unsafe physical training practices were: (1) exercising without a proper warm-up; (2) exercising without adequate food or fluid intake; and (3) training so hard as to feel sick afterwards.

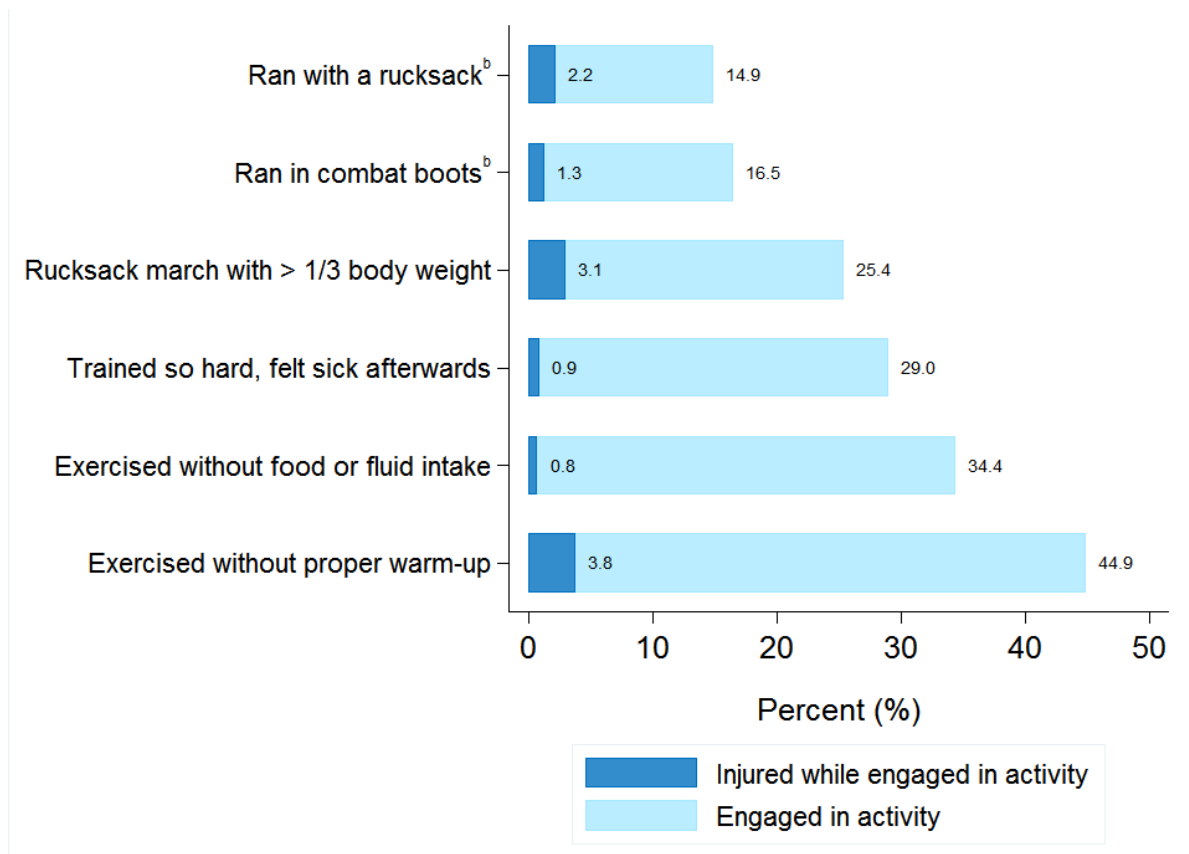


Figure 7-3: Regular Force personnel who engaged in unsafe physical training practices^a in the last 12 months.

^a Note that survey respondents may have engaged in more than one type of unsafe training practice. Percents may sum to more than 100%.

^b Beyond a short distance, to simulate running for cover.

In the last 12 months, 8.3% of all Regular Force personnel, or 4,530 individuals (95% CI: 3,661, 5,399), were reportedly injured while participating in one of the unsafe physical training practices listed in Figure 7-3. The unsafe physical training practices associated with the greatest risk of injuries were: (1) exercising without a proper warm-up; (2) engaging in a rucksack march while carrying more than 1/3 of one's own body weight; and (3) running with a rucksack over distances longer than those meant to simulate running for cover (Figure 7-3). There is an opportunity to substantially decrease the number of injuries sustained per year by reinforcing safer training practices.

In the last 12 months, 17.0% of all Regular Force personnel reported being required to exercise while injured. Being required to exercise while injured was more likely in: (1) personnel aged 18 – 29 years compared to



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personnel aged 50 – 60 years; (2) NCMs compared to officers; and (3) Land personnel compared to Air and Sea personnel (Table 7-11). However, the percentage of Regular Force personnel who were required to exercise while injured was not different between males and females.

Table 7-11: Percentage of Regular Force personnel who were required to exercise while injured in the last 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		17.0	(14.9, 19.1)		
Age (years)	18 – 29	17.4	(13.2, 21.5)	Reference	
	30 – 39	18.9	(14.7, 23.1)	1.11	(0.75, 1.65)
	40 – 49	16.0	(12.4, 19.6)	0.91	(0.61, 1.35)
	50 – 60	12.2	(9.3, 15.2)	0.66	(0.45, 0.99)
Rank	NCM	19.4	(16.7, 22.1)	Reference	
	Officer	9.8	(7.7, 11.9)	0.45	(0.34, 0.60)
Service element	Air	13.4	(10.2, 16.7)	Reference	
	Sea	9.8	(6.0, 13.6)	0.70	(0.42, 1.17)
	Land	22.2	(18.7, 25.6)	1.83	(1.30, 2.58)

In the last 12 months, 20.3% of all Regular Force personnel reported aggravating an injury by exercising before their injury was fully healed. Aggravating an injury by exercising before it had fully healed was more likely to have occurred in: (1) females compared to males; and (2) Land personnel compared to Air or Sea personnel (Table 7-12). The percentage of Regular Force personnel who reported aggravating an injury by exercising before it had fully healed was not different by categories of age or rank.

Table 7-12: Percentage of Regular Force personnel who aggravated an injury in the last 12 months by exercising before it had fully healed

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		20.3	(18.1, 22.6)		
Sex	Female	23.8	(21.0, 27.0)	Reference	
	Male	20.0	(17.4, 22.4)	0.79	(0.63, 0.99)
Service element	Air	18.9	(15.3, 22.5)	Reference	
	Sea	13.5	(9.1, 17.9)	0.67	(0.43, 1.04)
	Land	24.0	(20.5, 27.5)	1.36	(1.01, 1.83)



7.2.7 Organizational Support of Physical Activity

In 2013/14, nearly three-quarters of all Regular Force personnel believed that the CAF leadership encouraged them to be physically active. The perceived level of leadership support for physical activity had not changed from 2008/9 (Figure 7-4).

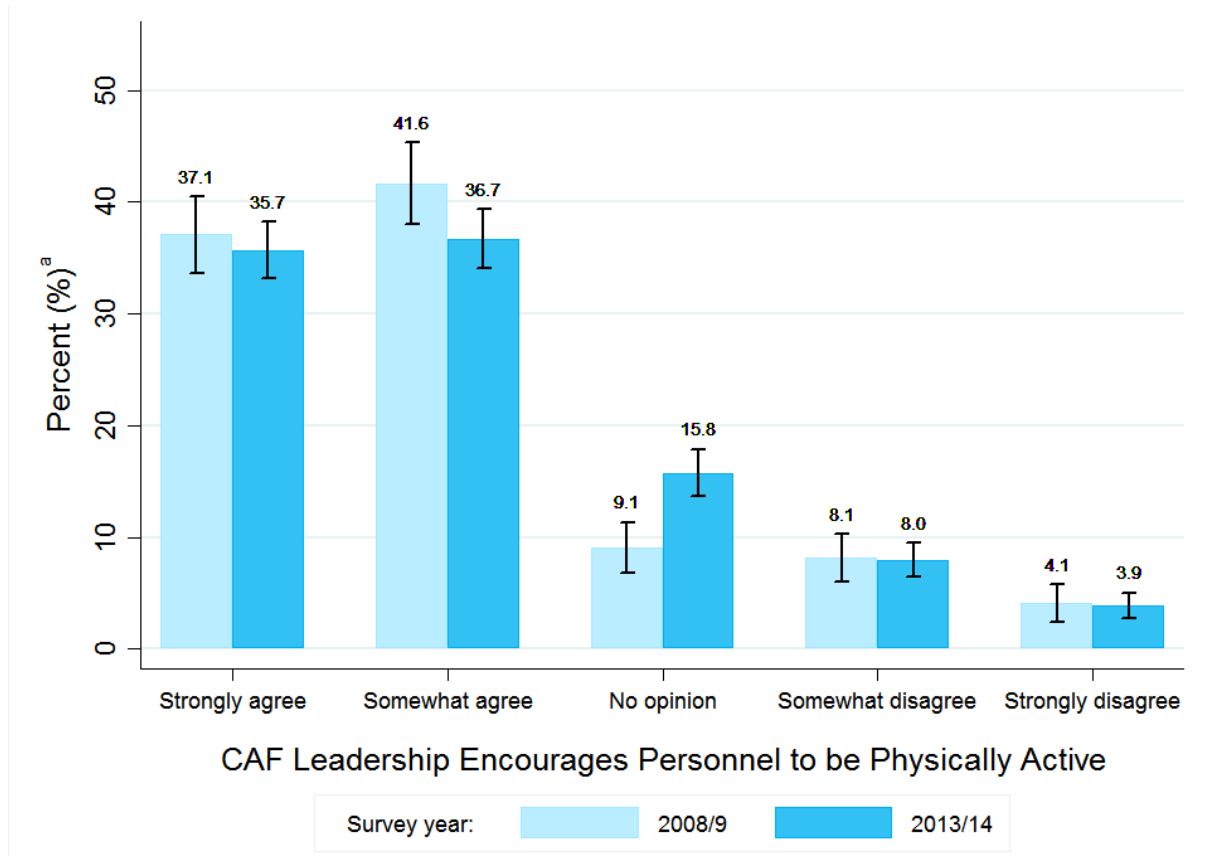


Figure 7-4: Perceived level of leadership support of physical activity in Regular Force personnel.

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

In 2013/14, perceiving higher levels of leadership support of physical activity was more likely in: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; (3) officers compared to NCMs; and (4) Land personnel compared to Air personnel (Table 7-13).



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Table 7-13: Percentage of Regular Force personnel who agree that the Canadian Armed Forces Leadership encourages physical activity

Variable	Category	Percent (95% CI)					Odds Ratio	(95% CI) ^a
		Strongly Agree	Somewhat Agree	No Opinion	Somewhat Disagree	Strongly Disagree		
Overall		35.7 (33.2, 38.2)	36.7 (34.1, 39.4)	15.8 (13.6, 17.9)	8.0 (6.4, 9.5)	3.9 (2.7, 5.0)		
Age (years)	18 – 29	27.9 (23.4, 32.5)	36.6 (31.5, 41.7)	18.9 (14.5, 23.3)	9.9 (6.6, 13.1)	6.7 (3.8, 9.6)	Reference	
	30 – 39	32.3 (27.5, 37.1)	39.1 (33.9, 44.2)	16.7 (12.6, 20.8)	8.4 (5.4, 11.3)	3.6 (1.6, 5.7)	1.32 (1.01, 1.73)	
	40 – 49	41.5 (36.8, 46.3)	36.2 (31.6, 40.9)	13.7 (10.3, 17.1)	6.4 (4.0, 8.8)	2.2 (0.7, 3.6)	1.92 (1.47, 2.50)	
	50 – 60	53.1 (48.6, 57.7)	30.4 (26.2, 34.6)	9.2 (6.6, 11.8)	5.7 (3.5, 7.8)	1.6 (0.5, 2.6)	2.97 (2.27, 3.88)	
Sex	Female	40.1 (36.6, 43.5)	38.0 (34.7, 41.4)	11.3 (9.1, 13.5)	8.4 (6.4, 10.4)	2.2 (1.2, 3.1)	Reference	
	Male	35.0 (32.1, 37.8)	36.5 (33.5, 39.5)	16.4 (14.0, 18.9)	7.9 (6.1, 9.7)	4.2 (2.8, 5.5)	0.77 (0.65, 0.92)	
Rank	NCM	33.3 (30.2, 36.4)	35.8 (32.5, 39.2)	17.7 (15.0, 20.4)	8.7 (6.7, 10.6)	4.5 (3.0, 6.0)	Reference	
	Officer	42.9 (39.3, 46.4)	39.3 (35.8, 42.8)	9.9 (7.7, 12.1)	5.9 (4.3, 7.5)	2.0 (0.9, 3.0)	1.67 (1.40, 1.99)	
Service element	Air	30.3 (26.4, 34.3)	40.7 (36.2, 45.2)	15.2 (11.6, 18.7)	9.3 (6.5, 12.1)	4.5 (2.3, 6.7)	Reference	
	Sea	33.7 (27.8, 39.6)	37.5 (31.3, 43.7)	15.1 (10.3, 19.8)	9.6 (5.6, 13.6)	4.1 (1.3, 7.0)	1.09 (0.81, 1.45)	
	Land	39.8 (36.0, 43.6)	33.8 (29.9, 37.6)	16.4 (13.3, 19.6)	6.6 (4.6, 8.7)	3.4 (1.8, 5.0)	1.36 (1.09, 1.69)	

^a Odds ratios computed with ordinal logistic regression. See Methods section for more details.



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Organizational support of physical activity is manifest in the resources available on bases and wings to facilitate an active lifestyle in Regular Force personnel. 90.4% of all Regular Force personnel reported having access to an exercise facility in their place of work; this percentage was not appreciably higher in 2013/14 than in 2008/9, but had increased from 2004 (Table 7-14). Among Regular Force personnel who reported having access to an exercise facility in their place of work, 71.3% (95% CI: 68.5%, 74.0%) were either very satisfied or satisfied with these facilities.

Table 7-14: Percentage of Regular Force personnel with access to exercise facilities in their place of work

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	85.2	(83.4, 87.0)	0.61	(0.49, 0.78)
2008/9	89.9	(87.5, 92.3)	0.95	(0.69, 1.31)
2013/14	90.4	(88.8, 92.0)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

92.1% of all Regular Force personnel reported having access to shower and locker facilities in their place of work. Access to shower and locker facilities in one's place of work has increased slightly from 2008/9 (Table 7-15).

Table 7-15: Percentage of Regular Force personnel with access to showers, and lockers in their place of work

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	90.3	(88.8, 91.8)	0.79	(0.62, 1.02)
2008/9	89.2	(86.7, 91.7)	0.70	(0.51, 0.97)
2013/14	92.1	(90.8, 93.5)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

About 70% of all Regular Force personnel reported having access to exercise classes in their place of work. Access to exercise classes in one's workplace had not changed from 2008/9, but was higher than in 2004 (Table 7-16).

Table 7-16: Percentage of Regular Force personnel with access to exercise classes in their place of work

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	55.1	(52.5, 57.7)	0.53	(0.45, 0.63)
2008/9	73.6	(70.3, 76.9)	1.21	(0.98, 1.51)
2013/14	69.7	(66.9, 72.5)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.



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86.8% of all Regular Force personnel reported being given time to exercise while at work, excluding group PT; this percentage was higher than it had been in 2008/9 and in 2004 (Table 7-17). Regardless of whether or not they were given time to exercise while at work, 63.7% (95% CI: 61.1%, 66.3%) of all Regular Force personnel felt that they had enough time to exercise while at work. These results suggest that Regular Force personnel may be struggling with conflicting workplace priorities; although the vast majority are given time to exercise while at work, a substantial proportion seem to feel unable to exercise and still fulfill their other job requirements within work hours.

Table 7-17: Percentage of Regular Force personnel who were given time to exercise at work

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	75.3	(73.0, 77.6)	0.46	(0.37, 0.57)
2008/9	66.0	(62.4, 69.6)	0.29	(0.23, 0.37)
2013/14	86.8	(84.9, 88.8)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

Nearly two-thirds of all Regular Force personnel felt it was important for them to have access to exercise facilities during evenings. Reporting that access to exercise facilities during the evenings was important was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; and (2) Air and Land personnel compared to Sea personnel (Table 7-18). There were no differences by categories of sex, or rank. The percentage of personnel who felt that access to exercise facilities during evenings was important was also not different between those who had, and those who did not have access to such facilities at work. It therefore appears that the perceived importance of access to exercise facilities in the evening is not related to the availability of such facilities during the day.

Table 7-18: Percentage of Regular Force personnel who felt it was important to have access to exercise facilities during evenings

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		65.5	(63.0, 68.1)		
Age (years)	18 – 29	78.8	(74.4, 83.2)	Reference	
	30 – 39	66.0	(61.0, 71.0)	0.52	(0.37, 0.74)
	40 – 49	56.4	(51.6, 61.2)	0.35	(0.25, 0.48)
	50 – 60	51.5	(46.9, 56.1)	0.29	(0.21, 0.39)
Service element	Air	66.6	(62.3, 70.9)	Reference	
	Sea	57.9	(51.6, 64.2)	0.69	(0.50, 0.95)
	Land	67.5	(63.8, 71.2)	1.04	(0.81, 1.35)



7.3 Physical Fitness Evaluation

Regardless of their rank or position, Regular Force personnel must be deployable. They are expected to be capable of performing general military duties in addition to the more specific tasks inherent to their respective occupations (DND, 2006b). These expectations are more articulately defined in the Minimum Physical Fitness Standards, which state that all Regular Force personnel must be able to perform the following six tasks often encountered in local and expeditionary operations: (1) digging entrenchments; (2) carrying a stretcher; (3) extricating casualties from a vehicle; (4) carrying pickets and wire; (5) building sandbag fortifications; and (6) crawling to escape enemy fire. All Regular Force personnel must pass an annual fitness test to demonstrate their ability to complete these six tasks.

The Fitness for Operational Requirements of CAF Employment (FORCE) evaluation was introduced on a trial basis in April 2013, and was officially launched as the CAF fitness standard in April 2014. It predicts one's ability to perform the six basic military tasks outlined above, and consists of four components: (1) lifting 20 kg sandbags above a height of one metre 30 times in less than 210 seconds; (2) running 400 m, alternating between a loaded run with a 20 kg sandbag and an unloaded run every 20 m, in less than 321 seconds; (3) sprinting 80 m, dropping to a prone position every 10 m, in less than 51 seconds; and (4) carrying a 20 kg sandbag while pulling four other such sandbags, over a distance of 20 m, without stopping.

Prior to 01 April 2014, the CF EXPRES test was the CAF fitness standard. This test was developed in the early 1980s, and included four components: a 20 m shuttle run; a hand grip test; push-ups; and sit-ups. The CF EXPRES test was replaced because it did not adequately reflect the most common physical tasks encountered in current CAF operations. It should be noted that, prior to April 2014, individuals could be exempted from annual testing because of an exceptional performance on physical tests in the previous years (i.e., incentive exempt). Individuals can also be exempted from annual testing due to medical issues.

The Canadian Army also developed a command-specific occupational test. The Land Force Command Physical Fitness Standard (LFCPFS) – also known as the Battle Fitness Test (BFT) – was finalized in 1991, and predicts an individual's ability to perform the most demanding and common tasks of "field soldiers". The BFT involves a 13 km march carrying 24.5 kg of equipment, a 100 m casualty evacuation using a fireman carry, and the digging of entrenchments.

The HLIS 2013/14 asked participants if they had performed these physical fitness tests in the previous 12 months; those who had were also asked to describe their test results.

7.3.1 Physical Fitness Test Completion

In the last 12 months, 86.8% of all Regular Force personnel had performed at least one of the three aforementioned physical fitness tests. Another 3.3% (95% CI: 2.6%, 4.2%) and 5.8% (95% CI: 4.7%, 7.0%) of Regular Force personnel had not completed any physical fitness testing within that time period because of incentive and medical exemptions, respectively. Finally, 4.1% (95% CI: 3.2%, 5.5%) had not completed any physical fitness testing within the last 12 months, but had not been exempt from testing. The percentage of Regular Force personnel who had completed at least one physical fitness test in the last 12 months was higher in: (1) personnel aged 18 – 29 years compared to personnel aged 40 – 60 years; (2) males compared to females; (3) personnel who did not sustain a serious repetitive strain injury in the last 12 months compared to personnel who did; and (4) personnel who did not sustain a serious acute injury in the last 12 months compared to personnel who did (Table 7-19). There were no differences by categories of rank, service element, or BMI.



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Table 7-19: Percentage of Regular Force personnel who completed a physical fitness test in the last 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		86.8	(85.1, 88.5)		
Age (years)	18 – 29	91.9	(88.9, 94.8)	Reference	
	30 – 39	88.0	(84.7, 91.3)	0.65	(0.39, 1.08)
	40 – 49	84.8	(81.5, 88.1)	0.49	(0.31, 0.79)
	50 – 60	73.7	(69.7, 77.7)	0.25	(0.16, 0.39)
Sex	Female	79.1	(76.3, 81.9)	Reference	
	Male	88.0	(86.1, 89.9)	1.93	(1.51, 2.48)
Repetitive strain injury in last 12 months	No	88.9	(86.8, 90.7)	Reference	
	Yes	82.3	(78.9, 85.7)	0.59	(0.43, 0.81)
Acute injury in last 12 months	No	87.9	(85.9, 89.7)	Reference	
	Yes	82.6	(77.6, 86.7)	0.65	(0.46, 0.94)

7.3.2 FORCE Evaluation

In the 12 months immediately preceding the HLIS 2013/14 – a time that coincided with FORCE evaluation roll-out – 75.0% (95% CI: 72.7%, 77.2%) of all Regular Force personnel performed the FORCE evaluation test. Among Regular Force personnel who performed this test, 98.6% (95% CI: 97.9%, 99.0%) passed its four components. Among Regular Force personnel who failed at least one FORCE evaluation test component in the last 12 months, 77.3% had failed the 80-metre sprint and 24.6% had failed the sandbag pull.

It should be noted that 42.2% (95% CI: 23.4%, 63.5%) of Regular Force personnel who failed the FORCE evaluation test in the last 12 months were able to pass all of its components during a retest administered within the same time period. In addition, 16.3% of Regular Force personnel who failed the FORCE evaluation test in the last 12 months attended remedial training.

7.3.3 Canadian Forces EXPRES Test

In the 12 months immediately preceding HLIS 2013/14 administration – a time that coincided with the phasing-out of the CF EXPRES test – 19.8% (95% CI: 17.7%, 22.0%) of all Regular Force personnel performed the CF EXPRES test. Among Regular Force personnel who performed the CF EXPRES test, 98.0% (95% CI: 96.1%, 99.0%) passed its four components. Among Regular Force personnel who failed at least one CF EXPRES component in the last 12 months, 72.3% had failed the push-up test.

It should be noted that 59.5% of all Regular Force personnel who failed the CF EXPRES test in the last 12 months attended remedial training. Too few survey respondents reported having been retested after failing the CF EXPRES test in the last 12 months for reliable statistics to be computed on retesting following CF EXPRES failure.



7.3.4 Battle Fitness Test

In the last 12 months, 41.4% (95% CI: 36.9%, 45.9%) of all Regular Force Land personnel performed the Battle Fitness Test. Among Land personnel who performed the Battle Fitness Test, 99.9% passed its three components. Too few survey respondents reported failing the Battle Fitness Test in the last 12 months for reliable statistics to be computed on failed test components.

7.4 Conclusion

In the last five years, the physical activity level of CAF Regular Force personnel has increased. However, over the same time period, the amount of hours per week Regular Force personnel spent engaged in sedentary activities such as watching television, playing video games, and surfing the internet also increased.

Regular Force personnel continue to perceive high levels of support of physical activity from the CAF leadership. This finding is consistent with the strong physical fitness culture that is promoted by the CAF Chain of Command. The vast majority of Regular Force personnel reported having access to exercise facilities, shower and locker facilities, and exercise classes in their workplace. Furthermore, the majority of Regular Force personnel reported being given time to exercise while at work, although some remained unable to find the time to exercise without failing to fulfill other job requirements while at work.

Two-thirds of Regular Force personnel reported engaging in unsafe physical training practices in the last 12 months, of whom 12.5% were injured as a result. There is an opportunity to decrease the number of injuries sustained per year by reinforcing safer training practices.

7.5 References

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Chapter 8 – Healthy Weight, Diet, and Nutrition

8.1 Introduction

The maintenance of a healthy body weight is essential for the prevention of many chronic diseases, and proper nutrition is a key factor in the overall health and well-being of a population. Excess weight is associated with many well-recognized health conditions, including: Type 2 diabetes; high blood pressure; cardiovascular diseases; and osteoarthritis (Wang, 2011). As well, poor nutrition can have substantial effects on brain structure and cognitive performance, including memory (Burkhalter, 2011), and negatively impact immune system functioning (Marcos, 2003).

In addition to the burden of diseases associated with obesity and poor nutrition, these conditions carry with them important indirect societal costs which include: increased work absenteeism; increased risk of mortality prior to retirement; early retirement for health reasons; and decreased years of disability-free life (Wang, 2011). Therefore, promoting a healthy body weight within the Canadian Armed Forces (CAF) is important to achieve optimal health for CAF personnel, and to maintain a healthy and readily deployable force.

The HLIS 2013/14 asked participants to describe their current body weight, and their personal goals regarding weight gain and weight loss. They were also queried on their diet and nutritional choices.

8.2 Body Weight and Health

8.2.1 Body Mass Index

Body mass index (BMI) is a frequently used measure that is calculated by determining the ratio between an individual's weight (in kilograms) to the square of their height (in meters). BMI is highly correlated with the percent body fat of an individual (Health Canada, 2003), and an increased BMI is predictive of all-cause mortality (Calle, 1999). A high BMI is further associated with the severity of chronic conditions, physical disabilities, mental health conditions, and lower overall self-rated health (WHO, 2003a).

In addition, BMI is used by health care practitioners and organizations to classify individuals as either underweight (BMI less than 18.5 kg/m²), normal weight (BMI between 18.5 and 24.9 kg/m²), overweight (BMI between 25 and 29.9 kg/m²), or obese (BMI of 30 kg/m² or greater) (WHO, 2003a).

In 2013/14, the mean BMI of Regular Force personnel¹³ was 27.6 kg/m². The mean self-reported BMI increased by 0.5 kg/m² from 2004¹⁴ (Table 8-1). Although smaller in magnitude, the direction of this trend is consistent with that observed in the non-military Canadian population (PHAC, 2011).

¹³ Pregnant women were excluded from all BMI calculations.

¹⁴ Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.



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Table 8-1: Mean self-reported body mass index (kg/m²) of Regular Force personnel

HLIS	Mean ^a	(95% CI)
2004	27.1	(26.9, 27.3) ^c
2008/9	27.3	(27.0, 27.6)
2013/14	27.6	(27.4, 27.8) ^b

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

^b Reference category.

^c Significantly different from the reference category, at the 99% confidence level ($p < 0.01$).

Three-quarters (74.0%) of all Regular Force personnel reported a BMI of 25 kg/m² or greater (Figure 8-1). Based on self-reported BMI, 49.0% of all Regular Force personnel were classified as overweight, and an additional 25.0% were classified as obese. Less than 1% of all Regular Force personnel reported underweight BMIs; these individuals were excluded from all further BMI analyses.

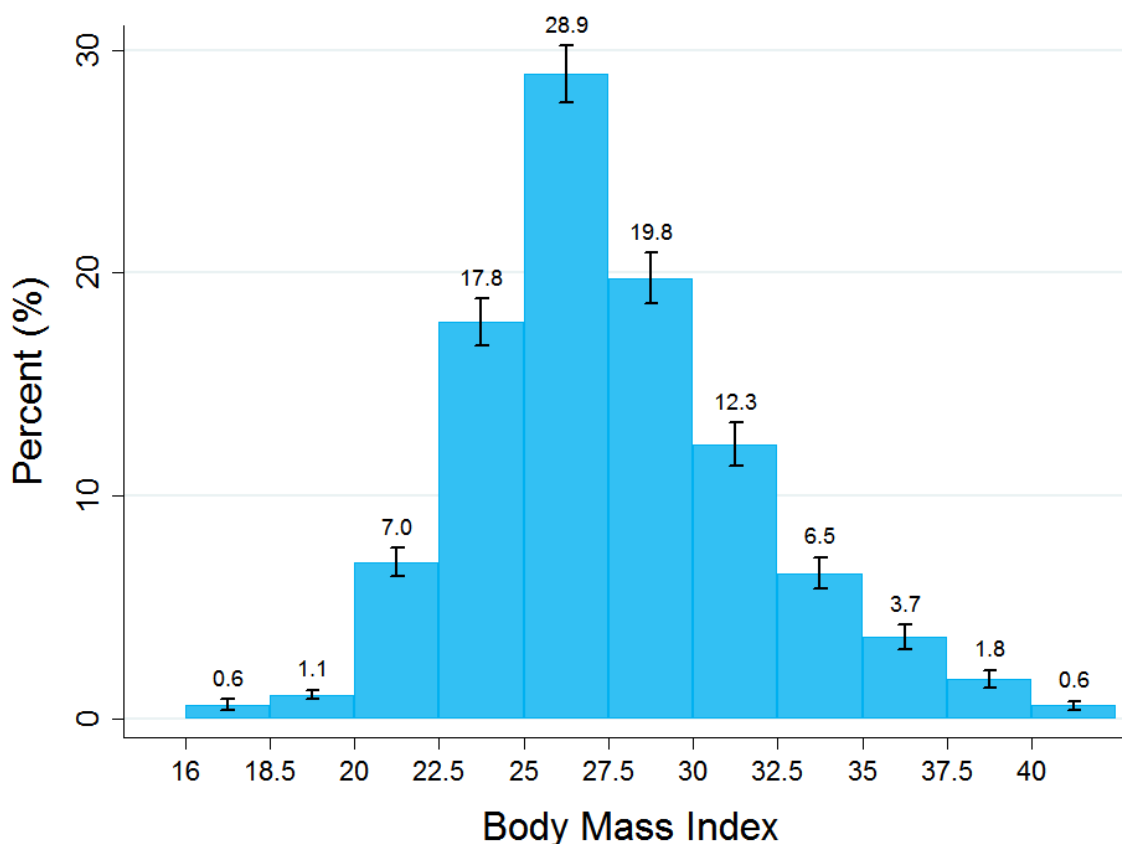


Figure 8-1: Distribution of body mass index among Regular Force personnel.



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The distribution of personnel across BMI categories was unchanged from 2008/9. However, Regular Force personnel in 2013/14 were more likely to be in a heavier BMI category than personnel in 2004 (Table 8-2). The percentage of obese personnel had increased by 4.8% from 2004 (Table 8-2). Furthermore, 6.1% (95% CI: 4.8%, 7.6%) of Regular Force personnel were morbidly obese (i.e., BMI \geq 35 kg/m²) in 2013/14 compared to just 3.6% (95% CI: 2.7%, 4.7%) in 2004.

Table 8-2: Body mass index classification of Regular Force personnel, by survey year

HLIS	Percent (95% CI) ^a			Odds Ratio	(95% CI) ^b
	Normal Weight	Overweight	Obese		
2004	30.2 (27.9, 32.5)	49.6 (47.0, 52.2)	20.2 (18.1, 22.2)	0.79	(0.69, 0.91)
2008/9	28.7 (25.4, 32.1)	48.3 (44.6, 52.0)	22.9 (19.8, 26.1)	0.88	(0.74, 1.05)
2013/14	26.0 (23.7, 28.3)	49.0 (46.2, 51.7)	25.0 (22.6, 27.4)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

^b Odds ratios computed using ordinal logistic regression. See the Methods section for more details.

In 2013/14, higher BMI categories were observed in: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; (2) males compared to females; and (3) NCMs compared to officers (Table 8-3). There was no difference by service element.

Table 8-3: Body mass index classification of Regular Force personnel

Variable	Category	Percent (95% CI)			Odds Ratio	(95% CI) ^a
		Normal Weight	Overweight	Obese		
Overall		26.0 (23.7, 28.3)	49.0 (46.2, 51.7)	25.0 (22.6, 27.4)		
Age (years)	18 – 29	33.6 (28.8, 38.5)	47.3 (41.9, 52.7)	19.0 (14.7, 23.4)	Reference	
	30 – 39	25.1 (20.9, 29.3)	50.2 (44.8, 55.5)	24.8 (20.0, 29.5)	1.47	(1.11, 1.93)
	40 – 49	21.5 (17.7, 25.4)	47.4 (42.6, 52.3)	31.0 (26.4, 35.6)	1.91	(1.44, 2.52)
	50 – 60	20.0 (16.4, 23.6)	53.8 (49.2, 58.4)	26.2 (22.1, 30.3)	1.73	(1.34, 2.25)
Sex	Female	49.0 (45.5, 52.6)	34.3 (30.9, 37.7)	16.6 (13.9, 19.3)	Reference	
	Male	22.6 (20.1, 25.2)	51.1 (48.0, 54.3)	26.2 (23.5, 29.0)	2.81	(2.30, 3.42)
Rank	NCM	24.0 (21.1, 26.9)	49.0 (45.5, 52.5)	27.0 (23.9, 30.1)	Reference	
	Officer	32.1 (28.9, 35.3)	48.9 (45.3, 52.5)	19.0 (16.1, 22.0)	0.66	(0.55, 0.79)

^a Odds ratios computed using ordinal logistic regression. See the Methods section for more details.

It should be noted that the use of BMI to estimate excess body fat may have limitations for some groups, such as: (1) young adults who have not attained full growth; (2) adults with a very lean build; (3) adults with a very muscular build; (4) older adults (over 65 years of age); (5) very tall or very short adults; and (6) certain



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ethnic or racial groups (Health Canada, 2003). Furthermore, BMI does not provide any information regarding body fat distribution. Research demonstrates that excess abdominal fat in particular is associated with increased health risks (Health Canada 2003). In addition, self-reported data often underestimates the prevalence of overweightness and obesity in a population (Booth, 2000; Roberts 1995; Shields, 2008). Data from the Canadian Community Health Survey (CCHS) showed that self-reported height and weight data underestimated the prevalence of obesity by nearly 7%, when validated with measured height and weight data. This effect was further differentiated by sex, with the obesity rate underreported by 9% among males, and by 6% among females (Connor-Gorber, 2010). Therefore, the number of overweight and obese CAF personnel may be underestimated due to the survey method employed.

8.2.2 Perceived Weight Status

Self-perception of personal weight may influence an individual’s behaviour and habits (e.g., time spent exercising, eating habits, and sedentary activities) (Jackson-Elmoore, 2007). HLIS 2013/14 participants were asked if they considered themselves to be overweight, underweight, or just about the right weight.

Although 74.0% of all Regular Force personnel reported overweight or obese BMIs, only 45.8% of all personnel perceived themselves as overweight. Perceiving oneself as overweight was more likely in: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; and (2) females compared to males (Table 8-4).

Table 8-4: Percentage of Regular Force personnel who perceived themselves as overweight

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		45.8	(43.2, 48.5)		
Age (years)	18 – 29	31.5	(26.5, 36.4)	Reference	
	30 – 39	45.0	(39.7, 50.2)	1.78	(1.30, 2.43)
	40 – 49	57.8	(53.0, 62.7)	2.99	(2.21, 4.04)
	50 – 60	56.4	(51.8, 60.9)	2.81	(2.10, 3.78)
Sex	Female	53.3	(49.9, 56.7)	Reference	
	Male	44.7	(41.6, 47.7)	0.71	(0.59, 0.85)

Previous research has already shown that among people with a BMI greater than 25 kg/m², males are less likely than females to perceive themselves as overweight (Linder, 2010). This discrepancy could be due, in part, to an inaccurate self-image of body weight among males (Gardner, 2014); however, this discrepancy could also be due, in part, to high muscle mass.

Some healthy individuals – males in particular – can be classified as overweight because of high muscle mass rather than excess body fat. As an example, only 41.6% of overweight males perceived themselves as carrying excess body fat compared to 79.6% of overweight females (Figure 8-2). However, the vast majority of males and females with an obese BMI perceived themselves as carrying excess body fat (Figure 8-2). High muscle mass could, therefore, explain some cases of overweightness in males, but is unlikely to account for many cases of obesity in either males or females. These findings are consistent with the conclusions of a previous



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study of CAF personnel, in which an increased waist circumference (≥ 102 cm for males and ≥ 88 cm for females) was found in only 8% of overweight males and 34% of overweight females, and in 67% of obese males and 88% of obese females (Bogaert, 2013).

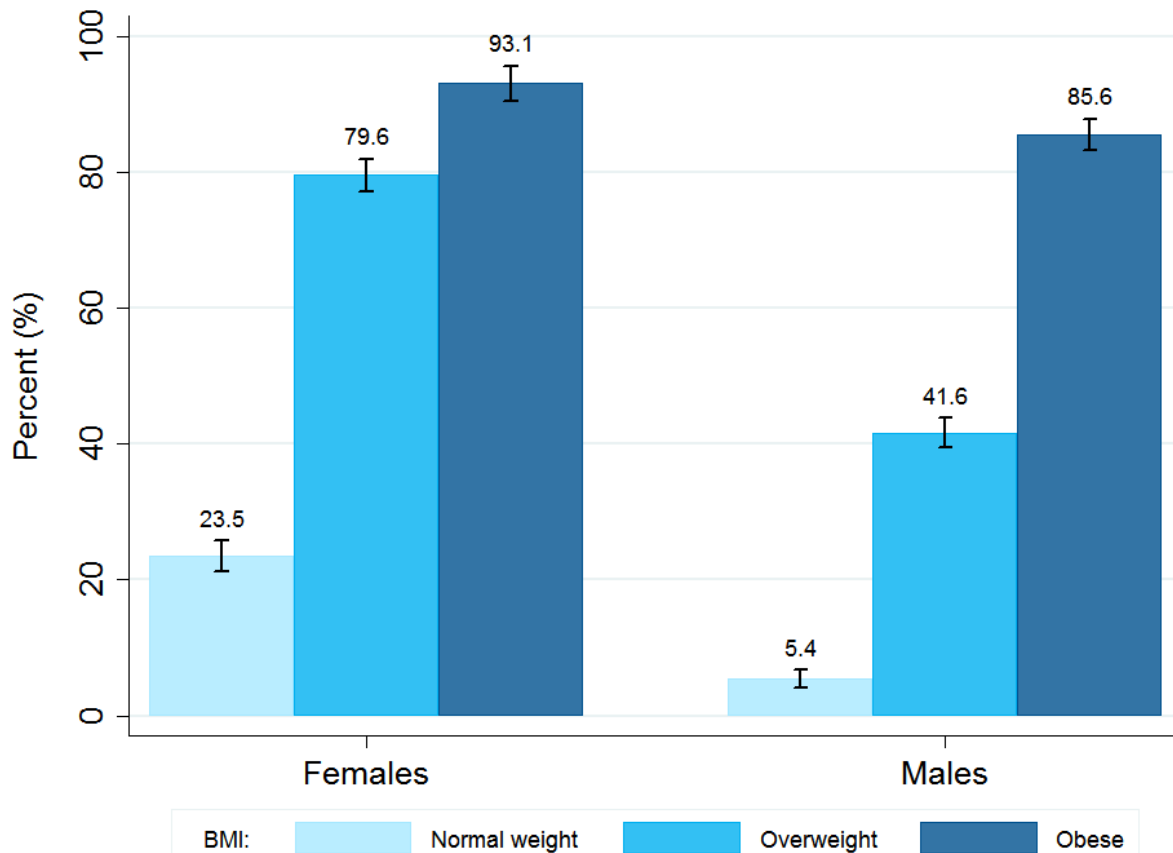


Figure 8-2: Percentage of Regular Force personnel who perceived themselves as overweight. BMI = body mass index.

In a recent study of Alberta adults, 87% of males with a BMI ≥ 25 kg/m² and an increased waist circumference perceived themselves as overweight compared to 96% of females with a BMI ≥ 25 kg/m² and an increased waist circumference (Linder, 2010). The vast majority of males with indication of excess body fat, therefore, perceive themselves as overweight. However, there remain differences in the accuracy of self-perceived body weight between males and females with excess body fat.

It should also be noted that 23.5% of females with a healthy BMI perceived themselves as overweight (Figure 8-2). This finding is nearly identical to the results of a prospective cohort study of Alberta adults, in which 25% of females with a healthy BMI perceived themselves as overweight (Linder, 2010). Given the possible effects of negative body image on healthy eating patterns, this particular finding may warrant further investigation.



8.2.3 Goals Related to Body Weight

More than half of all Regular Force personnel reported wanting to lose weight. Wanting to lose weight was more likely in: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; (3) Air personnel compared to Land personnel; and (4) obese and overweight personnel compared to normal weight personnel (Table 8-5). There was no difference by rank. Only 54.9% of overweight males reported wanting to lose weight compared to 89.3% of overweight females (Figure 8-3). This finding could be attributable to an inaccurate self-image among males, and/or to high muscle mass explaining a proportion of overweight cases among males.

Table 8-5: Percentage of Regular Force personnel who reported wanting to lose weight

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		55.5	(52.8, 58.2)		
Age (years)	18 – 29	44.2	(38.9, 49.5)	Reference	
	30 – 39	53.2	(48.0, 58.5)	1.44	(1.06, 1.94)
	40 – 49	66.5	(61.8, 71.1)	2.50	(1.85, 3.37)
	50 – 60	65.4	(61.0, 69.7)	2.38	(1.78, 3.17)
Sex	Female	65.5	(62.3, 68.8)	Reference	
	Male	54.0	(50.9, 57.0)	0.62	(0.51, 0.75)
Service element	Air	61.5	(57.1, 66.0)	Reference	
	Sea	55.7	(49.3, 62.1)	0.79	(0.57, 1.08)
	Land	51.8	(47.8, 55.8)	0.67	(0.52, 0.86)
Body mass index	Normal weight	21.3	(17.8, 24.9)	Reference	
	Overweight	58.0	(54.0, 62.0)	5.10	(3.89, 6.70)
	Obese	87.7	(83.8, 91.5)	26.27	(17.37, 39.72)



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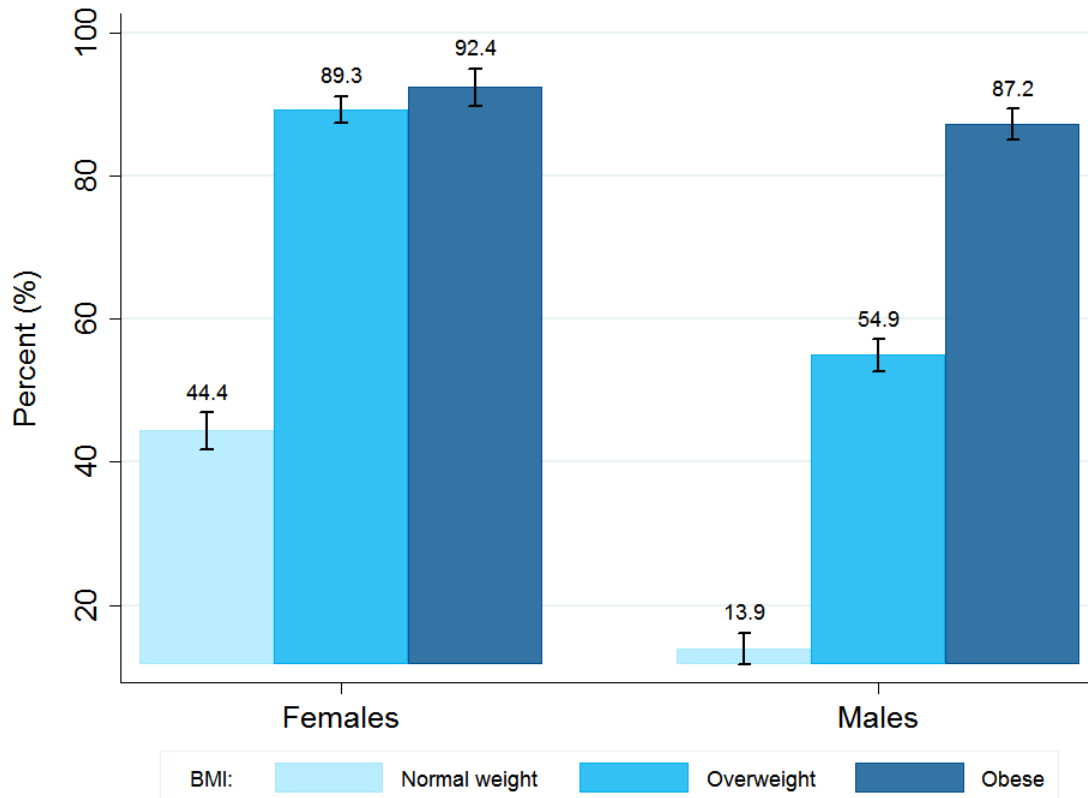


Figure 8-3: Percentage of Regular Force personnel who reportedly wanted to lose weight.

Similarly, more than half of all Regular Force personnel reported wanting to decrease their waist size. Wanting to decrease one's waist size was more likely in: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; (3) Air personnel compared to Sea and Land personnel; and (4) overweight and obese personnel compared to normal weight personnel (Table 8-6). There was no difference by rank. Only 58.3% of overweight males reported wanting to decrease their waist size compared to 84.8% of overweight females (Figure 8-4). This finding could also be attributable to an inaccurate self-image among males, and/or to high muscle mass explaining a proportion of overweight cases among males.



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Table 8-6: Percentage of Regular Force personnel who reported wanting to decrease their waist size

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		58.1	(55.4, 60.8)		
Age (years)	18 – 29	47.8	(42.5, 53.2)	Reference	
	30 – 39	55.2	(50.0, 60.5)	1.34	(0.99, 1.82)
	40 – 49	68.8	(64.3, 73.4)	2.41	(1.78, 3.25)
	50 – 60	67.8	(63.5, 72.1)	2.29	(1.72, 3.07)
Sex	Female	67.7	(64.5, 70.9)	Reference	
	Male	56.6	(53.6, 59.7)	0.62	(0.51, 0.76)
Service element	Air	65.7	(61.4, 70.1)	Reference	
	Sea	54.3	(47.9, 60.7)	0.62	(0.45, 0.86)
	Land	54.8	(50.8, 58.9)	0.63	(0.49, 0.82)
Body mass index	Normal weight	28.8	(24.7, 33.0)	Reference	
	Overweight	60.6	(56.6, 64.6)	3.80	(2.92, 4.96)
	Obese	85.0	(80.8, 89.2)	13.93	(9.47, 20.51)

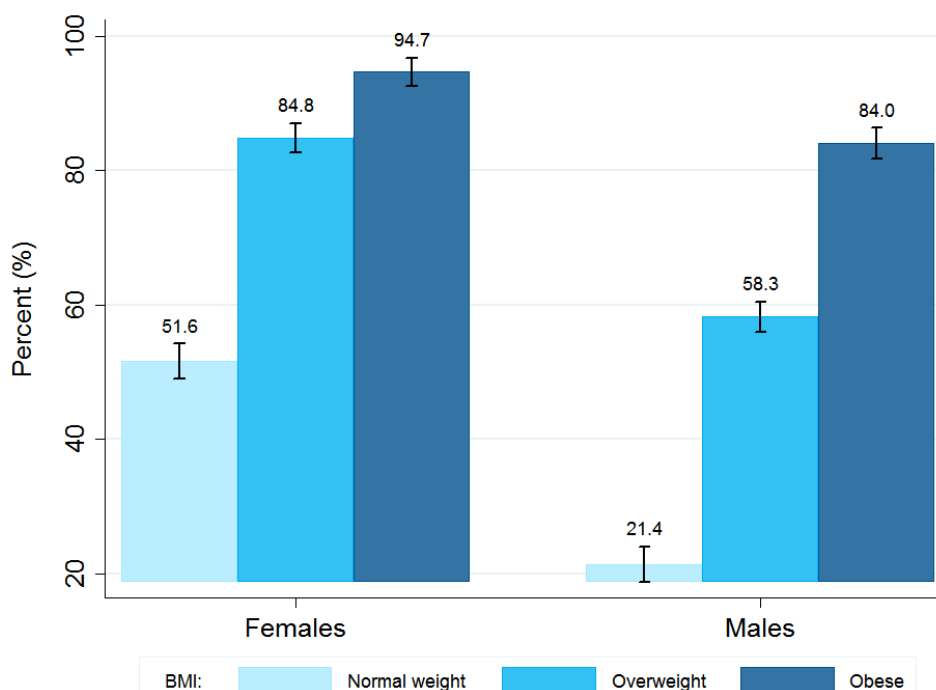


Figure 8-4: Percentage of Regular Force personnel who reportedly wanted to decrease their waist size.



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Half of all Regular Force personnel reported wanting to increase their muscle mass. Wanting to increase one's muscle mass was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; and (2) normal weight personnel compared to overweight or obese personnel (Table 8-7). There were no differences by sex, rank, or service element.

Table 8-7: Percentage of Regular Force personnel who reported wanting to increase their muscle mass

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		50.9	(48.2, 53.6)		
Age (years)	18 – 29	63.9	(58.7, 69.0)	Reference	
	30 – 39	54.1	(48.8, 59.3)	0.67	(0.49, 0.91)
	40 – 49	39.7	(35.1, 44.3)	0.37	(0.28, 0.50)
	50 – 60	34.3	(30.0, 38.6)	0.30	(0.22, 0.40)
Body mass index	Normal weight	61.1	(56.3, 66.0)	Reference	
	Overweight	53.0	(49.0, 57.0)	0.72	(0.55, 0.93)
	Obese	38.1	(32.5, 43.8)	0.39	(0.29, 0.54)

8.2.4 Actions to Change Body Weight

8.2.4.1 Weight Loss

Among personnel who reported wanting to lose weight, only 57.5% had been actively trying to lose weight in the last month. Females who wanted to lose weight were more likely to have been actively trying to do so in the last month compared to their male counterparts (Table 8-8). There were no differences by age, rank, service element, or BMI category.

Table 8-8: Percentage of Regular Force personnel who actively tried to lose weight in the last month, among those who reported wanting to lose weight

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		57.5	(53.9, 61.0)		
Sex	Female	68.8	(64.7, 72.7)	Reference	
	Male	55.3	(51.1, 59.4)	0.56	(0.44, 0.72)

Among personnel who reported wanting to lose weight, 93.0% (95% CI: 91.0%, 94.6%) were seriously considering trying to lose weight in the next six months. There were no differences by age, sex, rank, service element, or BMI category. It should be noted that only 59.6% (95% CI: 56.0%, 63.2%) of personnel who were seriously considering trying to lose weight in the next six months had already tried to do so in the last month. There are, therefore, roughly 19,000 Regular Force personnel who are considering losing weight in the near future, but have not recently attempted to lose weight. These individuals could potentially benefit from weight



loss campaigns targeting Regular Force personnel who are ready to start trying to lose weight, such as *Strengthening the Forces’* Weight Wellness Lifestyle Program.

8.2.4.2 Weight Maintenance

Among personnel who reported wanting to either lose or maintain weight, only 60.0% had been actively trying to keep from gaining weight in the last month. Among personnel who wanted to either lose or maintain their current weight, actively trying to keep from gaining weight in the last month was more likely in: (1) females compared to males; and (2) overweight and obese personnel compared to normal weight personnel (Table 8-9). There were no differences by age, rank, or service element.

Table 8-9: Percentage of Regular Force personnel who actively tried to keep from gaining weight in the last month, among those who reported wanting to lose weight or maintain their current weight

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		60.0	(56.9, 62.6)		
Sex	Female	67.1	(63.5, 70.6)	Reference	
	Male	58.7	(55.2, 62.2)	0.70	(0.56, 0.86)
Body mass index	Normal weight	45.5	(39.7, 51.5)	Reference	
	Overweight	60.5	(56.2, 64.8)	1.84	(1.36, 2.48)
	Obese	70.0	(64.1, 75.3)	2.79	(1.95, 4.01)

More than half of all Regular Force personnel had reportedly maintained their desired weight for more than six months. Having maintained one’s desired weight for more than six months was more likely in: (1) Sea and Land personnel compared to Air personnel; and (2) normal weight personnel compared to overweight and obese personnel (Table 8-10). There were no differences by age, sex, or rank.

Table 8-10: Percentage of Regular Force personnel who maintained their desired weight for more than six months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		56.6	(53.9, 59.3)		
Service element	Air	50.1	(45.5, 54.7)	Reference	
	Sea	63.1	(57.0, 69.1)	1.70	(1.24, 2.33)
	Land	58.8	(54.8, 62.8)	1.42	(1.11, 1.82)
Body mass index	Normal weight	75.0	(70.6, 79.5)	Reference	
	Overweight	59.4	(55.4, 63.3)	0.49	(0.36, 0.65)
	Obese	31.6	(26.2, 37.0)	0.15	(0.11, 0.22)



8.3 Nutrition and Health

Healthy diets can reduce the risk of obesity, thereby helping to prevent type 2 diabetes, cardiovascular diseases, certain types of cancer, and osteoporosis (WHO, 2003b). Unsurprisingly, poor diets and physical inactivity are major contributors to the leading causes of death in Canada. Dietary behaviours, including skipped or rushed meals, eating meals away from home, and the frequency and quantity of eating have all been shown to moderate important factors such as the caloric balance of an individual (Ma, 2003). There is also substantial evidence that the energy balance of an individual (defined as the difference between caloric intake and expenditure) has a direct causal relationship with excess weight and obesity.

8.3.1 Self-Reported Eating Habits

The majority (83.3%) of Regular Force personnel reported that their eating habits were good, very good, or excellent. Self-reported eating habits were unchanged from 2004 and 2008/9. Reporting better eating habits was more likely in: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; (3) officers compared to NCMs; and (4) normal weight personnel compared to overweight and obese personnel (Table 8-11). There was no difference by service element.

Table 8-11: Self-rated eating habits of Regular Force personnel

Variable	Category	Percent (95% CI)			Odds Ratio (95% CI) ^a
		Fair/Poor	Good	Very Good/Excellent	
Overall		16.7 (14.5, 18.8)	43.2 (40.5, 45.9)	40.1 (37.5, 42.7)	
Age (years)	18 – 29	18.0 (13.7, 22.2)	47.1 (41.8, 52.4)	34.9 (30.0, 39.8)	Reference
	30 – 39	19.7 (15.4, 24.0)	40.9 (35.7, 46.1)	39.4 (34.4, 44.4)	1.09 (0.83, 1.45)
	40 – 49	13.5 (10.1, 16.8)	43.6 (38.8, 48.4)	42.9 (38.2, 47.7)	1.39 (1.07, 1.80)
	50 – 60	11.3 (8.4, 14.2)	39.2 (34.7, 43.6)	49.6 (45.0, 54.1)	1.78 (1.37, 2.30)
Sex	Female	12.9 (10.5, 15.3)	34.7 (31.4, 38.0)	52.4 (48.9, 55.8)	Reference
	Male	17.3 (14.8, 19.7)	44.5 (41.4, 47.6)	38.2 (35.2, 41.2)	0.59 (0.49, 0.71)
Rank	NCM	18.6 (15.9, 21.4)	44.7 (41.2, 48.1)	36.7 (33.4, 39.9)	Reference
	Officer	10.7 (8.4, 13.0)	38.9 (35.4, 42.4)	50.4 (46.8, 54.0)	1.79 (1.48, 2.16)
Body mass index	Normal weight	11.1 (7.7, 14.5)	36.1 (31.1, 41.1)	52.8 (47.7, 57.8)	Reference
	Overweight	12.6 (9.8, 15.4)	44.8 (40.8, 48.9)	42.6 (38.6, 46.5)	0.70 (0.54, 0.90)
	Obese	30.9 (25.4, 36.4)	48.5 (42.8, 54.3)	20.5 (16.1, 24.9)	0.24 (0.18, 0.32)

^a Odds ratios computed using ordinal logistic regression. See the Methods section for more details.

8.3.2 Skipped Meals

Skipping meals is a dietary behaviour associated with poor nutrition, although the causal process behind this mechanism is not clearly understood. Intuitively, fewer meals should lead to a decrease in caloric intake;

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however, a recent study by O’Neil and colleagues (2014) demonstrated that skipping breakfast was associated with lower diet quality, and increased BMI and waist circumference. Shaw (1998) also showed that skipping meals resulted in a lower intake of vitamins and minerals, a higher intake of fat, and higher serum cholesterol levels.

Regular Force personnel reportedly skipped, on average, 3.1 meals in the last week. The mean number of meals skipped in the last week was higher in: (1) NCMs compared to officers; and (2) obese personnel compared to normal weight personnel (Table 8-12). There were no differences by age, sex, or service element.

Table 8-12: Mean number of meals skipped in the last week among Regular Force personnel

Variable	Category	Mean	(95% CI)
Overall		3.1	(2.8, 3.3)
Rank	NCM	3.3	(3.0, 3.6) ^a
	Officer	2.3	(2.1, 2.6) ^b
Body mass index	Normal weight	2.6	(2.2, 3.0) ^a
	Overweight	3.1	(2.7, 3.4)
	Obese	3.5	(3.0, 4.0) ^b

^a Reference category.

^b Significantly different from the reference category, at the 99% confidence level ($p < 0.01$).

Breakfast was the most frequently skipped meal (Figure 8-5). In fact, half (49.4%) of all Regular Force personnel had skipped breakfast at least once in the last week, and 42.4% of personnel had skipped it at least twice. Having skipped breakfast at least twice in the last week was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 50 – 60 years; (2) males compared to females; (3) NCMs compared to officers; and (4) obese personnel compared to normal weight personnel (Table 8-13). There was no difference by service element.



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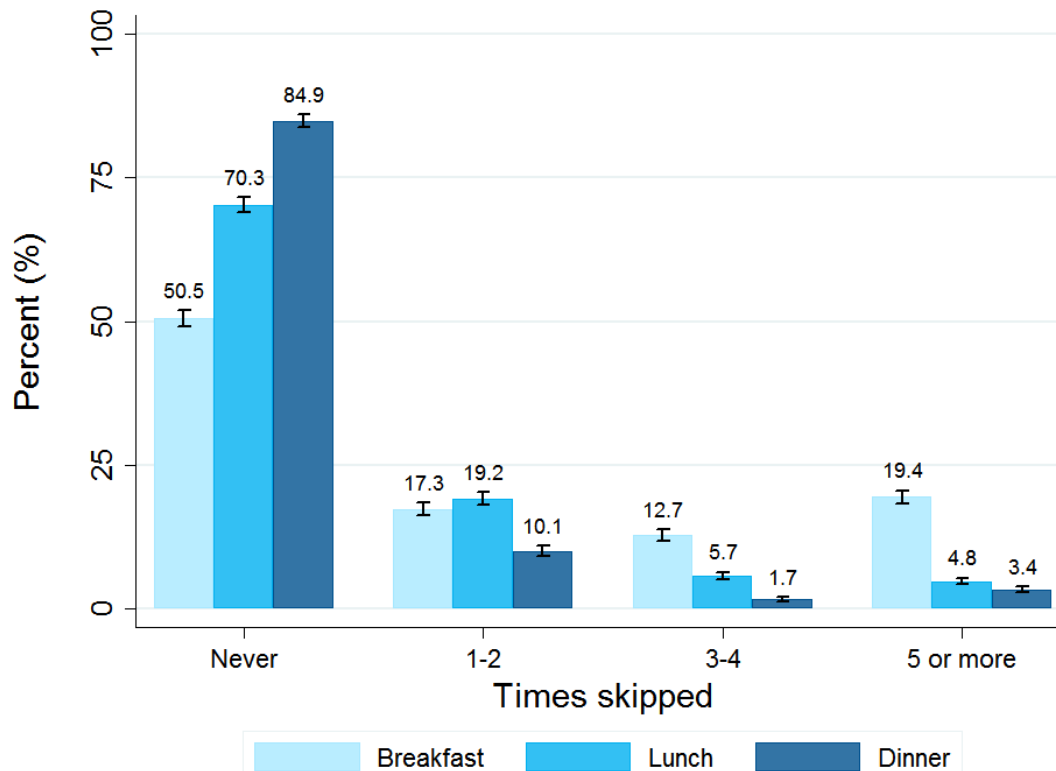


Figure 8-5: Number of times Regular Force personnel skipped breakfast, lunch, or dinner in the last week.

Table 8-13: Percentage of Regular Force personnel who skipped breakfast at least twice in the last week

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		42.4	(39.7, 45.2)		
Age (years)	18 – 29	46.6	(41.2, 52.0)	Reference	
	30 – 39	44.3	(39.0, 49.6)	0.91	(0.67, 1.23)
	40 – 49	39.5	(34.7, 44.3)	0.75	(0.56, 1.00)
	50 – 60	32.2	(27.9, 36.5)	0.54	(0.41, 0.73)
Sex	Female	32.9	(29.6, 36.3)	Reference	
	Male	43.9	(40.8, 47.1)	1.59	(1.31, 1.94)
Rank	NCM	46.4	(42.9, 49.9)	Reference	
	Officer	30.7	(27.3, 34.0)	0.51	(0.41, 0.63)
Body mass index	Normal weight	39.0	(33.9, 44.1)	Reference	
	Overweight	40.7	(36.6, 44.8)	1.07	(0.82, 1.41)
	Obese	50.0	(44.2, 55.9)	1.57	(1.14, 2.15)



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8.3.3 Actions to Change Eating Habits

In the past year, 20.2% of all Regular Force personnel had tried to improve or change their eating habits by seeking nutritional counselling or attending a class on nutrition. Seeking this sort of help to improve one's eating habits was more likely in: (1) personnel aged 50 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; (3) NCMs compared to officers; and (4) obese personnel compared to normal weight personnel (Table 8-14). There was no difference by service element, or self-rated eating habits.

Table 8-14: Percentage of Regular Force personnel who sought nutritional counselling or attended a nutrition class in the last year in an attempt to improve their eating habits

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		20.2	(18.0, 22.4)		
Age (years)	18 – 29	18.2	(13.9, 22.4)	Reference	
	30 – 39	19.5	(15.3, 23.7)	1.09	(0.74, 1.61)
	40 – 49	21.1	(17.1, 25.1)	1.21	(0.83, 1.75)
	50 – 60	26.0	(22.0, 30.0)	1.58	(1.11, 2.25)
Sex	Female	25.3	(22.2, 28.4)	Reference	
	Male	19.4	(16.9, 21.9)	0.71	(0.57, 0.90)
Rank	NCM	21.6	(18.8, 24.4)	Reference	
	Officer	16.0	(13.4, 18.6)	0.69	(0.54, 0.89)
Body mass index	Normal weight	18.8	(14.9, 22.7)	Reference	
	Overweight	17.8	(14.7, 21.0)	0.94	(0.67, 1.31)
	Obese	25.5	(20.5, 30.5)	1.48	(1.03, 2.14)

It is important to note that survey respondents only rated their current eating habits, while reporting whether they had sought nutritional counselling or attended nutrition classes in the past year. Therefore, respondents' eating habits at the time they sought nutritional counselling or attended nutrition classes were unknown. It is unclear whether the 18.5% (95% CI: 13.5%, 24.7%) of personnel with very good or excellent eating habits who sought help to improve their diet in the past year: (1) already had very good or excellent eating habits prior to seeking help; or (2) improved their eating habits as a result of seeking help. Nevertheless, more efforts may be warranted to target the roughly 7,000 Regular Force personnel with fair or poor eating habits who did not seek help to improve their diet in the past year.

The most commonly reported sources of help to improve one's eating habits in the past year were: (1) attending a military nutrition program or class; (2) obtaining nutritional counselling from a health care provider other than a dietitian; and (3) obtaining nutritional counselling from a registered dietician at a CF medical clinic (Table 8-15).



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Table 8-15: Percentage of Regular Force personnel who attempted to improve their eating habits in the last year using various methods

Action to Improve Eating Habits	Percent	(95% CI)
Military nutrition program or class	8.6	(7.1, 10.3)
Counselling with a health care provider (not a dietician)	7.1	(5.8, 8.7)
Counselling with a registered dietician at a CF medical clinic	4.9	(3.9, 6.2)
Counselling with a registered dietician at a civilian facility	4.3	(3.3, 5.5)
Civilian nutrition program or class	3.4	(2.6, 4.5)

8.3.4 Vegetable and Fruit Intake

An insufficient intake of vegetables and fruits is correlated with many negative health outcomes, including cancers and cardiovascular disease (Crowe, 2015). Recommendations for the required daily servings of vegetables and fruits, according to Canada’s Food Guide, vary according to age and sex. Females aged 50 years or younger should eat 7 to 8 servings per day. Males aged 50 years or younger should eat 8 to 10 servings per day. Individuals aged more than 50 years should eat 7 servings per day, regardless of sex (Health Canada, 2007).

Over half (52.2%) of all Regular Force personnel underestimated the recommended number of daily vegetable and fruit servings. In other words, 52.2% of all Regular Force personnel believed that they could eat less vegetables and fruits than what is actually recommended for their age and sex, and still meet the recommendations of Canada’s Food Guide. Underestimating the recommended number of daily servings of vegetables and fruits was more likely in: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 29 years; and (2) males compared to females (Table 8-16). There were no differences by rank, service element, BMI category, or self-reported eating habits.

Table 8-16: Percentage of Regular Force personnel who underestimated the number of daily vegetable and fruit servings recommended for an individual of their age and sex

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		52.2	(48.6, 55.8)		
Age (years)	18 – 29	44.5	(37.2, 51.8)	Reference	
	30 – 39	51.9	(44.8, 59.0)	1.35	(0.89, 2.03)
	40 – 49	58.8	(52.8, 64.9)	1.79	(1.21, 2.63)
	50 – 60	54.1	(48.2, 60.0)	1.47	(1.01, 2.15)
Sex	Female	41.4	(37.3, 45.4)	Reference	
	Male	54.6	(50.3, 58.9)	1.70	(1.34, 2.17)
Times per day eating vegetables and fruits	3 or less	59.2	(51.0, 67.3)	Reference	
	3.01 – 6	58.6	(53.2, 64.0)	0.98	(0.65, 1.47)
	More than 6	42.4	(36.6, 48.1)	0.51	(0.34, 0.77)



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8.3.4.1 Frequency of Vegetable and Fruit Intake

Servings are well-defined quantities, and therefore lend themselves well to dietary recommendations. As an example, 125 mL of cooked leafy vegetables, or 250 mL of raw leafy vegetables, represents one serving of vegetables and fruits (Health Canada, 2007). However, few individuals can accurately recall the exact quantities of vegetables and fruits they ate. The HLIS 2013/14, therefore, asked respondents to describe how often they usually eat vegetables and fruits, rather than how many servings they usually eat.

The number of vegetable and fruit servings consumed in a day is highly correlated with the number of times the following six food items were consumed: (1) fruit juices; (2) fruits; (3) green salad; (4) potatoes, excluding French fries, fried potatoes, or chips; (5) carrots; and (6) other vegetables (Garriguet, 2009; Traynor, 2006). Research suggests that Canadians who only consume vegetables and fruits three times per day or less have poorer diets than those who consume vegetables and fruits more than six times per day (Garriguet, 2009). However, these thresholds have never been fully validated.

It should be noted that personnel who ate vegetables and fruits three times per day or less were more likely to underestimate the recommended number of daily vegetable and fruit servings compared to personnel who ate vegetables and fruits more than six times per day (Table 8-16). Lack of awareness of recommended guidelines could, therefore, partly explain why some Regular Force personnel ate less vegetables and fruits than they should.

On average, Regular Force personnel consumed vegetables and fruits 5.1 (95% CI: 4.9, 5.4) times per day. More than one-quarter (28.7%) of personnel ate vegetables and fruits more than six times per day, while another 28.3% of personnel ate vegetables and fruits three times per day or less. Regular Force personnel ate vegetables and fruits more frequently in 2013/14 than in 2004, but less frequently than in 2008/9 (Table 8-17).

Table 8-17: Number of times Regular Force personnel reportedly ate vegetables and fruits on a typical day, by survey year

HLIS	Percent (95% CI)			Odds Ratio	(95% CI) ^a
	3 or Less	3.01 to 6	More than 6		
2004	29.5 (27.1, 31.8)	48.0 (45.4, 50.6)	22.5 (20.3, 24.6)	0.83	(0.72, 0.96)
2008/9	24.4 (21.2, 27.5)	43.7 (40.0, 47.3)	32.0 (28.5, 35.5)	1.20	(1.01, 1.43)
2013/14	28.3 (25.7, 30.8)	43.0 (40.3, 45.7)	28.7 (26.3, 31.1)	Reference	

^a Odds ratios computed using ordinal logistic regression; see the Methods section for more details.

Vegetables and fruits were more frequently consumed by: (1) personnel aged 18 – 29 years compared to personnel aged 50 – 60 years; (2) females compared to males; (3) officers compared to NCMs; (4) normal weight personnel compared to obese personnel; and (5) personnel with good, very good, or excellent eating habits compared to personnel with fair or poor eating habits (Table 8-18). There was no difference by service element. The fact that only 28.7% of personnel ate vegetables and fruits more than six times per day, yet 83.3% of personnel rated their eating habits as good, very good, or excellent, suggests that there is a notable nutritional knowledge gap among Regular Force personnel.



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Table 8-18: Number of times Regular Force personnel reportedly ate vegetables and fruits on a typical day

Variable	Category	Percent (95% CI)			Odds Ratio (95% CI) ^a
		3 or Less	3.01 to 6	More than 6	
Overall		28.3 (25.7, 30.8)	43.0 (40.3, 45.7)	28.7 (26.3, 31.1)	
Age (years)	18 – 29	28.5 (23.6, 33.5)	35.8 (30.7, 40.9)	35.7 (30.6, 40.8)	Reference
	30 – 39	29.2 (24.3, 34.1)	43.4 (38.2, 48.7)	27.4 (22.9, 31.8)	0.79 (0.59, 1.07)
	40 – 49	27.7 (23.3, 32.2)	46.5 (41.7, 51.4)	25.7 (21.6, 29.9)	0.79 (0.60, 1.05)
	50 – 60	25.8 (21.8, 29.8)	52.4 (47.8, 56.9)	21.8 (18.2, 25.5)	0.76 (0.58, 0.99)
Sex	Female	19.5 (16.8, 22.3)	43.1 (39.6, 46.5)	37.4 (34.0, 40.7)	Reference
	Male	29.6 (26.7, 32.5)	43.0 (40.0, 46.1)	27.3 (24.6, 30.1)	0.61 (0.51, 0.73)
Rank	NCM	31.0 (27.7, 34.2)	42.4 (39.0, 45.8)	26.6 (23.6, 29.7)	Reference
	Officer	20.2 (17.2, 23.1)	45.0 (41.4, 48.5)	34.9 (31.5, 38.3)	1.59 (1.32, 1.91)
Body mass index	Normal Weight	23.8 (19.2, 28.4)	41.2 (36.3, 46.2)	35.0 (30.2, 39.7)	Reference
	Overweight	27.2 (23.5, 30.8)	43.0 (39.0, 47.0)	29.9 (26.2, 33.6)	0.81 (0.63, 1.04)
	Obese	35.7 (30.1, 41.4)	44.6 (38.8, 50.3)	19.7 (15.2, 24.3)	0.51 (0.38, 0.68)
Eating habits	Fair/Poor	52.4 (45.2, 59.7)	37.2 (30.2, 44.2)	10.4 (5.7, 15.1)	Reference
	Good	33.7 (29.5, 37.8)	44.1 (39.9, 48.4)	22.2 (18.7, 25.7)	2.28 (1.64, 3.17)
	Very good / Excellent	12.7 (9.9, 15.5)	44.2 (40.2, 48.3)	43.1 (39.1, 47.1)	6.74 (4.83, 9.41)

^a Odds ratios computed using ordinal logistic regression. See the Methods section for more details.

8.3.5 Dietary Supplements

In the past 12 months, 74.7% (95% CI: 72.4%, 77.0%) of all Regular Force personnel consumed dietary supplements or energy drinks at least once. The dietary supplements used by the greatest percentage of Regular Force personnel over the past 12 months were: (1) multivitamins; (2) energy drinks; and (3) protein powders (Figure 8-6).

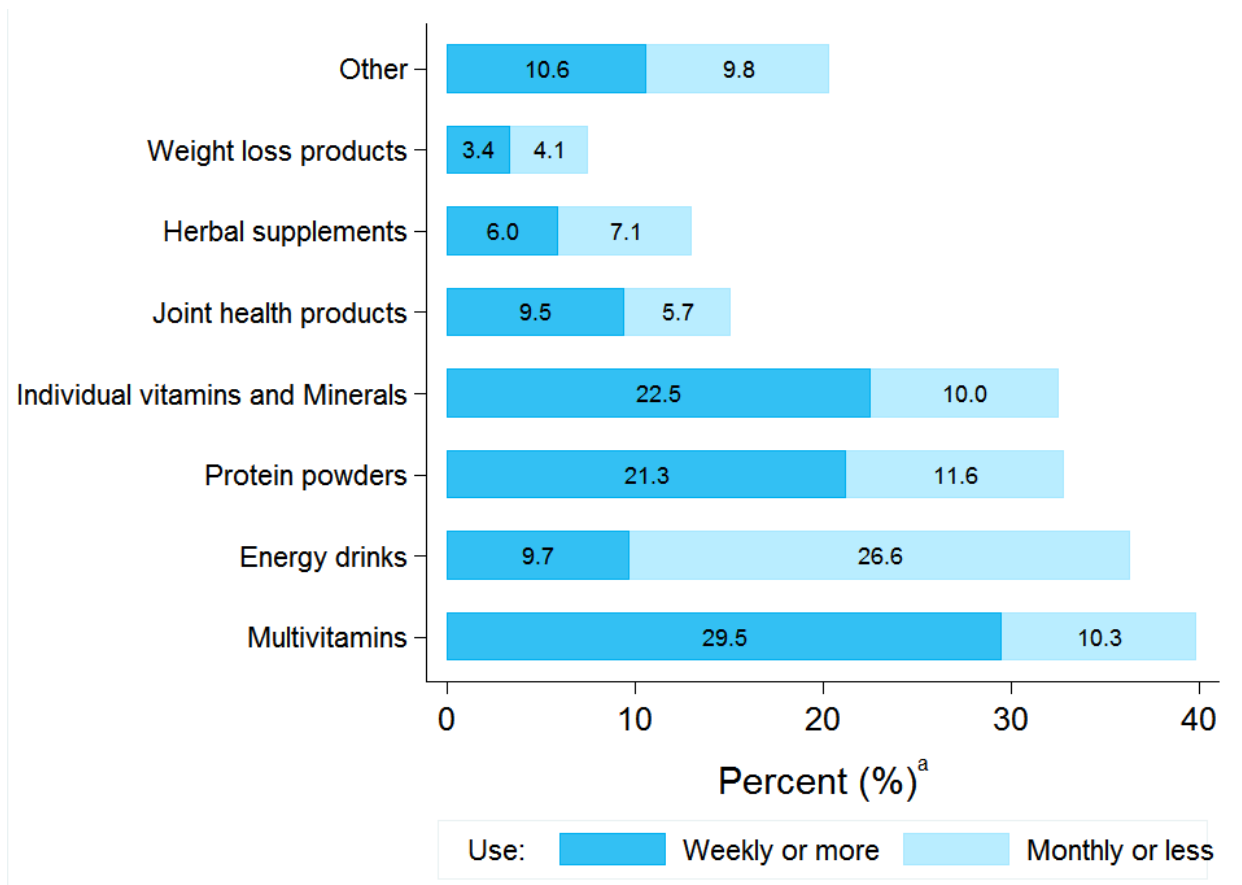


Figure 8-6: Percentage of Regular Force personnel who consumed various nutritional supplements over the past 12 months.

^a Personnel could consume more than one type of supplement. Percents may sum to more than 100%.

In the past 12 months, 67.9% (95% CI: 65.0%, 70.6%) of all Regular Force personnel had consumed dietary supplements or energy drinks on a weekly basis. The dietary supplements that had been consumed on a weekly basis by the greatest percentage of Regular Force personnel were: (1) multivitamins; (2) individual vitamins and minerals; and (3) protein powders (Figure 8-6). Reporting weekly use of dietary supplements over the past 12 months was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; (2) females compared to males; (3) Land personnel compared to Air personnel; and (4) personnel with very good or excellent eating habits compared to personnel with fair or poor eating habits (Table 8-19). There were no differences by rank, or BMI category.



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Table 8-19: Percentage of Regular Force personnel who consumed dietary supplements or energy drinks at least once a week over the past 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		67.9	(65.1, 70.6)		
Age (years)	18 – 29	81.0	(76.2, 85.8)	Reference	
	30 – 39	68.6	(63.0, 74.2)	0.51	(0.34, 0.77)
	40 – 49	59.2	(53.9, 64.5)	0.34	(0.23, 0.50)
	50 – 60	56.7	(51.9, 61.4)	0.31	(0.21, 0.44)
Sex	Female	77.6	(74.4, 80.7)	Reference	
	Male	66.2	(63.0, 69.4)	0.57	(0.45, 0.71)
Service element	Air	62.6	(57.6, 67.6)	Reference	
	Sea	67.8	(61.3, 74.3)	1.26	(0.87, 1.82)
	Land	71.2	(67.2, 75.2)	1.48	(1.10, 1.98)
Eating habits	Fair/Poor	59.7	(51.5, 68.0)	Reference	
	Good	67.7	(63.2, 72.1)	1.41	(0.95, 2.11)
	Very good / Excellent	70.8	(66.8, 74.8)	1.63	(1.10, 2.43)

8.3.6 Canadian Armed Forces Food Services

CAF food services and contracted facilities provide meal options to personnel through dining halls and cafeterias, boxed lunches, rations, and vending machines. These services provide the CAF with a unique opportunity to influence the diet of its personnel.

In the past month, Regular Force personnel had eaten at civilian locations much more frequently than they had used CAF food services (Figure 8-7). Empowering personnel with the right tools to make healthy food choices at home and in restaurants could, therefore, have a greater impact on the diet of Regular Force personnel than making alterations to the meal options offered through CAF food services. The CAF food services most frequently used were: (1) dining halls and cafeterias; (2) boxed lunches; and (3) rations (Figure 8-7).

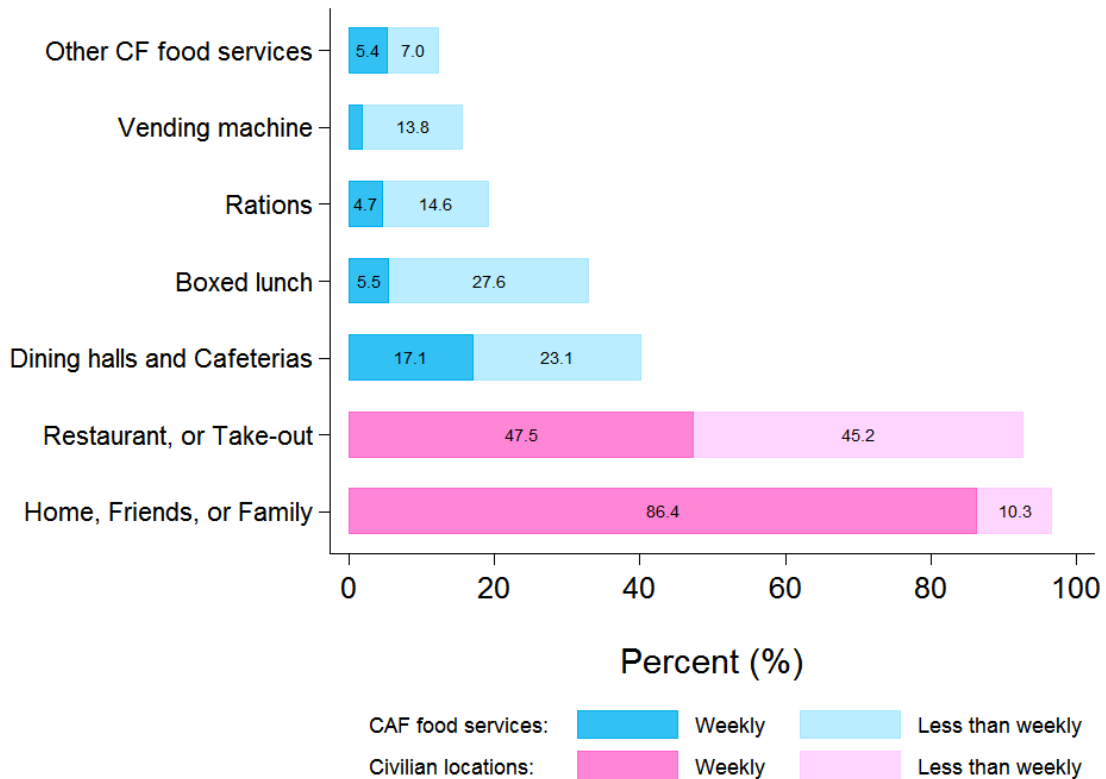


Figure 8-7: Frequency at which Regular Force personnel ate at various military and civilian locations during the past month.

8.3.6.1 Canadian Armed Forces Dining Halls and Cafeterias

In the past month, 17.1% of all Regular Force personnel reported eating at CAF dining halls or cafeterias at least once a week. Eating at CAF dining halls or cafeterias on a weekly basis was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; (2) males compared to females; and (3) Sea personnel compared to Air and Land personnel (Table 8-20). There were no differences by rank, BMI category, or self-reported eating habits.



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Table 8-20: Percentage of Regular Force personnel who ate at Canadian Armed Forces dining halls or cafeterias at least once a week in the past month

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		17.1	(15.1, 19.2)		
Age (years)	18 – 29	23.7	(19.2, 28.2)	Reference	
	30 – 39	15.2	(11.4, 19.0)	0.58	(0.39, 0.85)
	40 – 49	14.7	(11.2, 18.2)	0.56	(0.38, 0.81)
	50 – 60	11.6	(8.6, 14.6)	0.42	(0.29, 0.62)
Sex	Female	12.3	(10.1, 14.6)	Reference	
	Male	17.9	(15.5, 20.3)	1.55	(1.19, 2.02)
Service element	Air	12.6	(9.6, 15.5)	Reference	
	Sea	35.6	(29.3, 42.0)	3.86	(2.63, 5.67)
	Land	13.2	(10.5, 15.9)	1.06	(0.74, 1.51)

Overall, 68.2% of Regular Force personnel were satisfied with the availability of healthy food choices¹⁵ at CAF dining halls and cafeterias. Higher levels of satisfaction were more likely to be reported by: (1) personnel aged 50 – 60 years compared to personnel aged 18 – 29 years; and (2) males compared to females (Table 8-21). There were no differences by rank, or service element.

Table 8-21: Satisfaction levels of Regular Force personnel with the availability of healthy choices at Canadian Armed Forces dining halls and cafeterias

Variable	Category	Percent (95% CI)			Odds Ratio	(95% CI) ^a
		Dissatisfied	Neutral	Satisfied		
Overall		13.9 (11.6, 16.3)	17.8 (15.2, 20.4)	68.2 (65.0, 71.4)		
Age (years)	18 – 29	17.3 (12.5, 22.0)	15.3 (10.9, 19.6)	67.5 (61.6, 73.3)	Reference	
	30 – 39	15.2 (10.7, 19.6)	19.5 (14.3, 24.6)	65.4 (59.3, 71.4)	0.95	(0.65, 1.39)
	40 – 49	10.0 (6.3, 13.7)	19.1 (14.1, 24.1)	70.9 (65.1, 76.6)	1.27	(0.86, 1.85)
	50 – 60	8.4 (5.1, 11.6)	17.0 (12.5, 21.5)	74.6 (69.4, 79.8)	1.52	(1.04, 2.22)
Sex	Female	19.8 (16.2, 23.4)	21.8 (18.1, 25.5)	58.5 (54.0, 62.9)	Reference	
	Male	13.1 (10.4, 15.7)	17.3 (14.3, 20.2)	69.6 (66.0, 73.2)	1.63	(1.28, 2.08)

^a Odds ratios computed using ordinal logistic regression. See the Methods section for more details.

¹⁵ In instructions to HLIS participants, healthy food choices were defined as: vegetables and fruits; whole grain and high fibre foods; low fat milk products; legumes, fish, and lean meats; and foods low in saturated fats, trans fats, added sugars, and added salt.



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8.3.6.2 Boxed Lunches

Boxed lunches are fresh meals, prepared and packaged on a daily basis by military cooks on bases and wings. Regular Force personnel are entitled to boxed lunches whenever their duties prevent them from easily accessing other meal options. In the past month, 5.5% of all Regular Force personnel reported eating boxed lunches at least once a week. Eating boxed lunches on a weekly basis was more likely in: (1) males compared to females; and (2) officers compared to NCMs (Table 8-22). There were no differences by age, service element, BMI category, or self-reported eating habits.

Table 8-22: Percentage of Regular Force personnel who ate from boxed lunches at least once a week in the past month

Variable	Category	Percent (95% CI)	Odds Ratio (95% CI)
Overall		5.5 (4.3, 6.8)	
Sex	Female	2.7 (1.6, 3.8)	Reference
	Male	6.0 (4.5, 7.4)	2.30 (1.41, 3.75)
Rank	NCM	4.5 (3.0, 6.1)	Reference
	Officer	8.6 (6.5, 10.8)	1.99 (1.28, 3.11)

Overall, 34.9% of Regular Force personnel were satisfied with the availability of healthy food choices in boxed lunches. Higher satisfaction levels were more likely to be reported by: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 29 years; and (2) males compared to females (Table 8-23). There were no differences by rank, or service element.

Table 8-23: Satisfaction levels of Regular Force personnel with the availability of healthy choices in boxed lunches

Variable	Category	Percent (95% CI)			Odds Ratio (95% CI) ^a
		Dissatisfied	Neutral	Satisfied	
Overall		38.4 (35.0, 41.8)	26.7 (23.6, 29.8)	34.9 (31.6, 38.2)	
Age (years)	18 – 29	42.5 (36.4, 48.7)	21.7 (16.6, 26.7)	35.8 (29.7, 41.8)	Reference
	30 – 39	42.1 (35.9, 48.2)	29.8 (24.0, 35.7)	28.1 (22.4, 33.8)	0.87 (0.62, 1.21)
	40 – 49	31.2 (25.1, 37.3)	27.6 (21.6, 33.7)	41.2 (34.5, 47.8)	1.44 (1.02, 2.05)
	50 – 60	24.4 (18.8, 30.0)	28.8 (22.8, 34.8)	46.8 (40.2, 53.5)	1.88 (1.33, 2.66)
Sex	Female	46.0 (41.3, 50.7)	26.6 (22.5, 30.8)	27.4 (23.2, 31.5)	Reference
	Male	37.4 (33.6, 41.1)	26.7 (23.2, 30.2)	35.9 (32.2, 39.6)	1.45 (1.16, 1.82)

^a Odds ratios computed using ordinal logistic regression. See the Methods section for more details.



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8.3.6.3 Rations

Rations are non-perishable food items carried by Regular Force personnel working in environments where no other meal options are available. In the past month, 4.7% of all Regular Force personnel reported eating rations at least one a week. Eating rations on a weekly basis was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; (2) males compared to females; and (3) Sea and Land personnel compared to Air personnel (Table 8-24). There was no difference by rank.

Table 8-24: Percentage of Regular Force personnel who ate rations at least once a week in the past month

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		4.7	(3.5, 6.0)		
Age (years)	18 – 29	7.1	(4.3, 10.0)	Reference	
	30 – 60	3.8	(2.6, 5.4)	0.51	(0.29, 0.91)
Sex	Female	2.4	(1.3, 3.4)	Reference	
	Male	5.1	(3.6, 6.6)	2.21	(1.29, 3.80)
Service element	Air	1.2	(0.2, 2.1) ^a	Reference	
	Sea	5.5	(2.5, 8.6)	4.86	(1.80, 13.16)
	Land	6.5	(4.4, 8.7)	5.84	(2.42, 14.08)

^a Less than 20 unweighted observations; estimate may be unstable.

Overall, 31.3% of Regular Force personnel were satisfied with the availability of healthy food choices in rations. Higher satisfaction levels were more likely to be reported by: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; (2) males compared to females; and (3) Sea personnel compared to Air personnel (Table 8-25). There were no differences by rank.



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Table 8-25: Satisfaction levels of Regular Force personnel with the availability of healthy choices in rations

Variable	Category	Percent (95% CI)			Odds Ratio	(95% CI) ^a
		Dissatisfied	Neutral	Satisfied		
Overall		33.5 (29.8, 37.1)	35.2 (31.5, 39.0)	31.3 (27.7, 34.9)		
Age (years)	18 – 29	44.4 (37.5, 51.4)	33.1 (26.6, 39.6)	22.4 (16.5, 28.4)	Reference	
	30 – 39	34.3 (27.6, 41.0)	36.1 (29.2, 43.0)	29.6 (23.0, 36.2)	1.51	(1.04, 2.20)
	40 – 49	21.9 (16.0, 27.7)	38.7 (31.3, 46.0)	39.5 (32.2, 46.8)	2.51	(1.73, 3.66)
	50 – 60	16.6 (11.0, 22.3)	28.8 (21.7, 35.9)	54.6 (46.7, 62.4)	4.25	(2.80, 6.46)
Sex	Female	48.9 (43.7, 54.1)	31.2 (26.4, 36.0)	19.9 (15.8, 24.1)	Reference	
	Male	31.3 (27.2, 35.4)	35.8 (31.5, 40.0)	32.9 (28.8, 36.9)	2.05	(1.59, 2.66)
Service element	Air	33.5 (26.3, 40.7)	39.0 (31.2, 46.8)	27.6 (20.4, 34.7)	Reference	
	Sea	21.2 (13.0, 29.5)	42.8 (32.2, 53.4)	36.0 (26.0, 45.9)	1.57	(1.03, 2.41)
	Land	36.2 (31.4, 41.0)	32.5 (27.8, 37.2)	31.3 (26.7, 35.8)	1.02	(0.73, 1.42)

^a Odds ratios computed using ordinal logistic regression. See the Methods section for more details.

8.3.6.4 Vending Machines

Only 2.0% (95% CI: 1.3%, 3.0%) of Regular Force personnel had eaten from vending machines located on bases or wings on a weekly basis in the past month. Too few survey respondents reported eating from vending machines at least once per week to allow meaningful comparisons by demographic characteristics.

Overall, 8.7% of Regular Force personnel were satisfied with the availability of healthy food choices in CAF vending machines. Higher satisfaction levels were more likely to be reported by: (1) personnel aged 50 – 60 years compared to personnel aged 18 – 29 years; (2) males compared to females; and (3) NCMs compared to officers (Table 8-26). There were no differences by service element.



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Table 8-26: Satisfaction levels of Regular Force personnel with the availability of healthy choices in Canadian Armed Forces vending machines

Variable	Category	Percent (95% CI)			Odds Ratio	(95% CI) ^a
		Dissatisfied	Neutral	Satisfied		
Overall		59.0 (54.8, 63.3)	32.2 (28.1, 36.3)	8.7 (6.3, 11.2)		
Age (years)	18 – 29	59.5 (52.2, 66.9)	30.0 (23.1, 36.9)	10.5 (5.5, 15.4)	Reference	
	30 – 39	64.1 (56.5, 71.6)	30.6 (23.3, 38.0)	5.3 (1.9, 8.7)	0.78 (0.50, 1.21)	
	40 – 49	53.4 (44.9, 61.9)	37.0 (28.7, 45.3)	9.5 (4.3, 14.8)	1.22 (0.77, 1.92)	
	50 – 60	45.9 (37.1, 54.8)	37.4 (28.8, 46.0)	16.7 (10.0, 23.3)	1.77 (1.10, 2.86)	
Sex	Female	72.8 (67.9, 77.7)	21.5 (17.0, 26.0)	5.7 (3.1, 8.3)	Reference	
	Male	57.0 (52.2, 61.9)	33.8 (29.2, 38.4)	9.2 (6.4, 11.9)	1.99 (1.45, 2.73)	
Rank	NCM	57.3 (51.9, 62.6)	32.9 (27.7, 38.0)	9.9 (6.8, 13.0)	Reference	
	Officer	64.7 (59.3, 70.1)	30.2 (25.1, 35.4)	5.0 (2.5, 7.6)	0.70 (0.52, 0.96)	

^a Odds ratios computed using ordinal logistic regression. See the Methods section for more details.

8.3.6.5 Civilian Food Options

In the past month, 86.4% (95% CI: 84.4%, 88.2%) of all Regular Force personnel had eaten at their home, or the home of friends or family members, at least once a week. This percentage did not differ by age, sex, rank, service element, BMI category, or self-reported eating habits.

In the past month, 47.5% of all Regular Force personnel had eaten at restaurants at least once a week. Eating at restaurants on a weekly basis was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 40 – 60 years; (2) males compared to females; (3) officers compared to NCMs; and (4) personnel with fair, or poor eating habits compared to personnel with good, very good, or excellent eating-habits (Table 8-27). There were no differences by service element, or BMI category.



Table 8-27: Percentage of Regular Force personnel who ate at restaurants at least once a week in the past month

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		47.5	(44.8, 50.2)		
Age (years)	18 – 29	53.5	(48.1, 58.8)	Reference	
	30 – 39	48.7	(43.5, 54.0)	0.83	(0.61, 1.12)
	40 – 49	42.3	(37.5, 47.1)	0.64	(0.48, 0.85)
	50 – 60	40.4	(35.9, 44.9)	0.59	(0.44, 0.79)
Sex	Female	42.6	(39.2, 46.0)	Reference	
	Male	48.3	(45.1, 51.4)	1.26	(1.04, 1.52)
Rank	NCM	44.8	(41.3, 48.2)	Reference	
	Officer	55.7	(52.1, 59.3)	1.55	(1.27, 1.90)
Eating habits	Fair/Poor	69.4	(62.8, 76.1)	Reference	
	Good	50.1	(45.8, 54.4)	0.44	(0.31, 0.63)
	Very good / Excellent	35.5	(31.6, 39.5)	0.24	(0.17, 0.35)

8.4 Conclusion

Based on self-reported height and weight, 49.0% of personnel were classified as overweight, and another 25.0% were classified as obese. High muscle mass may account for a proportion of overweight BMIs, but is unlikely to account for many of those with obese BMIs. The percentage of obese Regular Force personnel increased from 2004. The percentage of obese personnel also increased from 2008/9 to 2013/14, but the difference, measured over a shorter time period, was not statistically significant.

More than half of all Regular Force personnel reported wanting to lose weight. Of these, only 57.5% had been actively trying to lose weight in the last month, but 93.0% were seriously considering trying to lose weight in the next six months. Weight loss campaigns targeting Regular Force personnel who are ready to start trying to lose weight could, therefore, have a positive impact on many individuals.

The majority (83.3%) of Regular Force personnel reported that their eating habits were good, very good, or excellent. However, only 28.7% of personnel ate vegetables and fruits more than six times per day – an indicator of healthy diets. Furthermore, 42.4% of Regular Force personnel had skipped breakfast at least twice in the last week, and 52.2% of personnel underestimated Canada’s Food Guide recommendations for vegetable and fruit intake. The discrepancy between self-rated eating habits and other indicators of diet quality suggests that there is a notable nutritional knowledge gap among Regular Force personnel.

In the past month, Regular Force personnel had eaten at civilian locations much more frequently than they had used CAF food services. Empowering personnel with the right tools to make healthy food choices at home and in restaurants could, therefore, have a greater impact on the diet of the Regular Force than alterations to the meal options offered through CAF food services.



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Chapter 9 – Substance Use and Gambling

9.1 Introduction

The use of substances such as tobacco, alcohol, and recreational drugs can have negative short-term and long-term effects on health, including physical and psychological addictions. Likewise, pathological gambling can affect health and well-being. Substance use and gambling are modifiable behaviours and even small changes to these negative behaviours can lead to large improvements in the health status of a population (Rose, 1992). Quantifying substance use and gambling among Regular Force personnel can inform the development of targeted health promotion programs and policies with large potential benefits for the Canadian Armed Forces (CAF).

The HLIS 2013/14 queried participants on their use of tobacco products, alcohol, and drug use for non-medical purposes. Participants were also asked to describe recent gambling activities.

9.2 Tobacco Use

Tobacco use is the single leading cause of preventable death, globally responsible for six million deaths per year (WHO, 2015). Smoking tobacco impacts every organ in the body and is associated with a variety of negative health consequences including premature death (Jha, 2009). Tobacco product use is associated with increased rates of cancer, heart disease, stroke, chronic respiratory disease, diabetes, and reduced reproductive ability (U.S. Department of Health and Human Services, 2014).

Smoking rates have decreased over the past three decades, although recent reports suggest that the smoking decline may be slowing (Reid, 2015). The results of the Canadian Tobacco, Alcohol and Drugs Survey (CTADS) showed that, in 2013, 14.6% of all Canadians aged 15 years and older were smokers (10.9% daily smokers and 3.8% occasional smokers). Furthermore, smoking prevalence was highest among adults aged 25 – 34 years and 20 – 24 years, at 18.5% and 17.9%, respectively (Reid, 2015).

9.2.1 Smoking in the Canadian Armed Forces

For this survey, having ever smoked was defined as having smoked at least 100 cigarettes (approximately 4 or 5 packs) in one's lifetime. Regular Force personnel who had never smoked 100 cigarettes were considered to be lifetime non-smokers. The majority of personnel were either lifetime non-smokers (59.6%), or former smokers (22.8%). At the time of the survey, 12.6% of personnel reported being daily smokers and 5.0% reported being occasional smokers (Figure 9-1). These percentages are similar to the ones reported in the 2013 CTADS (Reid, 2015).

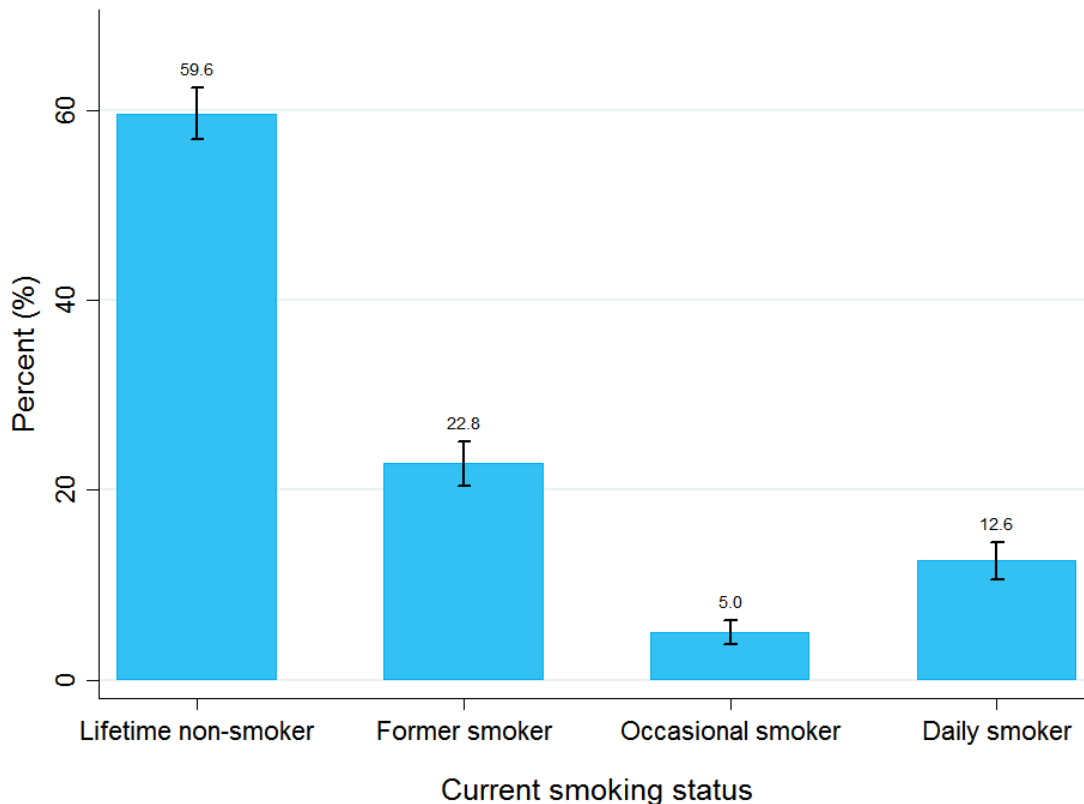


Figure 9-1: Smoking status of Regular Force personnel.

9.2.2 Lifetime (Ever) Smoking

Overall, 40.4% of Regular Force personnel reported being “ever smokers” at some point in their lifetime. The percentage of Regular Force personnel who reported being “ever smokers” was unchanged from 2008/9, but was lower than in 2004 (Table 9-1). However, as will be discussed in Section 9.2.9, some lifetime “ever smokers” quit before joining the CAF. Overall, 37.1% of all Regular Force personnel reported being “ever smokers” at some point since joining the CAF. This percentage was lower than in 2008/9, when 43.7% of all Regular Force personnel were found to have been smokers while in uniform (Table 9-2).

Table 9-1: Percentage of Regular Force Personnel who smoked at least 100 cigarettes in their lifetime

Year	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	52.1	(49.5, 54.6)	1.60	(1.38, 1.87)
2008/9	43.9	(40.2, 47.6)	1.16	(0.96, 1.39)
2013/14	40.4	(37.7, 43.1)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.



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Table 9-2: Percentage of Regular Force Personnel who smoked at least 100 cigarettes while serving in the Canadian Armed Forces

Year	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2008/9	43.7	(40.1, 47.3)	1.40	(1.16, 1.68)
2013/14	37.1	(34.5, 39.8)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

9.2.3 Current Smoking

At the time of the survey, 17.6% of the Regular Force reported being a current smoker, either daily or occasionally. The percentage of Regular Force personnel who reported being current smokers decreased from 2004 and 2008/9 (Table 9-3). The observed decrease in smoking prevalence could be explained by either: (1) fewer smokers being recruited into the Regular Force; and/or (2) more Regular Force smokers quitting while in uniform. Section 9.2.9 will attempt to disentangle the effects of these two factors on smoking prevalence.

Table 9-3: Percentage of Regular Force Personnel who were current smokers (daily or occasional), by survey year

Year	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	25.3	(23.1, 27.7)	1.59	(1.31, 1.93)
2008/9	23.0	(19.9, 26.5)	1.40	(1.11, 1.78)
2013/14	17.6	(15.5, 19.9)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

Current smokers were more likely to be: (1) personnel aged 18 – 29 years compared to personnel aged 50 – 60 years; (2) males compared to females; (3) NCMs compared to officers; and (4) personnel with no post-secondary education compared to personnel with a university degree (Table 9-4). There were no differences by service element.



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Table 9-4: Percentage of Regular Force Personnel who were current smokers (daily or occasional)

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		17.6	(15.4, 19.8)		
Age (years)	18 – 29	20.7	(16.3, 25.3)	Reference	
	30 – 39	15.5	(11.5, 19.5)	0.70	(0.46, 1.06)
	40 – 49	18.1	(14.2, 22.0)	0.84	(0.58, 1.23)
	50 – 60	14.3	(11.1, 17.5)	0.64	(0.44, 0.93)
Sex	Female	12.0	(9.7, 14.4)	Reference	
	Male	18.4	(15.9, 20.9)	1.65	(1.25, 2.17)
Rank	NCM	20.8	(18.0, 23.7)	Reference	
	Officer	7.9	(5.9, 9.8)	0.32	(0.24, 0.45)
Highest education level	Secondary	23.6	(19.2, 28.0)	Reference	
	Some post-secondary	19.1	(15.3, 22.9)	0.76	(0.54, 1.08)
	Completed university	7.6	(5.6, 9.6)	0.26	(0.18, 0.39)

It should be noted that, even though smoking has decreased from 2008/9, smoking prevalence remained highest among the youngest personnel (i.e., those aged 18 – 29 years). This finding highlights the need for the development and implementation of evidence-based strategies to address smoking initiation and continuation among young CAF personnel.

9.2.4 Alternative Tobacco Products

In the last month, 17.3% of Regular Force personnel had reportedly used alternative tobacco products. The most commonly used alternative tobacco products were: (1) cigars; (2) cigarillos; and (3) pipes (Figure 9-2). Cigar and cigarillo use appeared to be higher in the Regular Force than in the Canadian population; in 2013, 3.3% of Canadians reported using cigars or cigarillos in the past 30 days (Reid, 2015).



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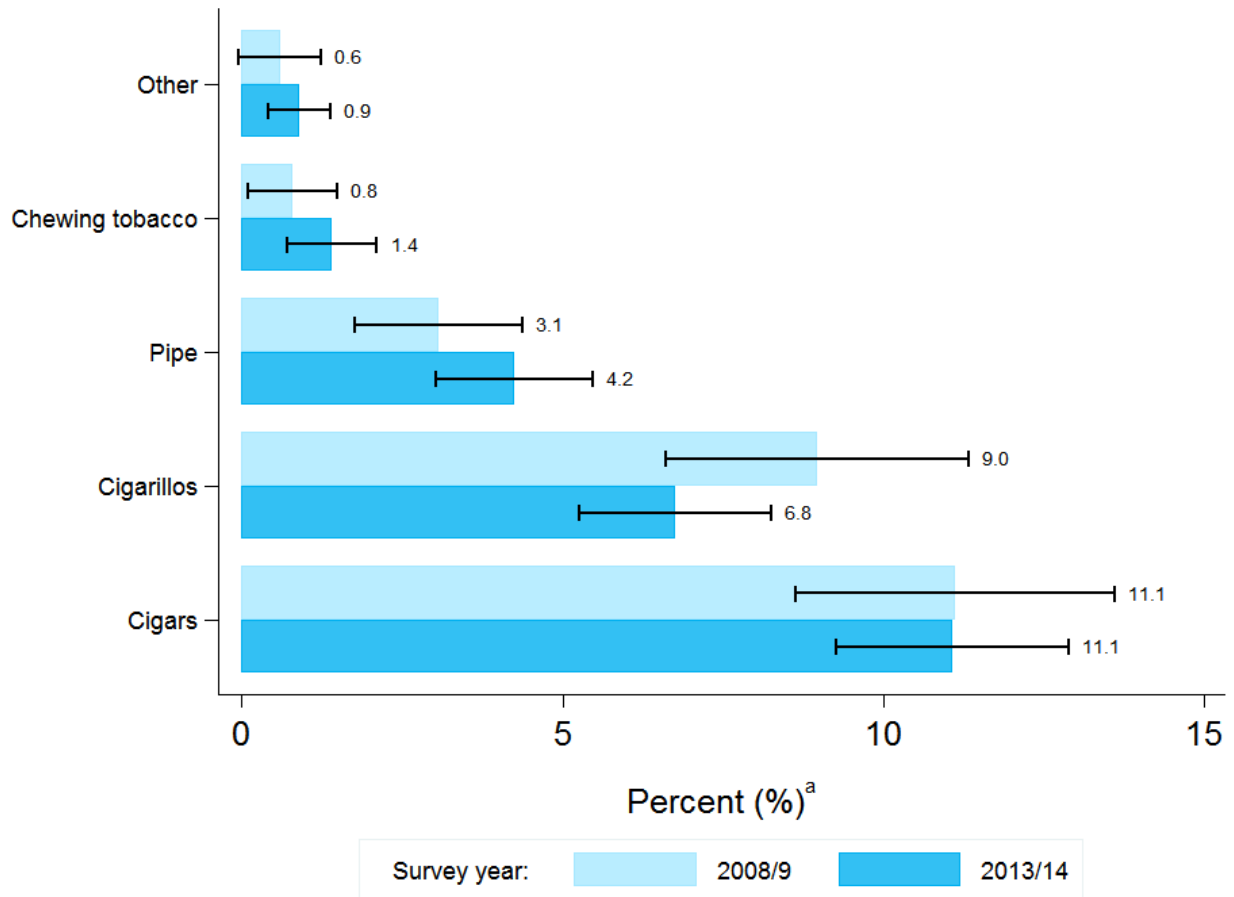


Figure 9-2: Percentage of Regular Force personnel who reported using alternative tobacco products in the past month, by survey year.

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

The percentage of Regular Force personnel who reported using alternative tobacco products in the last month was unchanged from 2008/9. Use of alternative tobacco products was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; (2) males compared to females; (3) NCMs compared to officers; and (4) current smokers compared to current non-smokers (Table 9-5). There were no differences by service element. In the Canadian population, alternative tobacco products were also more likely to be used by males (Reid, 2015).



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Table 9-5: Percentage of Regular Force personnel who used alternative tobacco products in the past month

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		17.3	(15.1, 19.5)		
Age (years)	18 – 29	25.3	(20.5, 30.0)	Reference	
	30 – 39	15.7	(11.6, 19.9)	0.55	(0.37, 0.83)
	40 – 49	14.3	(10.6, 17.9)	0.49	(0.33, 0.73)
	50 – 60	8.2	(5.6, 10.9)	0.26	(0.17, 0.41)
Sex	Female	4.3	(3.0, 5.5)	Reference	
	Male	19.3	(16.8, 21.9)	5.36	(3.79, 7.60)
Rank	NCM	18.7	(15.8, 21.5)	Reference	
	Officer	13.3	(10.9, 15.7)	0.67	(0.50, 0.89)
Current smoker	No	11.7	(9.6, 13.8)	Reference	
	Yes	43.4	(36.2, 50.6)	5.79	(4.05, 8.26)

Of note, less than half of alternative tobacco product users were current cigarette smokers. Overall, 28.0% (95% CI: 25.5%, 30.6%) of all Regular Force personnel were either: (1) current smokers; and/or (2) users of alternative tobacco products.

9.2.5 Tobacco Purchase on Department of National Defence Property

In the past year, 57.8% of current smokers purchased tobacco products on their base, wing, unit, or formation. Smokers aged 18 – 29 years were more likely to purchase tobacco on their base, wing, unit, or formation compared to smokers aged 50 – 60 years (Table 9-6). There were no differences by sex, rank, or service element.

Table 9-6: Percentage of current smokers who purchased tobacco products on their base, wing, unit, or formation in the past year

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		57.8	(50.8, 64.4)		
Age (years)	18 – 29	64.8	(52.4, 75.4)	Reference	
	30 – 39	62.4	(48.1, 74.9)	0.90	(0.42, 1.96)
	40 – 49	50.2	(38.2, 62.3)	0.55	(0.27, 1.12)
	50 – 60	37.0	(26.1, 49.5)	0.32	(0.16, 0.66)



9.2.6 Age of Smoking Initiation

On average, current smokers reported starting to smoke at 16.2 years of age. The average age of smoking initiation among current smokers had not changed from 2004 or 2008/9. The average age of smoking initiation was higher in: (1) current officer smokers compared to current NCM smokers; and (2) current smokers who completed a university degree compared to current smokers with lower levels of formal education (Table 9-7). Of note, 71.6% (95% CI: 64.9%, 77.5%) of current smokers had started smoking before the age of 18 years.

Table 9-7: Age (in years) at which current smokers first started smoking

Variable	Category	Mean	(95% CI)
Overall		16.2	(15.7, 16.7)
Rank	NCM	15.9	(15.4, 16.5) ^a
	Officer	18.4	(16.9, 19.8) ^b
Highest education level	Secondary	15.8	(15.1, 16.5) ^a
	Some post-secondary	15.9	(15.1, 16.7)
	Completed university	18.4	(16.7, 20.1) ^b

^a Reference category.

^b Significantly different from the reference category at the 99% confidence level ($p < 0.01$).

9.2.7 Circumstance of Smoking Initiation and Continuation

The majority (81.5% [95% CI: 75.5%, 86.3%]) of Regular Force personnel who currently smoke first started smoking before joining the CAF. This finding was not surprising given that most current smokers started smoking before age 18.

Nearly one-fifth (18.5%) of current smokers first started smoking after joining the CAF. The percentage of current smokers who reported starting smoking after joining the CAF had not changed from 2004 and 2008/9. Smoking initiation after joining the CAF was more likely in current officer smokers compared to current NCM smokers (Table 9-8). There were no differences by age, sex, or service element.

Table 9-8: Percentage of current smokers who started smoking after joining the Canadian Armed Forces

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		18.5	(13.7, 24.5)		
Rank	NCM	17.1	(12.0, 23.8)	Reference	
	Officer	29.5	(19.2, 42.3)	2.03	(1.01, 4.09)

Among current smokers who first started smoking after joining the CAF, 57.1% started smoking during basic training, 24.3% started during occupational training, 8.5% started during deployment, and an additional 10.1%



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started at other times, such as field exercises, postings, and regular work (Figure 9-3). Efforts to prevent smoking initiation during basic training could, therefore, help further reduce smoking prevalence in the Regular Force.

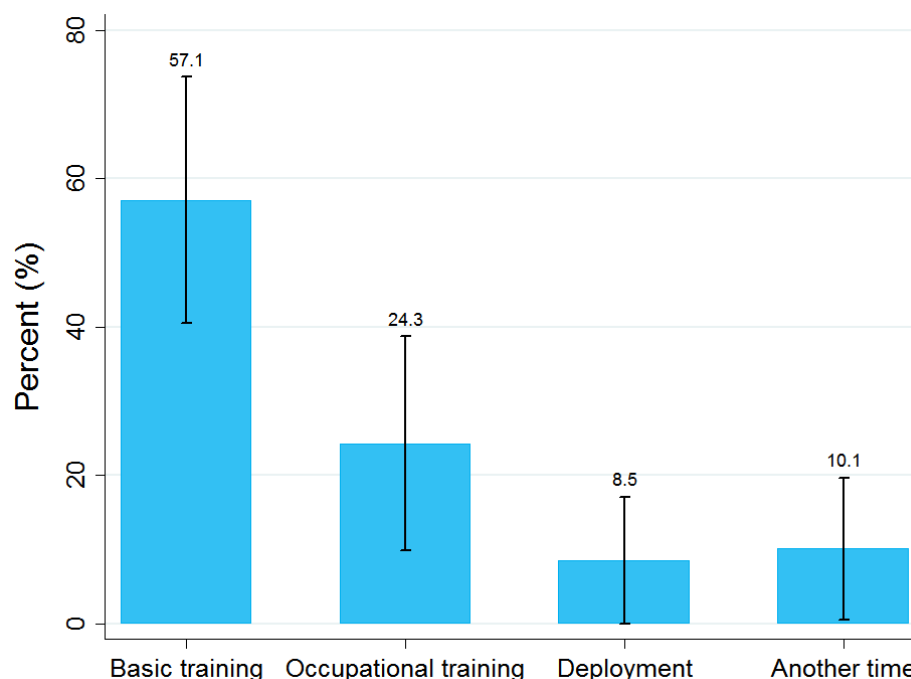


Figure 9-3: Percentage of current smokers in the Regular Force who started smoking during specific military activities after joining the Canadian Armed Forces.

Since they joined the CAF, 79.7% of all current smokers had either: (1) re-started smoking after quitting; or (2) increased the amount they smoked. This percentage was unchanged from 2008/9. Among current smokers, officers were more likely to report having re-started smoking after quitting or having increased the amount they smoked since joining the CAF compared to NCMs (Table 9-9). There were no differences by age, sex, or service element. The most frequently reported events during which unhealthy changes in smoking behaviour occurred since joining the CAF were: (1) deployments; (2) occupational training; and (3) basic training (Figure 9-4). Of note, the HLIS did not differentiate between short and long-term changes in smoking behaviour; of the 41.4% of current smokers who reportedly increased the amount they smoked while on deployment, some may have later decreased the amount they smoked after returning home.

Table 9-9: Percentage of current smokers who (1) re-started smoking after quitting, and/or (2) increased the amount they smoked since joining the Canadian Armed Forces

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		79.7	(75.4, 84.0)		
Rank	NCM	78.3	(73.4, 83.3)	Reference	
	Officer	87.7	(81.7, 93.7)	1.97	(1.06, 3.70)



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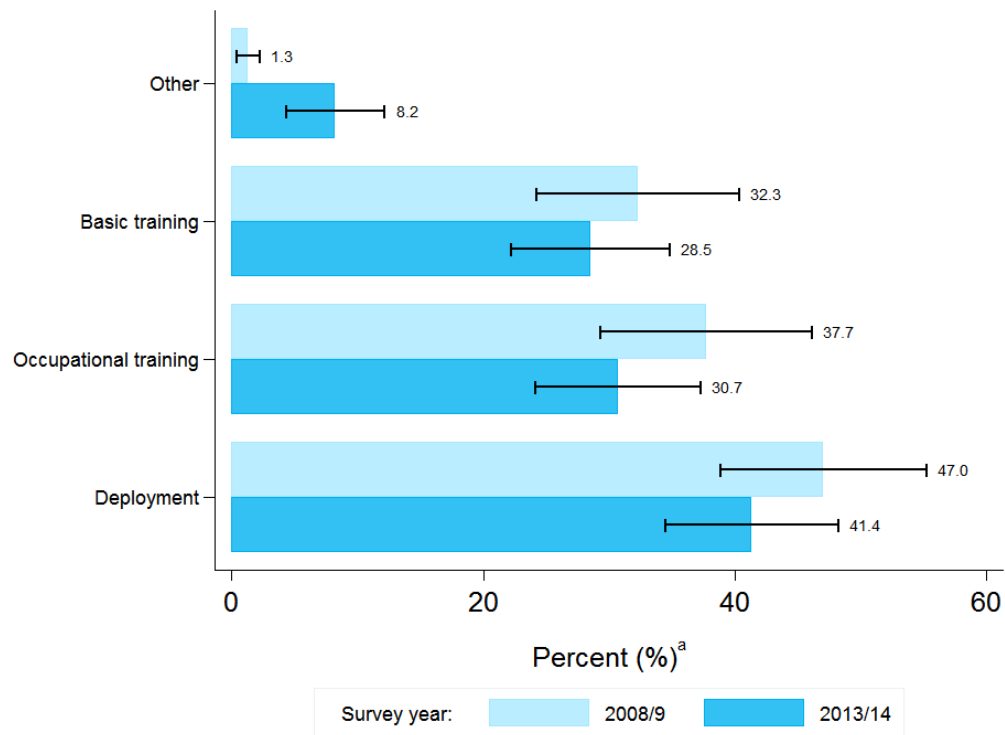


Figure 9-4: Percentage of Regular Force personnel who reported restarting or increasing smoking during specific military activities, by survey year^b.

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

^b Personnel could select more than one option. Percents may sum to more than 100%.

9.2.8 Smoking Exposure

Second-hand smoke (SHS) is smoke from burning tobacco products, such as cigarettes or pipes, as well as smoke that has been exhaled by a person who is smoking. SHS, or environmental tobacco smoke, is known to be carcinogenic, and exposure to SHS is associated with lung cancer, lower respiratory tract infections, asthma, and cardiovascular disease (Callinan, 2010). In the past month, 59.1% of all Canadians 15 years and older reported being exposed to SHS at least once, and 12.9% had been exposed to SHS every day or almost every day (Reid, 2015).

Overall, 57.3% (95% CI: 54.6%, 60.0%) of Regular Force personnel reported being exposed to SHS at least once a month, and 19.9% reported being exposed to SHS every day or almost every day. Frequent exposure to SHS was more likely in: (1) NCMs compared to officers; and (2) current smokers compared to non-smokers (Table 9-10). There were no differences by age, sex, or service element. The most frequently reported places of weekly exposure to SHS among Regular Force personnel were: (1) public areas; (2) outside military buildings; and (3) outside civilian buildings (Figure 9-5). Personnel appear to be exposed more often in situations where there is little control to avoid smoke. Through public policy, smoke exposure can be reduced by introducing bans, and restrictions to limit the areas where smoking is tolerated. Preventing exposure to SHS can reduce the associated negative health consequences; it is estimated that for every eight smokers who die from tobacco use one non-smoker will die from the effects of passive smoking (Callinan, 2010).



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Table 9-10: Percentage of Regular Force personnel who reported being exposed to second-hand smoke every day or nearly every day (excluding their own smoking)

Variable	Category	Percent (95% CI)	Odds Ratio (95% CI)
Overall		19.9 (17.8, 22.2)	
Rank	NCM	22.4 (19.6, 25.3)	Reference
	Officer	12.5 (10.3, 15.0)	0.50 (0.38, 0.65)
Current smoker	No	15.3 (13.3, 17.6)	Reference
	Yes	40.1 (33.5, 47.0)	3.69 (2.65, 5.14)

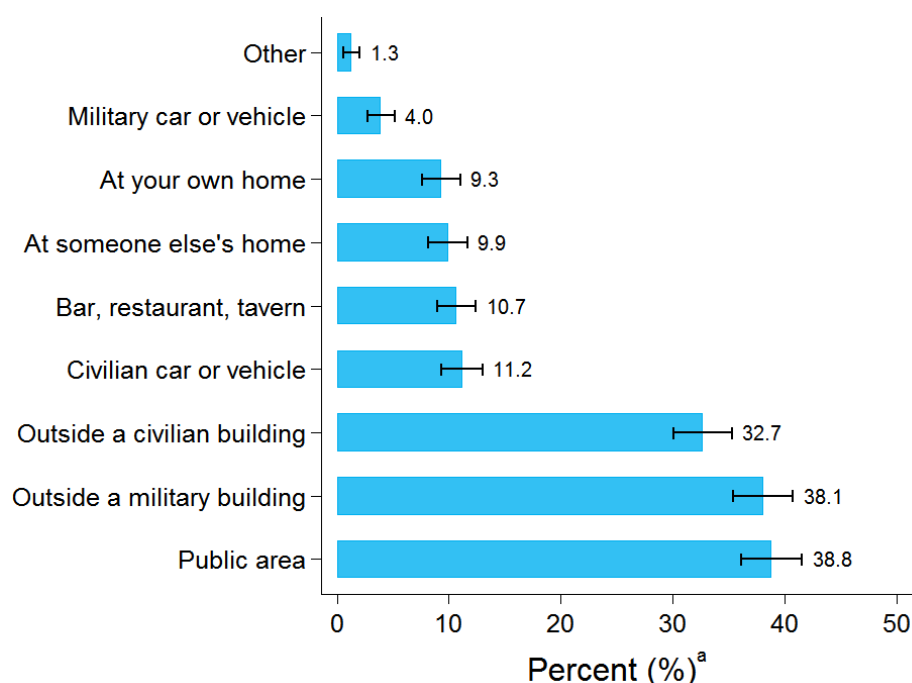


Figure 9-5: Percentage of Regular Force personnel who were exposed to second-hand smoke at least once per month, by location^b.
^{a,b} Personnel could select more than one option. Percents may sum to more than 100%.

9.2.9 Smoking Cessation

9.2.9.1 Former Smokers

Of the 40.4% of Regular Force personnel who reported ever having been smokers, 8.7% (95% CI: 6.6%, 11.4%) had quit smoking before joining the CAF and had not smoked since. The other 91.3% (95% CI: 88.6%, 93.4%) of lifetime smokers had, therefore, been smokers while serving in the CAF.



9.2.9.2 Quitting Smoking While Serving in the Canadian Armed Forces

Regardless of their current smoking status, 37.1% (95% CI: 34.5%, 39.8%) of all Regular Force personnel reported having been smokers at some point while serving in the CAF. Of these, 52.2% (95% CI: 47.5%, 56.8%) were no longer smokers at the time of the HLIS 2013/14. In other words, more than half of personnel who had ever smoked while serving in the CAF had successfully quit smoking while still in uniform. This percentage was unchanged from 2008/9. Therefore, the percentage of military smokers who quit while in uniform remained stable from 2008/9 to 2013/14.

Given that military smokers were not quitting at a higher percentage in 2013/14 than in 2008/9, the observed decrease in smoking prevalence reported in Section 9.2.3 was most likely attributable to a decrease in smoking among CAF recruits. This conclusion is consistent with the findings reported in Section 9.2.2 (where lifetime smoking prevalence was also found to have decreased from 2008/9 to 2013/14), and with preliminary results from the Recruit Health Questionnaire – a health questionnaire completed by CAF recruits and officer cadets – that have shown a steady decrease in the proportion of newly recruited personnel who self-identified as smokers over recent years.

9.2.9.3 Recent Quit Attempts

Only 12.3% (95% CI: 8.2%, 18.1%) of current smokers reported never having quit for at least one 24-hour period. On the other hand, 50.8% of current smokers reported having quit for at least one 24-hour period within the last year. In other words, there are roughly 4,900 Regular Force personnel who are still smokers today, but who quit for at least one 24-hour period within the last 12 months. Recent quit attempts were more likely in current smokers aged 18 – 29 years compared to current smokers aged 50 – 60 years (Table 9-11). There were no differences by sex, rank, or service element.

Table 9-11: Percentage of current smokers who quit smoking for at least one 24-hour period within the last year

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		50.8	(43.8, 57.7)		
Age (years)	18 – 29	59.3	(46.7, 70.7)	Reference	
	30 – 39	50.8	(36.8, 64.6)	0.71	(0.33, 1.52)
	40 – 49	45.4	(33.6, 57.8)	0.57	(0.28, 1.16)
	50 – 60	33.5	(23.1, 45.8)	0.35	(0.17, 0.71)

Among current smokers who quit smoking for at least one 24-hour period in the past year, the median number of quit attempts was 4. Approximately 9% of current smokers who recently attempted to quit smoking reported quitting for more than 20 different 24-hour periods within the past year. When these individuals were excluded from analysis, the mean number of quit attempts was 5.2 (95% CI: 4.1, 6.4) different 24-hour periods within the past year.



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9.2.9.4 Smoking Cessation Aids

In the last 12 months, 30.0% (95% CI: 23.9%, 36.9%) of all current smokers had reportedly used at least one form of nicotine replacement therapy and/or smoking cessation aid. Recent use of nicotine replacement therapies and/or smoking cessation aids among current smokers had not changed from 2004 and 2008/9. There were no differences by age, sex, rank, or service element.

In 2013/14, the most commonly used nicotine replacement therapies and/or smoking cessation aids were: (1) nicotine patch; (2) nicotine gum; and (3) Champix® (i.e., varenicline) (Figure 9-6).

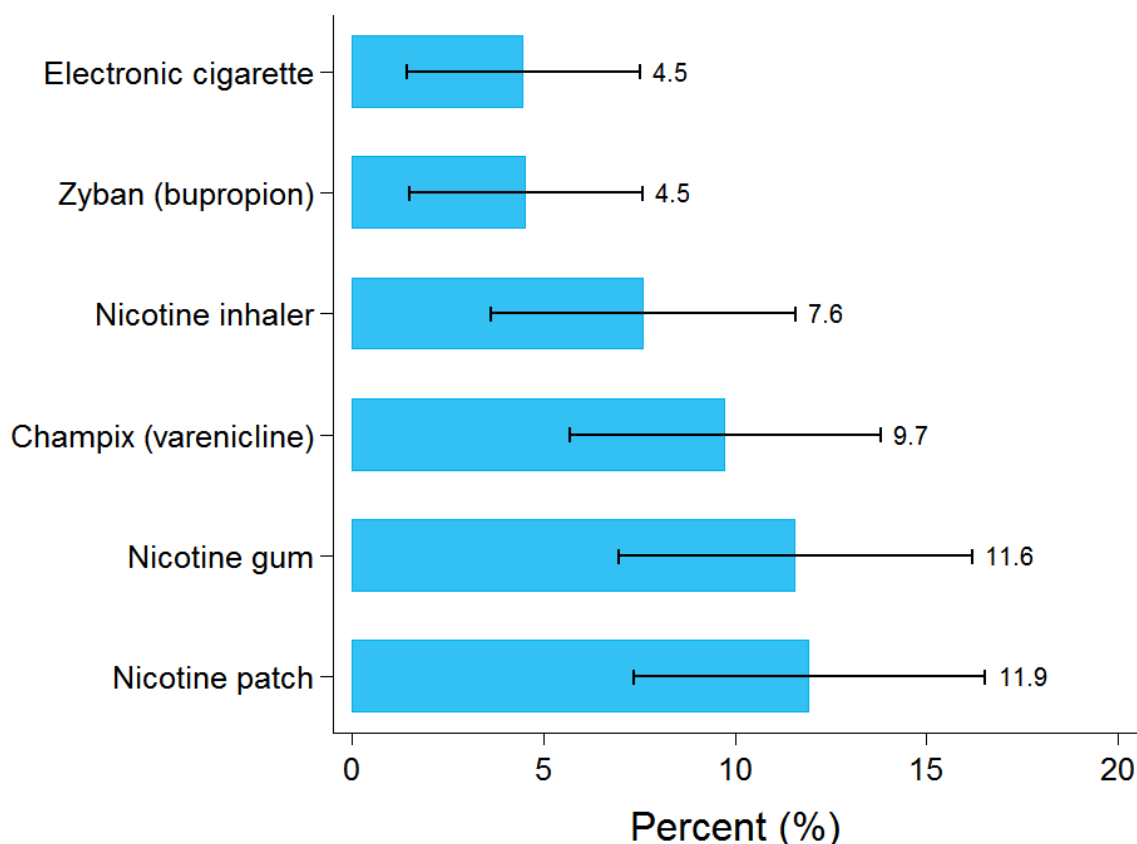


Figure 9-6: Percentage of current smokers who reportedly used various types of nicotine replacement therapies and/or smoking cessation aids in the past 12 months.

Of all Regular Force personnel who reported having quit smoking for at least one 24-hour period in the last year, 48.5% reported having done so without the use of any nicotine replacement therapy or smoking cessation aid (i.e., they quit “cold turkey”). Temporarily quitting without the use of smoking cessation aids was more likely in: (1) current smokers aged 18 – 29 years compared to current smokers aged 30 – 49 years; and (2) current officer smokers compared to current NCM smokers (Table 9-12). There were no differences by sex, or service element. The use of smoking cessation aids among Regular Force personnel is nearly identical to that in the Canadian population; in 2012, 46% of Canadians who had ever attempted to quit smoking reported having done so without any form of cessation assistance (Reid, 2014).



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Table 9-12: Percentage of current smokers^a who quit smoking for at least one 24-hour period without the use of any nicotine replacement therapies or smoking cessation aids in the last year

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		48.5	(40.3, 56.8)		
Age (years)	18 – 29	63.3	(49.4, 77.1)	Reference	
	30 – 39	38.9	(23.6, 54.2)	0.37	(0.15, 0.89)
	40 – 49	40.5	(24.7, 56.3)	0.40	(0.16, 0.96)
	50 – 60	45.5	(28.8, 62.2)	0.48	(0.20, 1.19)
Rank	NCM	45.6	(36.4, 54.7)	Reference	
	Officer	70.8	(57.6, 84.0)	2.89	(1.38, 6.05)

^a Only includes current smokers who quit smoking for at least one 24-hour period within the past year.

9.2.10 Prevention of Smoking Initiation

It is concerning that nearly one-fifth of all current smokers initiated smoking after joining the CAF; there were approximately 9,750 smokers in the Regular Force, 1,800 of whom had never smoked prior to joining the CAF. If smoking initiation in the CAF could somehow be eliminated, estimates presented in previous sections suggest that there would be at least 1,800 fewer current smokers in the Regular Force.

Previous research has shown that nearly half of persistent cigarette smokers will die prematurely due to their nicotine addiction, if they are unable to quit (Doll, 2004). Quitting before age 30 removes nearly all of the excess mortality risk associated with smoking (Doll, 2004). Extrapolating these numbers to the Regular Force population, we estimate that nearly 5,000 current Regular Force personnel will die prematurely due to nicotine addiction-related tobacco smoking, and that approximately 900 of these early deaths will be in individuals who had never smoked prior to joining the CAF. Therefore, an estimated 900 premature deaths could be avoided by eliminating smoking initiation in the CAF.

As highlighted in Section 9.2.7, basic training is a particularly high-risk period for smoking initiation. Approximately 950 current Regular Force smokers reportedly started smoking during basic training. Based on estimates presented above, eliminating smoking initiation during basic training would: (1) lower the number of current smokers by approximately 950 or 10%; (2) lower the current smoking prevalence by approximately 2%; and (3) prevent nearly 500 premature deaths due to nicotine addictions.

9.3 Alcohol Use

Alcohol use impacts almost every organ in the body; overuse can lead to chronic diseases as well as acute health effects, such as injuries caused by accidents (WHO, 2004). Alcohol use has been associated with liver damage, heart disease, disorders of the pancreas, and certain types of cancer. Episodes of heavy drinking (i.e., binge drinking) also increase the risks of various health problems such as alcohol poisoning, alcohol disorders, or injuries, and can have an adverse effect on social well-being (Bondy, 1999). Alcohol should be used in moderation as there is strong evidence of increasing risk of adverse health and injury consequences with increasing alcohol consumption (Rehm, 1992).



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9.3.1 Alcohol Use in the Canadian Armed Forces

In the past 12 months, 94.2% of Regular Force personnel reported consuming alcohol. This percentage was unchanged from 2004 and 2008/9. In comparison, the Canadian Tobacco, Alcohol and Drug Survey found that, in 2013, 76% of Canadians 15 years and older consumed alcohol in the past year (Statistics Canada, 2015); although these surveys are not directly comparable due to differences in age-ranges and survey modes, a substantial difference in alcohol consumption between the two populations is apparent.

9.3.2 Low Risk Drinking Guidelines

Canada’s Low Risk Alcohol Drinking Guidelines (LRDG) were developed in 2011 by a team of independent Canadian and international experts, on behalf of the National Alcohol Strategy Advisory Committee. These guidelines are informed by the most recent and best available scientific research and evidence, and are intended to provide consistent information across the country to help Canadians moderate their alcohol consumption and reduce immediate and long-term harm related to their alcohol use (Butt, 2011). The LRDG are summarized in Table 9-13.

Table 9-13: Canadian Guidelines for Low Risk Drinking

Type of Health Risk	Recommended Alcohol Consumption to Avoid Health Risks ^a	
	For Females	For Males
Long-term (i.e., chronic)	No more than 10 drinks ^b per week, not exceeding 2 drinks most days ^c	No more than 15 drinks per week, not exceeding 3 drinks most days
Short-term (i.e., acute)	No more than 3 drinks in one day	No more than 4 drinks in one day

^a Butt et al., 2011.

^b A standard drink is defined as 13.45 grams of alcohol, which is equivalent to one beer (12 oz); one glass of wine (5 oz); or one glass of spirit (1.5 oz).

^c For the purposes of this report, “most days” was interpreted as four or more days of the week.

Chronic risks from drinking are associated with the volume of alcohol consumed over a long period of time and resulting effects on the central nervous and digestive systems. Short-term risks from drinking are associated with the amount of alcohol consumed on one occasion and the related degree of impairment. To reduce alcohol-associated health risks, individuals should adhere to the LRDG (Table 9-13).

9.3.2.1 Low Risk Drinking Guidelines for Chronic Effects

In the previous week, 11.7% of male personnel had consumed more than 15 drinks and/or had consumed more than three drinks on at least four different days, and 8.3% of female personnel had consumed more than 10 drinks and/or consumed more than three drinks on at least four different days. In other words, 11.2% of all Regular Force personnel had exceeded the LRDG to avoid the chronic effects of alcohol use. This proportion was unchanged from 2004 and 2008/9. Exceeding the maximum number of drinks recommended to avoid chronic effects of alcohol use was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 40 – 60 years; (2) males compared to females; and (3) NCMs compared to officers (Table 9-14). There were no differences by service element, and positive screens for depression¹⁶, PTSD¹⁷, and recent suicide ideation.

¹⁶ Major depressive disorder screened for using the PHQ-2 measurement tool. See Chapter 2 for more details.

¹⁷ PTSD screened for using the PC-PTSD measurement tool. See Chapter 2 for more details.



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Table 9-14: Percentage of Regular Force personnel who exceeded the Low Risk Drinking Guidelines to avoid chronic effects of alcohol use during the past week

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		11.2	(9.4, 13.0)		
Age (years)	18 – 29	15.9	(12.0, 19.8)	Reference	
	30 – 39	11.6	(8.1, 15.2)	0.70	(0.44, 1.09)
	40 – 49	7.6	(5.0, 10.3)	0.44	(0.27, 0.70)
	50 – 60	6.3	(4.1, 8.4)	0.35	(0.22, 0.57)
Sex	Female	8.3	(6.4, 10.2)	Reference	
	Male	11.7	(9.6, 13.7)	1.46	(1.06, 2.01)
Rank	NCM	12.1	(9.8, 14.4)	Reference	
	Officer	8.6	(6.7, 10.6)	0.69	(0.49, 0.95)

Previous research suggests a link between alcohol misuse and mental disorders (Debell, 2014; Boden, 2011). The absence of a relationship between chronic alcohol abuse and positive screens for depression, PTSD, and recent suicide ideation could be due to the cross-sectional nature of the HLIS, and the different recall periods used throughout the questionnaire. Participants were asked to report alcohol consumption over the previous week. However, symptoms of mental health disorders were ascertained over the previous 12 months. Therefore, alcohol consumption measures do not necessarily reflect drinking behaviours during acute episodes of mental disorders, among Regular Force personnel who screened positive for depression, PTSD, or recent suicide ideation. Personnel who were suffering from symptoms of these disorders nearly one year ago may have since decreased their alcohol intake.

9.3.2.2 Low Risk Drinking Guidelines for Acute Effects

In the past week, 24.4% of male personnel had consumed more than four drinks in one day, and 18.0% of female personnel had consumed more than three drinks in one day. In other words, 23.5% of all Regular Force personnel had exceeded the maximum number of drinks recommended by the current LRDG at least once in the past week, rendering them susceptible to the acute effects of alcohol use. This percentage was unchanged from 2008/9, but was lower than in 2004 (Table 9-15). It should be noted that the current LRDG were published in 2011, and was used to compute all estimates presented in Table 9-15. However, more restrictive guidelines were in place prior to 2011 (i.e., no more than two drinks per day, for males and females) (Bondy, 1999).

Table 9-15: Percentage of Regular Force personnel who consumed more than the maximum number of drinks recommended by the Low Risk Drinking Guidelines to avoid acute effects of alcohol use during the past week, by survey year

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	28.3	(25.8, 30.8)	1.28	(1.07, 1.53)
2008/9	26.8	(23.4, 30.3)	1.19	(0.96, 1.48)
2013/14	23.5	(21.2, 25.9)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.



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In 2013, 14.6% of males and 8.0% of females from the general Canadian population were found to exceed the maximum number of drinks recommended to avoid the acute effects of alcohol use (Statistics Canada, 2015). Although the target population (aged 15+) and the survey mode (computer assisted telephone interview) for this Canadian survey was different from the HLIS, a substantial difference is noted between these two populations, with a much larger percentage of Regular Force personnel exceeding the LRDG for acute effects.

Exceeding the maximum number of drinks recommended in the LRDG to avoid acute effects of alcohol use at least once in the past week was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; (2) males compared to females; and (3) NCMs compared to officers (Table 9-16). There were no differences by service element, and positive screens for depression, PTSD, and recent suicide ideation. As discussed in Section 9.3.2.1, the lack of association between alcohol misuse and symptoms of mental health disorders may be explained by differences in recall periods.

Table 9-16: Percentage of Regular Force personnel who consumed more than the maximum number of drinks recommended by the Low Risk Drinking Guidelines to avoid acute effects of alcohol use during the past week

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		23.5	(21.2, 25.9)		
Age (years)	18 – 29	33.8	(28.7, 38.8)	Reference	
	30 – 39	22.2	(17.7, 26.6)	0.56	(0.40, 0.79)
	40 – 49	19.5	(15.5, 23.4)	0.47	(0.34, 0.66)
	50 – 60	10.4	(7.6, 13.2)	0.23	(0.16, 0.33)
Sex	Female	18.0	(15.4, 20.6)	Reference	
	Male	24.4	(21.7, 27.1)	1.47	(1.17, 1.85)
Rank	NCM	25.1	(22.1, 28.2)	Reference	
	Officer	18.7	(16.0, 21.4)	0.68	(0.54, 0.87)

9.3.2.3 Awareness of the Low Risk Drinking Guidelines

Just over one-third (34.2%) of Regular Force personnel were aware of the Canadian LRDG. This percentage increased from 2008/9 (Table 9-17). Awareness of the LRDG was higher in: (1) females compared to males; and (2) Land personnel compared to Air personnel (Table 9-18). However, awareness of the LRDG was not associated with safer alcohol use; 23.0% (95% CI: 19.4%, 27.2%) of personnel who were aware of the LRDG had exceeded the maximum number of drinks recommended to avoid acute effects of alcohol use at least once in the past week compared to 23.9% (95% CI: 21.0%, 27.1%) of personnel who were not aware of the LRDG.



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Table 9-17: Percentage of Regular Force personnel who reported being aware of the Low Risk Drinking Guidelines, by survey year

HLIS	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2008/9	28.7	(25.4, 32.0)	0.77	(0.64, 0.94)
2013/14	34.2	(31.6, 36.7)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

Table 9-18: Percentage of Regular Force personnel who reported being aware of the Low Risk Drinking Guidelines

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		34.2	(31.6, 36.7)		
Sex	Female	47.4	(43.9, 50.9)	Reference	
	Male	32.1	(29.3, 35.0)	0.53	(0.43, 0.64)
Service element	Air	31.7	(27.5, 35.8)	Reference	
	Sea	29.4	(23.8, 35.0)	0.90	(0.64, 1.25)
	Land	37.7	(33.8, 41.5)	1.30	(1.01, 1.68)

Survey respondents were also asked to report the maximum number of drinks they thought they should have per day. Regardless of whether they had heard of the LRDG or not, 91.1% (95% CI: 89.0%, 92.8%) of males reported that they should not drink more than four drinks per day, and 94.5% (95% CI: 92.7%, 95.9%) of females reported that they should not drink more than three drinks per day. The vast majority of Regular Force personnel were, therefore, aware of what represented safe levels of alcohol consumption. However, 22.0% (95% CI: 19.6%, 24.5%) of personnel who had correctly identified the maximum number of drinks they should have per day had exceeded the LRDG for acute effects at least once in the past week. Furthermore, 44.0% (95% CI: 41.3%, 46.8%) of personnel had more drinks than the daily maximum they believed they should adhere to, at least once in the past week. These findings highlight the fact that awareness alone does not necessarily lead to behaviour change. Regular Force personnel are not modifying their behavior despite their knowledge of the negative health effects of alcohol misuse.

9.3.3 Hazardous and Harmful Drinking

9.3.3.1 Alcohol Use Disorders Identification Test

Alcohol consumption in the week preceding survey completion – as presented in Section 9.3.2 – is a useful indicator of “binge drinking” tendencies, but does not necessarily reflect chronic health effects of hazardous drinking behaviour. For this reason, the HLIS also included the Alcohol Use Disorders Identification Test (AUDIT). The AUDIT was developed by the World Health Organization, and measures the frequency of 10 indicators of harmful drinking behaviour, such as how often in the past 12 months did one feel guilty or remorseful after drinking. Using sex-specific cut-off scores, the AUDIT identifies individuals with hazardous and harmful drinking behaviour (Babor, 2001). Flagging positive on the AUDIT measurement tool is, therefore, indicative of chronic alcohol abuse.



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One-fifth (19.9%) of Regular Force personnel exceeded the AUDIT sex specific cut-off score, indicating harmful drinking. This percentage was higher than in 2004, but unchanged from 2008/9 (Table 9-19).

Table 9-19: Percentage of Regular Force personnel who exceeded the sex-specific Alcohol Use Disorders Identification Test score, by survey year

Year	Percent	(95% CI) ^a	Odds Ratio	(95% CI)
2004	15.7	(13.7, 17.9)	0.75	(0.60, 0.93)
2008/9	17.3	(14.5, 20.4)	0.84	(0.65, 1.08)
2013/14	19.9	(17.7, 22.4)	Reference	

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

Hazardous and harmful drinking behaviour (as identified by the AUDIT) was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; (2) males compared to females; (3) NCMs compared to officers; (4) Sea personnel compared to Air personnel; (5) single personnel compared to married or common-law personnel; and (6) personnel with no post-secondary education compared to personnel who completed university (Table 9-20). There were no differences by positive screens for depression, PTSD, or recent suicide ideation. As discussed in Section 9.3.2.1, the lack of association between alcohol misuse and symptoms of mental health disorders may be explained by differences in recall periods.



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Table 9-20: Percentage of Regular Force personnel who exceeded the sex-specific Alcohol Use Disorders Identification Test score

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		19.9	(17.6, 22.2)		
Age (years)	18 – 29	31.0	(25.8, 36.1)	Reference	
	30 – 39	19.8	(15.3, 24.3)	0.55	(0.38, 0.80)
	40 – 49	13.6	(10.1, 17.2)	0.35	(0.24, 0.52)
	50 – 60	6.5	(4.1, 8.9)	0.15	(0.10, 0.24)
Sex	Female	12.3	(10.1, 14.6)	Reference	
	Male	21.1	(18.4, 23.8)	1.90	(1.46, 2.47)
Rank	NCM	21.2	(18.1, 24.2)	Reference	
	Officer	16.3	(13.7, 18.9)	0.73	(0.56, 0.95)
Service element	Air	16.2	(12.4, 20.1)	Reference	
	Sea	23.6	(17.7, 29.5)	1.59	(1.03, 2.45)
	Land	20.8	(17.4, 24.3)	1.36	(0.95, 1.93)
Marital status	Married or common-law	17.8	(15.0, 20.5)	Reference	
	Widowed, separated, or divorced	17.3	(10.4, 24.2)	0.97	(0.58, 1.63)
	Single	27.9	(22.3, 33.5)	1.79	(1.28, 2.51)
Highest education level	Secondary	22.0	(17.4, 26.7)	Reference	
	Some post-secondary	20.3	(16.2, 24.3)	0.90	(0.62, 1.31)
	Completed university	16.3	(13.5, 19.0)	0.69	(0.49, 0.96)

9.3.3.2 Frequency of Binge Drinking

Binge drinking is defined as consuming six or more drinks on one occasion. Over one-third of all Regular Force personnel reported never binge drinking, 11.8% reported binge drinking on a monthly basis, and another 9.2% reported binge drinking at least once a week. These percentages were unchanged from 2004 and 2008/9. Binge drinking was more likely to occur more frequently in: (1) personnel aged 18 – 29 compared to personnel aged 30 and above; (2) males compared to females; (3) NCMs compared to officers; (4) personnel of the Sea or Land element compared to personnel of the Air element; (5) single personnel compared to personnel in married or common law relationships; and (6) personnel with no post-secondary education compared to personnel with a university degree (Table 9-21). There were no differences by positive screens for depression, PTSD, or recent suicide ideation.



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Table 9-21: Frequency of binge drinking (i.e., consuming six or more alcoholic drinks on one occasion) among Regular Force personnel

Variable	Category	Percent (95% CI)				Odds Ratio	(95% CI) ^a
		Never	Less than Monthly	Monthly	Weekly		
Overall		35.0 (32.5, 37.5)	43.9 (41.1, 46.7)	11.8 (9.9, 13.7)	9.2 (7.5, 11.0)		
Age (years)	18 – 29	21.6 (17.2, 26.1)	44.4 (38.9, 49.8)	18.8 (14.4, 23.1)	15.2 (11.2, 19.3)	Reference	
	30 – 39	31.4 (26.5, 36.3)	48.0 (42.6, 53.4)	11.9 (8.3, 15.4)	8.7 (5.4, 12.0)	0.55 (0.41, 0.74)	
	40 – 49	44.6 (39.7, 49.6)	42.3 (37.3, 47.3)	7.3 (4.6, 10.0)	5.8 (3.2, 8.3)	0.32 (0.24, 0.43)	
	50 – 60	58.8 (54.1, 63.4)	33.1 (28.6, 37.6)	4.4 (2.4, 6.4)	3.7 (1.9, 5.5)	0.18 (0.14, 0.24)	
Sex	Female	53.5 (49.9, 57.0)	36.6 (33.2, 40.1)	6.6 (4.9, 8.3)	3.3 (2.0, 4.6)	Reference	
	Male	32.1 (29.3, 35.0)	45.1 (41.8, 48.3)	12.6 (10.5, 14.8)	10.2 (8.1, 12.2)	2.48 (2.07, 2.97)	
Rank	NCM	32.9 (29.7, 36.1)	44.3 (40.8, 47.9)	12.0 (9.5, 14.4)	10.8 (8.5, 13.1)	Reference	
	Officer	41.0 (37.6, 44.5)	42.7 (39.1, 46.4)	11.4 (9.1, 13.8)	4.8 (3.4, 6.2)	0.68 (0.57, 0.81)	
Service element	Air	40.9 (36.4, 45.4)	40.1 (35.4, 44.7)	10.6 (7.5, 13.8)	8.4 (5.4, 11.3)	Reference	
	Sea	30.5 (24.7, 36.3)	46.2 (39.5, 52.8)	15.4 (10.4, 20.4)	7.9 (4.1, 11.7)	1.44 (1.07, 1.94)	
	Land	33.3 (29.5, 37.0)	45.4 (41.2, 49.6)	11.2 (8.5, 13.8)	10.2 (7.5, 12.9)	1.31 (1.03, 1.67)	
Marital status	Married or common-law	37.6 (34.5, 40.7)	45.5 (42.1, 49.0)	9.7 (7.5, 11.8)	7.2 (5.3, 9.2)	Reference	
	Single	26.3 (21.0, 31.6)	38.5 (32.4, 44.7)	18.8 (14.0, 23.6)	16.3 (11.5, 21.1)	2.13 (1.60, 2.84)	
	Widowed, separated, or divorced	37.1 (28.6, 45.6)	44.8 (35.8, 53.8)	11.7 (5.8, 17.7)	6.3 (1.8, 10.9)	1.03 (0.73, 1.46)	
Highest education level	Secondary	33.9 (29.0, 38.9)	43.4 (38.0, 48.7)	10.3 (6.9, 13.7)	12.4 (8.7, 16.1)	Reference	
	Some post-secondary	31.9 (27.7, 36.1)	46.1 (41.2, 50.9)	13.1 (9.7, 16.5)	8.9 (6.0, 11.9)	1.01 (0.77, 1.33)	
	Completed university	40.9 (37.2, 44.6)	42.8 (38.9, 46.7)	11.1 (8.7, 13.5)	5.2 (3.5, 6.8)	0.69 (0.54, 0.89)	

^a Odds ratios computed with ordinal logistic regression. See Methods section for more details.



9.3.4 Alcohol-Associated Risk-Taking Behaviours

Alcohol use is associated with an increase in risk-taking behaviours (de Haan, 2015). It is also associated with decreased cognitive function and motor skills (e.g., double vision, impaired attention, slowed reflexes). Even one drink can reduce one’s ability to react quickly to events that happen suddenly while driving (Berthelon, 2014). Impaired driving is illegal and it is the leading cause of criminal death in Canada (Perreault, 2013). Unfortunately, little is known about the extent of impaired driving in Canada; police records can only be used to count the number of impaired driving infractions, while the number of Canadian impaired drivers not identified by police remains unknown. However, a 2008 study found that 8.1% of British Columbia drivers surveyed at anonymous road-side stops had a blood alcohol concentration of 0.05% (i.e., 50 mg of alcohol per 100 mL of blood) or more (Beirness, 2009). A direct comparison to HLIS data is not possible due to differences in survey mode. Furthermore, HLIS respondents were simply asked to report if they had ever driven a car after “having too much to drink” in the past 12 months. No formal definition of “too much” or quantification of blood alcohol concentration were included in the HLIS.

In the past 12 months, 3.6% of Regular Force personnel had reportedly driven after having “too much” to drink. This percentage was unchanged from 2008/9. Driving after drinking “too much” was more likely in: (1) personnel aged 18 – 39 years compared to personnel aged 40 – 60 years; and (2) NCMs compared to officers (Table 9-22). There were no differences by sex, or service element.

Table 9-22: Percentage of Regular Force personnel who reported driving after consuming too much alcohol

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		3.6	(2.6, 4.9)		
Age (years)	18 – 39	4.7	(3.3, 6.7)	Reference	
	40 – 60	1.7	(0.9, 3.3) ^a	0.37	(0.18, 0.77)
Rank	NCM	4.3	(3.0, 6.0)	Reference	
	Officer	1.6	(0.9, 2.7) ^a	0.36	(0.19, 0.69)

^a Fewer than 20 unweighted observations, values may be unstable; interpret with caution.

In the past 12 months, 4.7% of Regular Force personnel reportedly rode in a vehicle driven by someone who had had “too much” to drink. This percentage was unchanged from 2008/9. Riding in a vehicle driven by someone who had “too much” to drink was more likely in: (1) personnel aged 18 – 39 years compared to personnel aged 40 – 60 years; and (2) NCMs compared to officers (Table 9-23). There were no differences by sex, or service element.



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Table 9-23: Percentage of Regular Force personnel who reported riding in a vehicle driven by someone who had too much to drink in the past 12 months

Variable	Category	Percent (95% CI)	Odds Ratio (95% CI)
Overall		4.7 (3.4, 5.9)	
Age (years)	18 – 39	6.1 (4.6, 8.3)	Reference
	40 – 60	2.2 (1.3, 3.7)	0.33 (0.18, 0.63)
Rank	NCM	5.2 (3.6, 6.8)	Reference
	Officer	2.9 (1.9, 4.0)	0.55 (0.34, 0.89)

In the past 12 months, 2.3% of Regular Force personnel reportedly operated a boat, canoe, or other watercraft after having consumed “too much” alcohol. This percentage was unchanged from 2008/9. Operating a watercraft after drinking “too much” was more likely in: (1) personnel aged 18 – 39 years compared to personnel aged 40 – 60 years; and (2) males compared to females (Table 9-24). There were no differences by rank, or service element.

Table 9-24: Percentage of Regular Force personnel who reported operating a watercraft after having too much to drink in the past 12 months

Variable	Category	Percent (95% CI)	Odds Ratio (95% CI)
Overall		2.3 (1.4, 3.1)	
Age (years)	18 – 39	3.0 (1.9, 4.6)	Reference
	40 – 60	1.1 (0.4, 2.3)	0.34 (0.13, 0.89)
Sex	Female	0.9 (0.3, 1.5) ^a	Reference
	Male	2.5 (1.5, 3.5)	2.89 (1.29, 6.48)

^a Fewer than 20 unweighted observations, values may be unstable; interpret with caution.

Additionally, 1.9% (95% CI: 1.2%, 3.0%) of personnel operated power tools or machinery when they had “too much” to drink. Demographic comparisons were not possible due to insufficient observations.

9.4 Non-Medical Drug Use

Drug use for non-medical purposes, whether periodic or casual, can have lasting health and social consequences. Drug use may affect cognitive performance, even at a low cumulative exposure, and use can lead to a spectrum of mental health consequences from time-limited emotional or perceptual disturbances to episodes of a psychiatric disorder. Indirectly, non-medical drug use can lead to higher rates of infectious diseases (e.g., hepatitis C) and injury-associated disability, as well as lost opportunity and reduced productivity (Chen, 2009). There may also be legal consequences when illicit drugs are used. Data from the 2013 Canadian Tobacco, Alcohol and Drugs Survey (CTADS) found that 10.6% of Canadians aged 15 years and older had used cannabis in the past 12 months. Other illicit drugs used in the past 12 months included hallucinogens (0.6%), cocaine or crack (0.9%), and ecstasy (0.4%) (Statistics Canada, 2015).



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9.4.1 Non-Medical Drug Use by Canadian Armed Forces Personnel

In the past 12 months, 5.9% of all Regular Force personnel reportedly used drugs for non-medical purposes. Drug use in the past 12 months was more likely to be reported by: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; (2) NCMs compared to officers; (3) personnel with no post-secondary education compared to personnel who completed university; (4) single personnel compared to married or common-law personnel; (5) personnel who flagged positive for depression; (6) personnel who were identified as requiring further PTSD screening; and (7) personnel who had seriously contemplated suicide in the past 12 months (Table 9-25). There were no differences by sex, or service element.

Table 9-25: Percentage of Regular Force personnel who reported non-medical drug^a use in the past 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		5.9	(4.5, 7.3)		
Age (years)	18 – 29	10.8	(7.3, 14.2)	Reference	
	30 – 39	4.4	(2.2, 6.7)	0.39	(0.20, 0.74)
	40 – 49	4.1	(2.0, 6.1)	0.35	(0.19, 0.66)
	50 – 60	1.9	(0.8, 3.0)	0.16	(0.08, 0.32)
Rank	NCM	7.1	(5.3, 8.9)	Reference	
	Officer	2.2	(1.3, 3.2)	0.30	(0.18, 0.50)
Highest education level	Secondary	7.3	(4.5, 10.2)	Reference	
	Some post-secondary	6.9	(4.5, 9.3)	0.93	(0.53, 1.64)
	Completed university	2.7	(1.5, 3.9)	0.35	(0.19, 0.64)
Marital status	Married or common-law	5.2	(3.6, 6.8)	Reference	
	Widowed, separated, or divorced	4.1	(1.1, 7.0)	0.78	(0.34, 1.78)
	Single	8.9	(5.3, 12.5)	1.81	(1.04, 3.14)
Major depression	No	5.3	(3.9, 6.7)	Reference	
	Yes	14.5	(6.8, 22.1)	3.02	(1.53, 5.95)
Further PTSD evaluation required	No	4.9	(3.5, 6.2)	Reference	
	Yes	13.9	(7.4, 20.5)	3.15	(1.70, 5.87)
Suicide ideation in last 12 months	No	5.0	(3.7, 6.4)	Reference	
	Yes	28.5	(14.6, 42.3)	7.50	(3.59, 15.70)

^a Includes marijuana, hashish, hallucinogens, cocaine, amphetamines, barbiturates and other sedatives, heroin and other narcotics, inhalants, and anabolic steroids.

Marijuana and hashish were the most popular drugs used for non-medical purposes among Regular Force personnel, with 3.9% of personnel reporting use in the past 12 months (Figure 9-7). This percentage was unchanged from 2008/9. This percentage is surprisingly low, given that 10.6% of Canadians aged 15 years



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and older had used cannabis at least once in 2013 (Statistics Canada, 2015). The relatively low prevalence of reported cannabis use in the Regular Force may be partly explained by a reluctance to accurately report use due to fear of repercussions in spite of anonymity of the survey. Alternatively, it may reflect adherence to the policy which prohibits the use of illicit substances in the CAF. Personnel may be more inclined to follow this policy knowing that random drug testing and pre-deployment drug screening occurs.

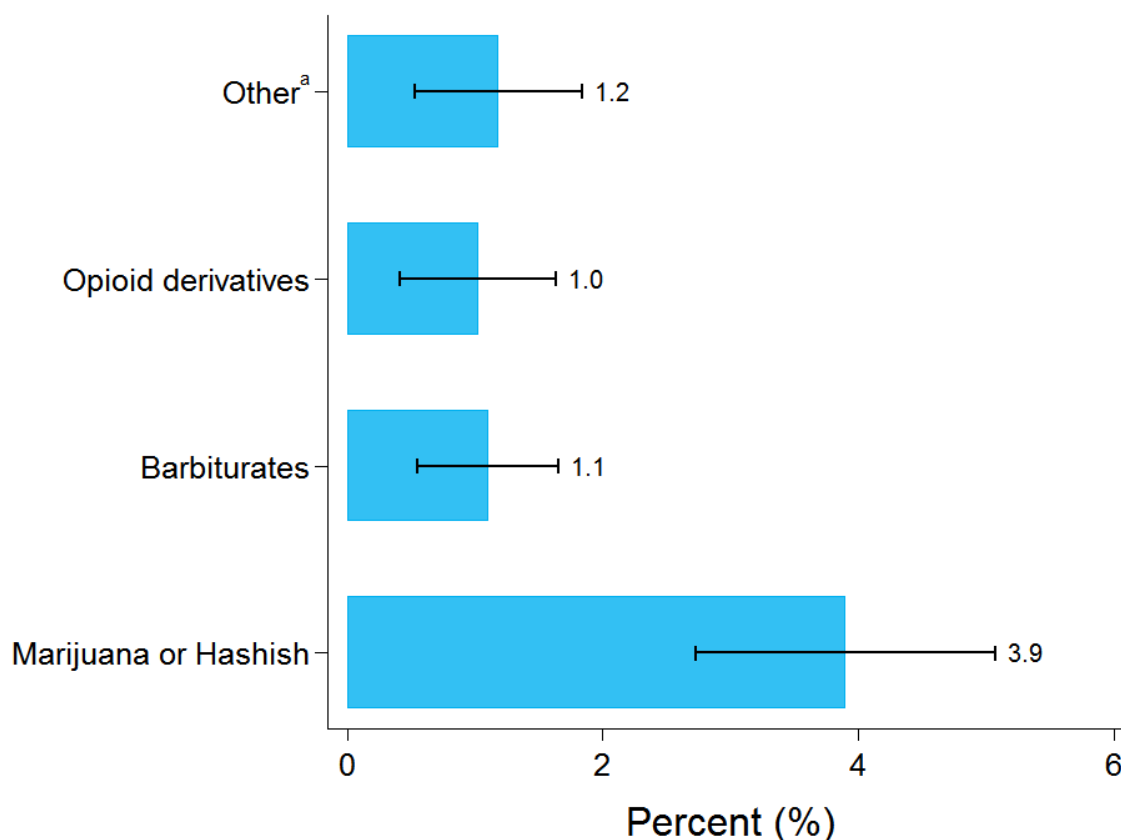


Figure 9-7: Percentage of Regular Force personnel who used various types of drugs for non-medical purposes in the past 12 months.

^a Includes hallucinogens, cocaine, amphetamines, inhalants, and anabolic steroids.

Other common drugs used for non-medical purposes in the previous 12 months were barbiturates (1.1%), and opioid derivatives (1.0%) (Figure 9-7). These percentages were unchanged from 2008/9. Use of cocaine, hallucinogens, amphetamines, and anabolic steroids was reported by less than 10 survey respondents. No survey respondent reported using inhalants (e.g., nitrous oxide) in the past 12 months.

9.4.2 Non-Medical Use of Sexual Enhancers

HLIS participants were asked to select from a specific list, non-medical drugs (“not prescribed by a doctor”) taken over the last 12 months. Sexual enhancers were included in this list because they are sometimes used for recreational purposes.



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In the past 12 months, 3.4% of all Regular Force personnel reportedly used sexual enhancers (e.g., Viagra, Cialis) for non-medical purposes. This percentage was unchanged from 2008/9. Non-medical use of sexual enhancers was more likely in personnel aged 40 – 60 years compared to personnel aged 18 – 39 years (Table 9-26). There were no differences by rank, or service element. All survey respondents who reported non-medical use of sexual enhancers in the past 12 months were male.

Table 9-26: Percentage of Regular Force personnel who reported non-medical use of sexual enhancers in the past 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		3.4	(2.5, 4.5)		
Age (years)	18 – 39	2.0	(1.1, 3.6) ^a	Reference	
	40 – 49	5.1	(3.2, 8.0) ^a	2.63	(1.22, 5.69)
	50 – 60	7.3	(5.1, 10.2)	3.84	(1.90, 7.76)

^a Fewer than 20 unweighted observations, values may be unstable; interpret with caution.

9.4.3 Non-Medical Drug Use in the Canadian Armed Forces Workplace

9.4.3.1 Change in Drug Use Since Joining the Canadian Armed Forces

Overall, 26.9% (95% CI: 24.5%, 29.4%) of Regular Force personnel reportedly used drugs for non-medical purposes at some point in their life. Of these, 84.1% reported that their current drug use was less than when they joined the CAF. On the other hand, 6.8% of personnel who had ever used drugs for non-medical purposes reported that their current drug use was greater than when they joined the CAF. Among personnel who had ever used drugs for non-medical purposes, reporting greater drug use at the time of survey completion than at recruitment was more likely in: (1) females compared to males; and (2) Air personnel compared to Land personnel (Table 9-27). There were no differences by age, or rank.

Table 9-27: Difference between non-medical use at time of survey completion and at time of recruitment into the Canadian Armed Forces, among Regular Force personnel who have ever used drugs for non-medical purposes

Variable	Category	Percent (95% CI)			Odds Ratio	(95% CI) ^a
		Less Drugs Now	Same Amount	More Drugs Now		
Overall		84.1 (80.2, 88.0)	9.1 (6.0, 12.1)	6.8 (4.1, 9.5)		
Sex	Female	76.3 (69.9, 82.7)	13.5 (8.3, 18.7)	10.2 (5.5, 14.9)	Reference	
	Male	85.1 (80.8, 89.5)	8.5 (5.1, 11.9)	6.4 (3.4, 9.3)	0.57	(0.35, 0.92)
Service element	Air	75.3 (66.6, 83.9)	14.0 (7.2, 20.9)	10.7 (4.4, 17.0)	Reference	
	Sea	84.1 (75.7, 92.5)	9.2 (2.3, 16.0)	6.7 (1.3, 12.1)	0.58	(0.27, 1.25)
	Land	89.6 (85.0, 94.2)	5.9 (2.3, 9.5)	4.5 (1.5, 7.5)	0.36	(0.18, 0.70)

^a Odds ratios computed with ordinal logistic regression. See Methods section for more details.



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9.4.3.2 Drug Use in Garrison or on Exercise

Of the 26.9% of Regular Force personnel who had ever used drugs for non-medical purposes, only 2.1% (95% CI: 1.0%, 4.6%) reported having been under the influence of drugs while at work in the past two years. Too few survey respondents reported having been under the influence of drugs while at work in the past two years to compare this percentage between demographic categories, or between survey years.

In contrast, 23.0% of all Regular Force personnel reportedly worked with a CAF member known to be taking drugs in-garrison or on deployment in the past 12 months. Therefore, although very few soldiers ever work under the influence of drugs, these individuals have an impact on nearly one-quarter of the Regular Force, through their work relations. The percentage of personnel who reportedly worked with someone known to be taking drugs was unchanged from 2008/9. Reports of knowing another CAF member taking drugs in-garrison or on deployment were more likely to come from: (1) personnel aged 18 – 29 compared to personnel aged 30 and older; (2) NCMs compared to officers; and (3) personnel of the Land element compared to personnel of the Air element (Table 9-28).

Table 9-28: Percentage of Regular Force personnel who have worked with another Canadian Armed Forces member known to be taking drugs in-garrison or on deployment in the past 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		23.0	(20.3, 25.7)		
Age (years)	18 – 29	36.2	(30.3, 42.2)	Reference	
	30 – 39	26.4	(21.0, 31.8)	0.63	(0.43, 0.92)
	40 – 49	11.7	(8.1, 15.4)	0.23	(0.15, 0.36)
	50 – 60	5.6	(3.3, 7.8)	0.10	(0.06, 0.17)
Rank	NCM	25.7	(22.2, 29.2)	Reference	
	Officer	15.0	(12.3, 17.8)	0.51	(0.39, 0.68)
Service element	Air	17.3	(12.8, 21.7)	Reference	
	Sea	20.4	(14.1, 26.6)	1.22	(0.74, 2.01)
	Land	27.2	(23.1, 31.3)	1.79	(1.22, 2.61)

9.4.3.3 Drug Use on Deployment

Of Regular Force personnel who had ever been deployed overseas, 5.0% had felt unsafe at some point during a deployment because someone they were working with was taking drugs. This percentage was unchanged from 2008/9. Officers were less likely than NCMs to report feeling unsafe while on deployment because of a co-worker's drug use (Table 9-29). There were no differences by age, sex, or service element.



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Table 9-29: Percentage of Regular Force personnel^a who have reportedly felt unsafe while on deployment because of a co-worker's drug use

Variable	Category	Percent (95% CI)	Odds Ratio (95% CI)
Overall		5.0 (3.6, 6.9)	
Rank	NCM	6.2 (4.4, 8.7)	Reference
	Officer	1.2 (0.6, 2.5) ^b	0.18 (0.08, 0.42)

^a Only includes personnel who have ever been deployed overseas.

^b Fewer than 20 unweighted observations, values may be unstable; interpret with caution.

9.4.4 Indications of Problem Drug Use

Indications of drug dependence were rarely reported by Regular Force personnel. Of the 26.9% of Regular Force personnel who ever used drugs for non-medical purposes, 4.8% (95% CI: 2.8%, 8.1%) reported that a friend, family member, or anyone else had ever expressed concerns about their drug use. Less than 1% of personnel who had ever used drugs reported ever having failed to do what was normally expected of them because of the use of drugs. Too few survey respondents reported such indications of drug dependence to compare percents between demographic categories.

9.5 Gambling

Legalized gambling opportunities have been rapidly increasing in Canada since the early 1990s (Korn, 2000). Gambling has become common among Canadians; approximately 78% of Canadians (aged 18 and older) will participate in some form of gambling in a given year. In 2012, gambling was a \$14 billion dollar industry in Canada (Responsible Gambling Council, 2013). Gambling addictions are known to have health, social, and economic impacts on individuals, as well as their families and communities (Korn, 2000).

9.5.1 Gambling in the Canadian Armed Forces

Gambling was common among Regular Force personnel. In the past 12 months, 43.8% of all personnel had reportedly gambled¹⁸ at least a few times per month. Gambling more than once per month was more likely in: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 29 years; (2) males compared to females; (3) NCMs compared to officers; (4) personnel with no post-secondary education compared to personnel who completed university; and (5) personnel who seriously considered suicide in the past 12 months compared to personnel with no recent suicide ideation (Table 9-30). There were no differences by service element, marital status, or by positive screens for depression or PTSD.

¹⁸ Gambling is defined as spending money on: (1) instant win, scratch tickets, or daily lottery tickets; (2) lottery tickets; (3) cards or board games; (4) video lottery terminals; (5) coin slots; (6) other casino games; (7) sports lotteries; (8) speculative investments; (9) games of skill; (10) internet gambling; and/or (11) other.

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Table 9-30: Percentage of Regular Force personnel who gambled^a in the past 12 months

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		43.8	(41.1, 46.5)		
Age (years)	18 – 29	38.5	(33.3, 43.7)	Reference	
	30 – 39	42.8	(37.5, 48.0)	1.19	(0.88, 1.62)
	40 – 49	47.4	(42.5, 52.2)	1.44	(1.07, 1.93)
	50 – 60	52.6	(48.0, 57.1)	1.77	(1.33, 2.36)
Sex	Female	35.8	(32.5, 39.1)	Reference	
	Male	45.0	(41.9, 48.1)	1.47	(1.21, 1.78)
Rank	NCM	47.1	(43.7, 50.5)	Reference	
	Officer	33.8	(30.4, 37.2)	0.57	(0.47, 0.70)
Highest education level	Secondary	47.8	(42.7, 52.9)	Reference	
	Some post-secondary	47.7	(43.0, 52.4)	1.00	(0.75, 1.31)
	Completed university	32.3	(28.7, 35.9)	0.52	(0.40, 0.68)
Suicide ideation in last 12 months	No	42.9	(40.0, 45.7)	Reference	
	Yes	59.9	(46.2, 73.7)	1.99	(1.11, 3.57)

^a Gambling is defined as spending money on: (1) instant win, scratch tickets, or daily lottery tickets; (2) lottery tickets; (3) cards or board games; (4) video lottery terminals; (5) coin slots; (6) other casino games; (7) sports lotteries; (8) speculative investments; (9) games of skill; (10) internet gambling; and/or (11) other.

The most commonly reported types of gambling were: (1) buying lottery tickets; (2) buying instant win tickets, scratch tickets, or daily lottery tickets; and (3) betting money on cards or board games with family and friends (Figure 9-8). Comparisons with the HLIS 2008/9 could not be made due to changes in response options.



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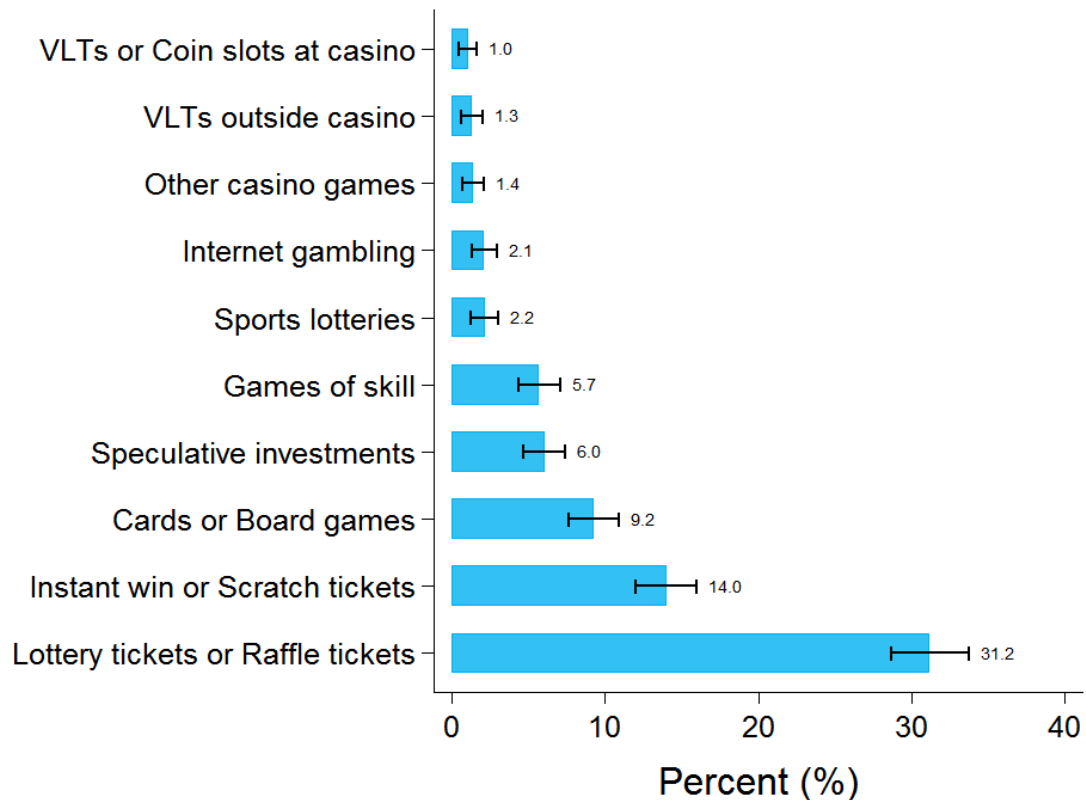


Figure 9-8: Percentage of Regular Force personnel who gambled by various activities in the past 12 months.

9.6 Conclusion

The percentage of current smokers decreased from 23.0% in 2008/9 to 17.6% in 2013/14. This observed decrease in smoking prevalence is likely attributable to fewer smokers being recruited into the CAF, rather than to smoking cessation programs offered by the CAF.

The majority (81.5%) of current smokers had already started smoking before joining the CAF. However, 79.7% of all current smokers had either: (1) re-started smoking after quitting; or (2) increased the amount they smoked at some point during their military careers. Deployments, occupational training, and basic training were associated with these types of unhealthy changes in smoking behaviour.

It is estimated that, if current smokers do not quit, approximately 5,000 individuals currently serving in the Regular Force will die prematurely because of tobacco smoking. Furthermore, approximately 900 of these premature deaths will occur in individuals who had never smoked prior to joining the CAF. Eliminating smoking initiation in the CAF – particularly during basic training – could prevent hundreds of early deaths.

In the previous week, 23.5% of all Regular Force personnel had exceeded the LRDG to avoid acute effects of alcohol use (i.e., no more than four drinks on any given day for males, and no more than three drinks on any given day for females). This percentage was unchanged from 2008/9, but was lower than in 2004. However,



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91.1% of males and 95.9% of females correctly identified the maximum number of drinks they should have per day, as outlined in the LRDG. Nearly one-quarter of Regular Force personnel are consuming alcohol in excess of recommendations, despite their knowledge of the guidelines. These findings suggest that personnel are not modifying their behavior despite their knowledge of the effects of harmful and hazardous alcohol use.

The AUDIT identified 19.9% of all Regular Force personnel as having harmful or hazardous drinking behaviours. This percentage increased from 15.7% in 2004.

In the past 12 months, 5.9% of all Regular Force personnel have reportedly used drugs for non-medical purposes. The most commonly used recreational drug was marijuana, reportedly consumed by 3.9% of all Regular Force personnel in the past 12 months. Changes in survey design and response options prevented comparison to drug use in previous years.

In the past 12 months, 43.8% of all Regular Force personnel reported gambling at least a few times per month. The most commonly reported forms of gambling were purchasing lottery tickets, purchasing instant win tickets, and betting money on cards and board games. Changes in survey design and response options prevented comparison to gambling behaviour in previous years.

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Chapter 10 – Deployment Health

10.1 Introduction

One of the Canadian Armed Forces' (CAF) roles is to contribute to international peace and security. To fulfill this role, the CAF conduct overseas operations, often in partnership with allies and other nations. Because of the variety of potential threats to international peace and security, CAF overseas operations are very diverse, ranging from humanitarian assistance in the wake of a natural disaster, to combat operations against an armed enemy. Different operations have different impacts on the long-term health and well-being of personnel. Specifically, operations differ with respect to the risk of serious physical injury, and exposure to psychologically traumatic events. Table 10-1 provides more details on the types of overseas operations conducted by the CAF. Of note, not all overseas deployments involve combat operations.

Table 10-1: Types of overseas operations conducted by the Canadian Armed Forces

Operation Type	Description
Combat	Contribute combat-capable forces to defeat armed enemies.
Regional Security	Contribute combat-capable forces to suppress destabilizing activities.
Peace-Support	Contribute task-tailored military contingents to resolve armed conflicts and provide safety to people of war-torn regions.
Training and Advisory	Contribute task-tailored military contingents to help fragile nations build military capacity.
Humanitarian	Contribute task-tailored military contingents in response to major disasters.
Non-Combatant Evacuation	Assist the departure of foreign nationals from dangerous overseas locations.

Table 10-2 summarizes the overseas operations conducted by the CAF during the one-year HLIS 2013/14 data collection period, and during the two years that preceded it. These operations may differ from the operations that were active in the two years that preceded earlier surveys. Important differences in the nature of overseas operations may explain reported differences in the impact of deployment, from 2008/9 to 2013/14.



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Table 10-2: Overseas operations on which Canadian Armed Forces personnel served, from September 2011 to September 2014^a

Operation	Start Date	End Date	Description
JADE	Aug 1954	*	Contribute military observers to the U.N. peace-support efforts in the Middle East.
SNOWGOOSE	Mar 1964	*	Contribute to peace and stability in Cyprus.
CALUMET	Sep 1985	*	Contribute to peace and stability in the Sinai Peninsula.
KOBOLD	Jun 1999	*	Support the development of a capable Kosovo Security Force.
SCULPTURE	Nov 2000	Feb 2013	Help the government of the Republic of Sierra Leone build effective and democratically accountable armed forces.
ATHENA	Jul 2003	Dec 2011	Drive out insurgent groups to create a secure environment for the development and reconstruction of Afghanistan.
HAMLET	May 2004	*	Facilitate the peaceful implementation of a constitutional process.
SAFARI	Jun 2004	Jul 2011	Support implementation of the Comprehensive Peace Agreement in Sudan.
CARIBBE	Nov 2006	*	Fight illicit trafficking by transnational organized crime in the Caribbean basin and the eastern Pacific Ocean.
IGNITION	May 2008	*	Periodically monitor Iceland's airspace, and enforce security if required.
SAIPH	Oct 2009	May 2012	Enhance maritime security in the North Arabian Sea, the Persian Gulf, and the waters around the Horn of Africa.
SATURN	Jan 2010	Jul 2011	Monitor and verify the implementation of the Darfur Peace Agreement in Sudan.
CROCODILE	May 2010	*	Contribute to peace and stability in the Democratic Republic of the Congo.
MOBILE	Feb 2011	Oct 2011	Evacuate non-combatants, and enforce an arms embargo and a no-fly zone over Libya.
ATTENTION	May 2011	Mar 2014	Deliver training and professional development support to the national security forces of Afghanistan.
JAGUAR	Jul 2011	Nov 2011	Contribute military aviation and search-and-rescue capability to the Jamaica Defence Force.
SOPRANO	Jul 2011	*	Contribute technical planning and operational expertise to the U.N. Mission in the Republic of South Sudan.
ARTEMIS	Jan 2012	*	Participate in counter-terrorism and maritime security operations across the Red Sea, and the Indian Ocean.
ACTIVE ENDEAVOUR	Oct 2011	Jan 2012	Participate in the NATO counter-terrorism operation in the Mediterranean Sea.
RENAISSANCE	Nov 2013	Dec 2013	Provide humanitarian support to the Philippines, in the aftermath of Typhoon Haiyan.
REASSURANCE	Apr 2014	*	Contribute to peace and stability in Central and Eastern Europe.
OPEN SPIRIT	May 2014	May 2015	Clear explosive remnants of war in the Baltic Sea region.

^a Based on information retrieved from the Canadian Armed Forces operations webpage (www.forces.gc.ca/operations).

* Ongoing operation at time of Health and Lifestyle Information Survey 2013/14 report writing.



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CAF personnel can expect to be deployed overseas for various lengths of time throughout their military careers. These deployments can have important physical and mental health benefits and risks. On one hand, overseas deployments have been associated with increased job satisfaction and improved retention; many service members prefer the challenges of a deployment to their in-garrison domestic tasks (Hosek, 2006). On the other hand, some overseas deployments may expose CAF members to combat, foreign environments, and extended separations from family. Combat exposure is associated with increased risk of post-traumatic stress disorder (PTSD), depression, and physical injuries (Zamorski, 2014; Hoge, 2006). Deployments can also have negative effects on the mental health of the spouse, and children of the deployed individual (Lester, 2010; Sheppard, 2010).

The HLIS 2013/14 asked participants about their experiences with overseas deployments¹⁹ in the last two years. Participants were also asked questions about the pre-deployment screening process, and whether they had been deemed unable to deploy at any time in the last two years.

Note that the mental health impact of overseas deployments is not discussed in this chapter. The reader should refer to Chapter 2 for an analysis of overseas deployments as a risk factor for various mental health outcomes.

10.2 Overseas Deployments

10.2.1 Deployment History in the Last Two Years

Since the HLIS 2008/9, Canadian operations in Afghanistan – the longest military campaign in the history of Canadian warfare – came to a gradual end. In March 2014, the last Canadian soldiers to have participated in military operations in Afghanistan left Afghan soil. It is, therefore, not surprising that fewer Regular Force personnel reported having recently deployed overseas in the HLIS 2013/14 than in the HLIS 2008/9 (Figure 10-1). In the HLIS 2013/14, only 15.6% (95% CI: 13.6%, 17.5%) of all Regular Force personnel reported having been deployed overseas at some point in the last two years compared to 24.2% (95% CI: 23.3%, 25.1%) in 2008/9 (Figure 10-1). The percentage of Regular Force personnel who had been deployed overseas at some point in the last two years did not vary across categories of age, sex, or rank. However, a greater percentage of Sea personnel had recently deployed overseas compared to Air and Land personnel (Table 10-3).

¹⁹ To maintain a state of high operational readiness, the CAF conduct overseas training exercises. These exercises are not considered overseas operations. However, Regular Force personnel participating in these exercises sometimes consider themselves to be on an overseas deployment.



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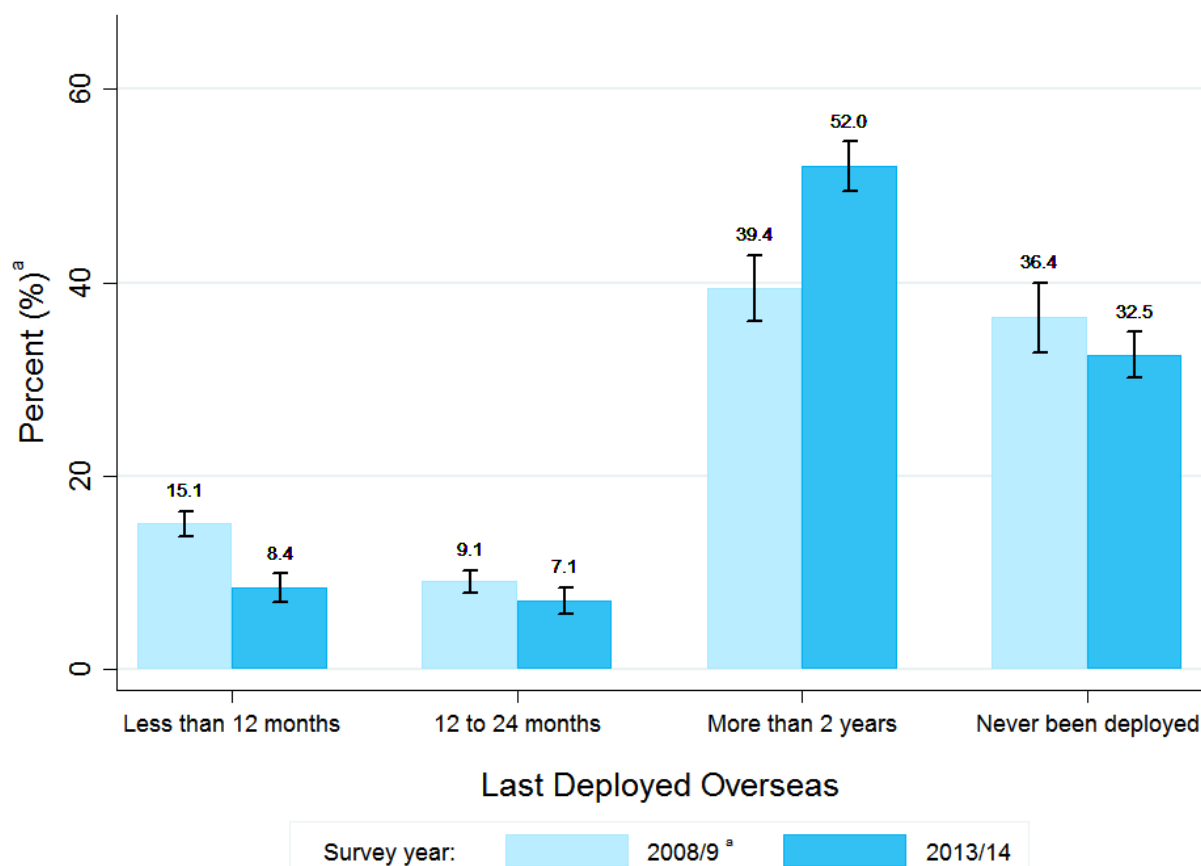


Figure 10-1: Overseas deployments in the two years preceding the Health and Lifestyle Information Survey 2008/9 and the Health and Lifestyle Information Survey 2013/14, in Regular Force personnel.

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

Table 10-3: Regular Force personnel who were deployed overseas in the last two years

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		15.6	(13.6, 17.5)		
Service element	Air	11.2	(8.2, 14.1)	Reference	
	Sea	25.3	(19.8, 30.9)	2.69	(1.78, 4.08)
	Land	14.6	(11.8, 17.4)	1.35	(0.93, 1.97)

Among Regular Force personnel who deployed overseas at least once in the two years preceding the HLIS 2013/14, 80.5% deployed once, 11.6% deployed twice, and 7.9% deployed three or more times within that time frame (Table 10-4). These percentages did not vary across categories of age, sex, or rank. However, Air personnel were more likely to have deployed more often than their Land counterparts. This difference is not surprising; Land personnel tend to deploy less frequently, but for longer periods of time (Table 10-4).



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Table 10-4: Number of overseas deployments in the last two years, among Regular Force personnel who were deployed at least once during that period

Variable	Category	Percent (95% CI)			Odds Ratio (95% CI) ^a
		One	Two	Three or More	
Overall		80.5 (74.8, 86.1)	11.6 (7.2, 16.0)	7.9 (4.1, 11.8)	
Service element	Air	70.0 (56.8, 83.3)	21.3 (9.4, 33.2)	8.7 (0.7, 16.7)	Reference
	Sea	77.5 (66.9, 88.1)	11.9 (3.9, 19.9)	10.6 (2.7, 18.5)	0.73 (0.31, 1.71)
	Land	87.0 (79.6, 94.3)	6.9 (1.7, 12.1)	6.1 (0.7, 11.5)	0.38 (0.15, 0.91)

^a Odds ratios computed with ordinal logistic regression. See Methods section for more details.

Among Regular Force personnel who deployed overseas at least once in the two years preceding the HLIS 2013/14, 13.8% had done so within 12 months of a previous overseas deployment (i.e., they had less than 12 months between two overseas deployments, and at least one of these deployments occurred in the two years preceding the HLIS 2013/14). Air personnel who deployed at least once in the last two years were more likely to have had more than one deployment in a 12-month period than their Land counterparts (Table 10-5). There was no difference between categories of age, sex, or rank. Again, these results are consistent with the finding that Land personnel tend to deploy less frequently, but for longer periods of time.

Table 10-5: Canadian Armed Forces Regular Force personnel who had more than one deployment in a 12-month period, among Regular Force personnel who deployed at least once in the last two years

Variable	Category	Percent (95% CI)	Odds Ratio (95% CI)
Overall		13.8 (8.8, 18.8)	
Service element	Air	27.6 (13.8, 41.4)	Reference
	Sea	13.2 (4.2, 22.1)	0.40 (0.14, 1.14)
	Land	8.0 (2.7, 13.3)	0.23 (0.08, 0.62)

Among Regular Force personnel who deployed overseas at least once in the two years preceding the HLIS 2013/14, 46.4% had deployed to Afghanistan, 23.4% had deployed to the Middle East²⁰, and 34.9% had deployed to other overseas locations (Table 10-6).

²⁰ The CAF Middle East portfolio includes Turkey, Syria, Iraq, Iran, Jordan, Israel, Egypt (Sinai), Saudi Arabia, Yemen, Oman, Qatar, Kuwait, Bahrain, the United Arab Emirates, and Palestine.



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Table 10-6: Overseas locations to which Regular Force personnel deployed in the last two years

Location	Percent	(95% CI) ^{a,b}
Afghanistan	46.4	(39.6, 53.3)
Middle East	23.4	(18.0, 29.9)
Other	34.9	(28.6, 41.8)

^a Only includes personnel who deployed to at least one overseas location in the last two years.

^b Personnel could have deployed to more than one location. Percents may sum to more than 100%.

10.2.2 Time Spent on Overseas Deployments in the Last Two Years

In the two years preceding the HLIS 2013/14, Regular Force personnel had spent a total of 3,911 person-years serving on overseas deployments. In other words, roughly 3% of all person-years of service accumulated by Regular Force personnel in the last two years had been spent on overseas deployments.

Among the 15.6% of Regular Force personnel who had been deployed overseas at least once in the two years preceding the HLIS 2013/14, the mean time spent serving on overseas deployments during that time frame was 5.4 months. The mean amount of time spent on overseas deployments was not different between categories of sex or rank. However, of Regular Force personnel who had deployed in the last two years, those aged 50 – 60 years spent more time serving on overseas deployments than those aged 18 – 29 years (Table 10-7). This finding is consistent with the nature of Operation ATTENTION (Canada’s contribution to NATO’s training mission in Afghanistan) through which CAF personnel, particularly officers with substantial military experience, were called upon to provide training and professional development support to the national security forces of Afghanistan. Of Regular Force personnel who had deployed in the last two years, Land personnel spent more time serving on overseas deployments than Sea or Air personnel who had deployed in the last two years (Table 10-7). These findings are consistent with those presented in the previous section; Land personnel tend to deploy less frequently, but for longer periods of time.

Table 10-7: Time spent serving on overseas deployments in the last two years

Variable	Category	Deployed (%)	Months Deployed Overseas ^a	
			Mean	(95% CI)
Overall		15.6	5.4	(4.9, 5.9)
Age (years)	18 – 29	16.3	4.8	(3.9, 5.7) ^b
	30 – 39	15.8	5.9	(4.9, 7.0)
	40 – 49	14.9	4.8	(3.9, 5.8)
	50 – 60	14.5	6.7	(5.5, 7.9) ^c
Service element	Air	11.2	4.6	(3.7, 5.6) ^b
	Sea	25.3	4.5	(3.8, 5.2)
	Land	14.6	6.3	(5.5, 7.1) ^c

^a Only includes Regular Force personnel who were deployed overseas in the last two years.

^b Reference category.

^c Significantly different than the reference category, at the 99% confidence level.



10.2.3 Adjusting to Life After Overseas Deployments in the Last Two Years

In 2013/14, Regular Force personnel who had deployed overseas in the last two years were more likely to find it easier to adjust to work life upon reintegration than in 2008/9. In 2013/14, 58.9% of recently deployed Regular Force personnel reported that adjusting to work life upon reintegration was easy compared to only 47.5% in 2008/9 (Figure 10-2). Similarly, Regular Force personnel were more likely to find it easier to adjust to family life upon reintegration in 2013/14 than in 2008/9. In 2013/14, 58.3% of recently deployed Regular Force personnel reported that adjusting to family life upon reintegration was easy compared to only 47.7% in 2008/9 (Figure 10-3).

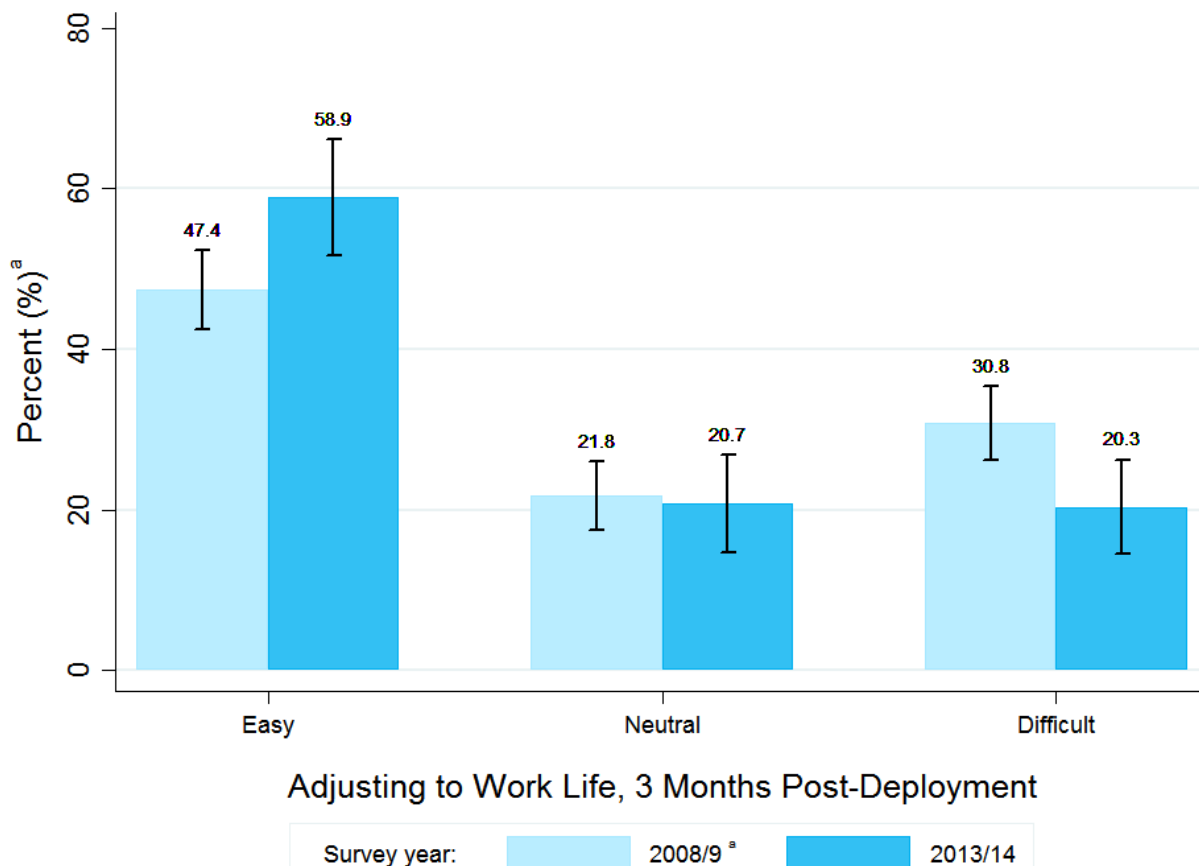


Figure 10-2: Ease with which Regular Force personnel who had deployed in the two years preceding the Health and Lifestyle Information Survey 2008/9 or the Health and Lifestyle Information Survey 2013/14 adjusted to work life, three months after re-integration.

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.



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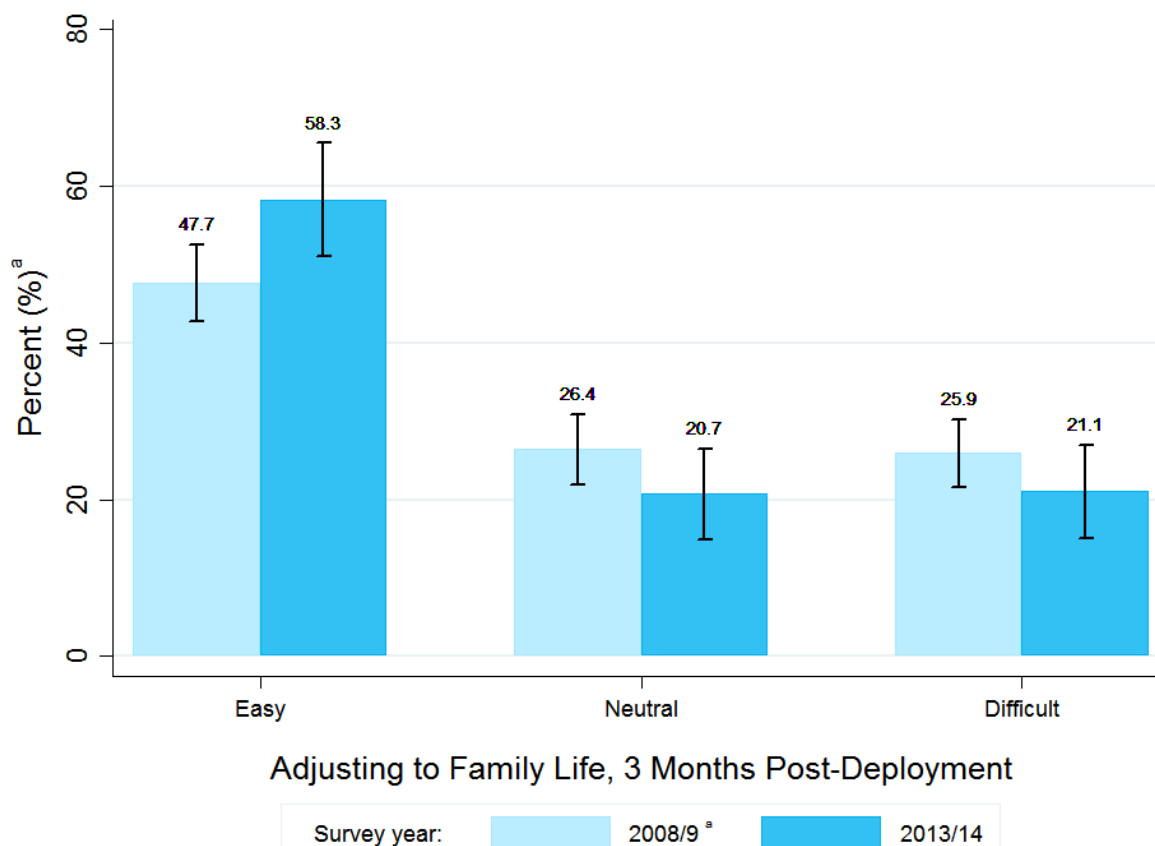


Figure 10-3: Ease with which Regular Force personnel who had deployed in the two years preceding the Health and Lifestyle Information Survey 2008/9 or the Health and Lifestyle Information Survey 2013/14 adjusted to family life, three months after re-integration.

^a Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

The overall increase in ease of adjustment to post-deployment life observed from 2008/9 to 2013/14 reflects the net effect of: (1) a change in deployment experiences; and (2) an increase in CAF mental health training initiatives to facilitate post-deployment adjustment (DND, 2013). The HLIS cannot disentangle the individual effects of these two factors.

In the HLIS 2013/14, the ease with which Regular Force personnel reported adjusting to either family or work life in the three months following a recent deployment did not vary across categories of age, sex, rank, or service element.

10.3 Pre-Deployment Screening Process

A two-tier screening process is used to ensure that all CAF members meet certain physical and mental fitness thresholds before being deployed overseas. Tier I is an annual requirement for all CAF members, and Tier II is a mission-specific screening only required for individuals in the process of being deployed. Such screening processes have been shown to reduce the incidence of negative mental health outcomes in military populations (Warner, 2011).



10.3.1 Pre-Deployment Screening: Tier I

The first stage of the pre-deployment screening process is the Personnel Readiness Verification (PRV) checklist, which collects information on health and demographic characteristics, and on administrative requirements for deployments. This information must be recorded in the Human Resources Management System (HRMS). All CAF units must update the PRV checklists of their Regular Force members on an annual basis, and whenever a member’s level of readiness changes between annual screens. The up-to-date information is accessed through HRMS to identify all members eligible for a particular overseas deployment.

Whether or not their HRMS status was up-to-date, 21.8% of Regular Force personnel had been unable to deploy at some point during the two years preceding the HLIS 2013/14. This percentage was nearly identical to the age, sex, and rank-standardized percentage of Regular Force personnel who had been unable to deploy at some point in the two years preceding the HLIS 2008/9 (21.0%). The most common reasons for which these individuals were unable to deploy in the two years preceding the HLIS 2013/14 are presented in Figure 10-4.

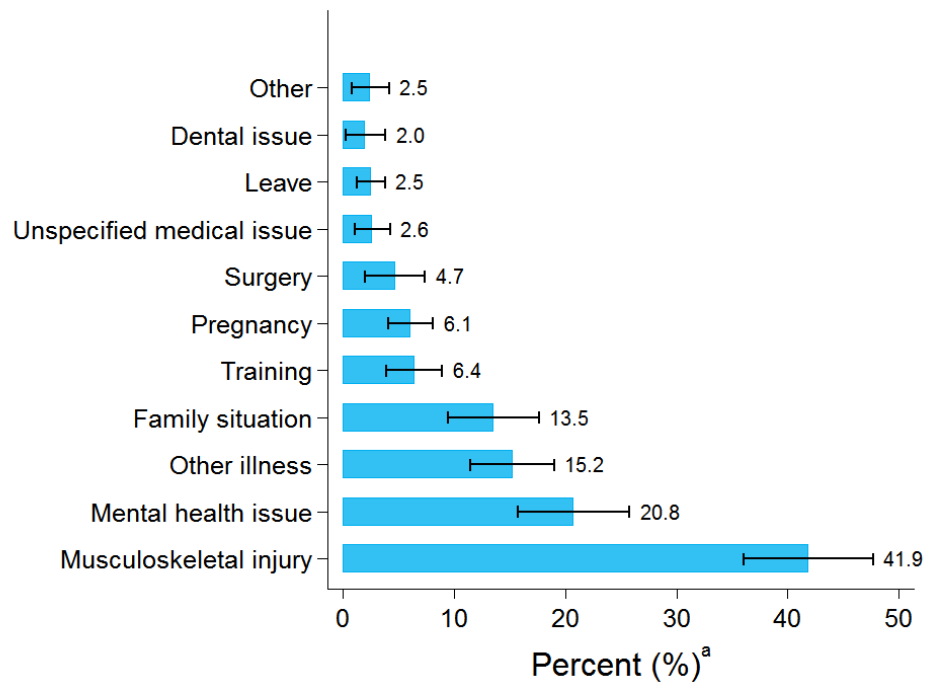


Figure 10-4: Reasons for having been unable to deploy among Regular Force personnel who were unable to deploy at some point in the last two years.

^a Personnel could report more than one reason. Percents may sum to more than 100%.

Although the CAF have an interest in maximizing the deployability of their members, some of the reasons listed in Figure 10-4 are not related to adverse health conditions. For example, pregnancy is part of the human experience and training is integral to the professional development of CAF personnel; it is expected that CAF members will be unable to deploy for such reasons over the course of their careers. Regular Force personnel whose only reasons for being unable to deploy in the last two years were pregnancy, family situation, training, and/or leave are therefore excluded from the following analyses.



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In the two years preceding the HLIS 2013/14, 17.4% of Regular Force personnel had been unable to deploy due to adverse health conditions (e.g., dental issue, musculoskeletal injuries, mental health issue, illness, or other health condition). Having been unable to deploy due to adverse health conditions was more likely in: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; (2) NCMs compared to officers; and (3) obese personnel compared to overweight and normal weight personnel (Table 10-8). There were no differences between categories of sex, command, or smoking status.

Table 10-8: Percentage of Regular Force personnel who were unable to deploy at some point in the last two years because of adverse health conditions

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		17.4	(15.3, 19.5)		
Age (years)	18 – 29	12.4	(8.8, 16.0)	Reference	
	30 – 39	18.7	(14.5, 23.0)	1.62	(1.06, 2.50)
	40 – 49	18.9	(15.2, 22.7)	1.65	(1.09, 2.49)
	50 – 60	22.5	(18.7, 26.3)	2.05	(1.38, 3.04)
Rank	NCM	19.0	(16.3, 21.7)	Reference	
	Officer	12.5	(10.1, 14.8)	0.61	(0.46, 0.80)
Body mass index	Normal weight	12.0	(8.7, 15.2)	Reference	
	Overweight	16.2	(13.2, 19.2)	1.42	(0.97, 2.08)
	Obese	25.5	(20.5, 30.6)	2.53	(1.68, 3.80)

In the two years preceding the HLIS 2013/14, Regular Force personnel were unable to deploy due to adverse health conditions for a total of 9,074 person-years, representing roughly 8% of the total person-years of service accumulated over that time period. Musculoskeletal injuries and mental health issues were the leading causes of inability to deploy due to adverse health conditions (Figure 10-4). These results mirror other findings that have highlighted the contribution of injuries and mental health issues to disability in Regular Force personnel. Regular Force personnel who were unable to deploy at some point in the two years preceding the HLIS 2013/14 were undeployable, on average, for 11.5 months (95% CI: 10.4, 12.5).

10.3.2 Pre-Deployment Screening: Tier II

The second stage of the pre-deployment screening process is mission-specific, and is only undertaken by CAF personnel who have been identified as eligible candidates for a particular deployment. This screening process consists of a Departure Assistance Group (DAG) checklist of additional items such as medical and dental health, training, and administrative qualifications relevant to the mission. Each item on this mission-specific checklist can be rated as either “green” (i.e., deployment granted; requirement is met), “yellow” (i.e., deployment initiated; requirement could be met within 30 days), or “red” (i.e., deployment denied; requirement cannot be met within 30 days). CAF personnel must usually meet all mission-specific requirements – in military colloquial parlance, they must “DAG green” on all items of the mission-specific checklist – in order to deploy. However,



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exemptions can be granted when the operational requirements outweigh the potential risks identified through the screening process.

In the two years preceding the HLIS 2013/14, 23.3% (95% CI: 21.0%, 25.7%) of Regular Force personnel were called-up for mission-specific pre-deployment screening. Of these individuals, 10.4% (95% CI: 7.3%, 14.6%) were rated as “red”. The probability of being rated as “red” on the DAG checklist was not different between categories of age, sex, rank, service element, body mass index, or smoking status.

10.4 Conclusion

As expected given the end of CAF operations in Afghanistan, fewer Regular Force personnel deployed overseas in the years preceding the HLIS 2013/14 than in the years preceding the HLIS 2008/9. However, those who did deploy overseas in the two years preceding the HLIS 2013/14 found it easier to adjust to family and work life upon reintegration than Regular Force personnel who deployed overseas in the two years preceding the HLIS 2008/9. This change in post-deployment experience is difficult to interpret, given that the operational realities of overseas deployments changed substantially between the two survey years.

The percentage of Regular Force personnel who had been unable to deploy in the last two years had not changed from 2008/9. One out of five currently serving Regular Force personnel had been unable to deploy overseas at some point in the last two years. The most commonly cited reasons for being unable to deploy overseas were related to adverse health conditions, such as: (1) musculoskeletal injuries; (2) mental health issues; and (3) other illnesses.

10.5 References

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Chapter 11 – Occupational Health and Safety Issues

11.1 Introduction

Occupational health and safety (OHS) focuses on the primary prevention of hazards in the workplace. OHS initiatives promote healthy and safe working environments through the provision of resources, education, and legislative enforcement. These initiatives aim to create positive working cultures. Within the Canadian Armed Forces (CAF), the Occupational and Environmental Health (OEH) Section, of the Directorate of Force Health Protection (DFHP), is concerned with ensuring a working environment that is free of health hazards by providing health advice and oversight to CF H Svcs Gp personnel (CF H Svcs Gp, 2014).

CAF personnel face unique occupational health challenges. CAF personnel have agreed to join the profession of arms, meaning that they understand, and accept that they can be lawfully ordered into harm’s way. However, the CAF, as an employer, remain obligated to provide the healthiest and safest working environment possible.

Identification of workplace factors that affect well-being, such as environmental health threats and occupational hazards, leads to informed development of preventive interventions. The following chapter provides an overview of the occupational health and safety culture of Regular Force personnel. Data from this chapter describe time away from home, job satisfaction, workplace exposures, and seatbelt use.

11.2 Time Away from Home

There are three demanding aspects typical to military lifestyle: mobility, separation, and risk. Military personnel and their families are relocated or mobilized on a recurring basis at the discretion of the CAF. Military families relocate three times as frequently as civilian families (Daigle, 2013). CAF personnel and their families may also be separated for long or short periods of time, spontaneously, or on a cyclical basis. Time away from home is disruptive to family life, and the reintegration process can be tumultuous (Daigle, 2013). Mobility and separation are associated with lower physical health, lower psychological well-being, and lower marital happiness. Time away from home also creates stress for families, and can lead to feelings of isolation and loneliness (Burrell, 2006).

11.2.1 Percentage of Personnel who Spent Time Away from Home

Most Regular Force personnel (82.6%) reported spending at least one month away from home for military-related activities in the past two years. This percentage decreased from 2008/9, but was not different from 2004 (Table 11-1).

Table 11-1: Percentage of Regular Force personnel who spent time away from home in the past two years, by survey year

HLIS	Percent	(95% CI)^a	Odds Ratio	(95% CI)
2004	82.8	(80.8, 84.7)	1.02	(0.84, 1.23)
2008/9	87.6	(85.1, 89.8)	1.50	(1.16, 1.93)
2013/14	82.6	(80.6, 84.4)	Reference	

^a All estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.



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In 2013/14, having spent at least one month away from home in the past two years was more likely in: (1) personnel aged 18 – 39 years compared to personnel aged 40 – 60 years; (2) males compared to females; (3) Land personnel compared to Air personnel; and (4) personnel with excellent, very good, or good self-rated health compared to personnel with fair or poor self-rated health (Table 11-2). There were no differences by rank, or self-rated mental health. The association between self-rated health and time spent away from home might reflect the selection process for military activities; only personnel who pass health examinations are usually sent away from home.

Table 11-2: Percentage of Regular Force personnel who spent at least one month away from home in the past two years

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		82.6	(80.7, 84.5)		
Age (years)	18 – 29	88.9	(85.6, 92.3)	Reference	
	30 – 39	87.2	(83.8, 90.6)	0.85	(0.54, 1.34)
	40 – 49	77.1	(73.1, 81.1)	0.42	(0.28, 0.63)
	50 – 60	63.8	(59.4, 68.1)	0.22	(0.15, 0.32)
Sex	Female	75.7	(72.8, 78.7)	Reference	
	Male	83.6	(81.5, 85.8)	1.64	(1.31, 2.05)
Service element	Air	77.5	(73.8, 81.2)	Reference	
	Sea	83.5	(79.1, 87.8)	1.47	(1.00, 2.15)
	Land	86.4	(83.9, 89.0)	1.85	(1.37, 2.51)
Self-rated health	Excellent	84.8	(80.8, 88.8)	Reference	
	Very good	85.0	(82.4, 87.6)	1.02	(0.70, 1.48)
	Good	81.6	(77.7, 85.4)	0.79	(0.53, 1.19)
	Fair or Poor	63.8	(53.5, 74.1)	0.32	(0.18, 0.54)

The most commonly reported reasons for spending at least one month away from home in the past two years were: (1) courses; (2) military exercises; and (3) deployments (Figure 11-1). Of note, fewer Regular Force personnel reported having recently spent time away from home because of deployments²¹ in the HLIS 2013/14 compared to the HLIS 2008/9. This finding is not surprising, given that combat operations in Afghanistan ended in 2011.

²¹ Data presented in this chapter include domestic operations. Data presented in Chapter 10 only include overseas operations. Discrepancies between chapters are due to Regular Force personnel having deployed for domestic operations in the past two years, but not having deployed for overseas operations.



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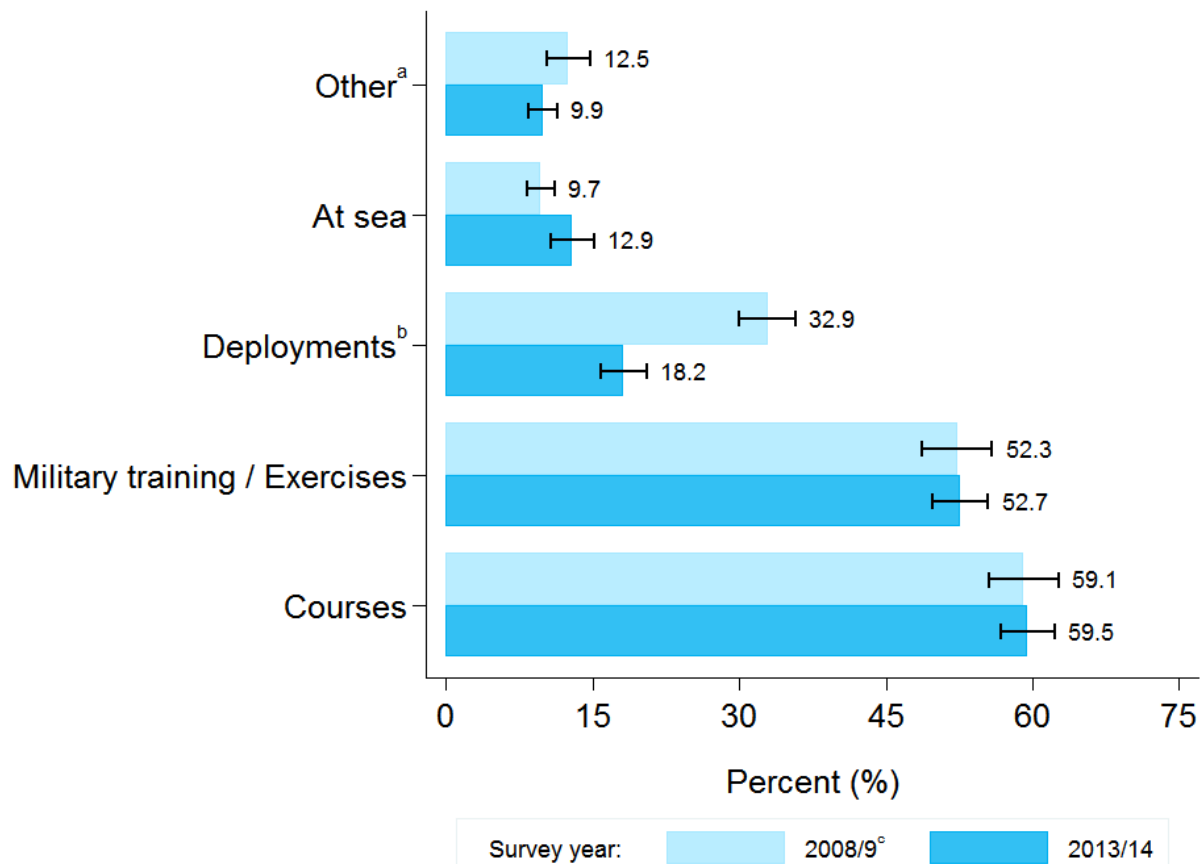


Figure 11-1: Percentage of Regular Force personnel who spent at least one month away from home in the past two years.

^a Includes imposed restrictions, temporary duty, and other reasons.

^b Includes deployments for both domestic and overseas operations.

^c Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

11.2.2 Amount of Time Spent Away from Home

In the past two years, Regular Force personnel spent a total of roughly 26,100 person-years away from home because of military-related activities. In other words, approximately 25% of the service time accrued by Regular Force personnel over the past two years was spent away from home. Among all Regular Force personnel, the median time spent away from home in the past two years was 4 months.

The biggest contributors to time spent away from home in the past two years were: (1) courses; and (2) military exercises. However, imposed restriction was associated with the longest average time spent away from home (Table 11-3).



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Table 11-3: Time spent away from home in the past two years, for various military activities

Activity	Spent Time Away (%)	Months Spent Away from Home ^a		Total Person-Years Away from Home
		Mean	(95% CI)	
Courses	59.5	3.3	(3.1, 3.6)	8,300
Military training / Exercises	52.7	3.6	(3.4, 3.9)	8,100
Deployments	18.2	5.1	(4.5, 5.6)	3,700
At sea	12.9	5.6	(4.9, 6.3)	2,800
Imposed restriction	3.2	14.3	(12.4, 16.3)	2,100
Temporary duty	2.7	2.4	(1.9, 2.8)	300
Other	7.6	4.4	(2.8, 6.0)	800

^a Mean only includes personnel who spent at least one month away from home in the past two years, for a given activity.

Among Regular Force personnel who had spent time away from home in the past two years, the average time away from home was 6.7 months. The average amount of time spent away from home had decreased from 2008/9 (Table 11-4).

Table 11-4: Months spent away from home in the past two years among Regular Force personnel, by survey year

HLIS	Mean	(95% CI) ^{a,b}
2004	6.9	(6.6, 7.1)
2008/9	8.6	(8.2, 9.1) ^d
2013/14	6.7	(6.4, 7.0) ^c

^a Mean only includes personnel who spent at least one month away from home in the past two years.

^b Estimates were standardized to the age, sex, and rank distribution of the 2013 Regular Force population.

^c Reference category.

^d Significantly different than reference category, at the 99% confidence level ($p < 0.01$).

Among personnel who had to leave home for military-related activities in the past two years, the average amount of time spent away from home was higher in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; (2) males compared to females; and (3) Sea and Land personnel compared to Air personnel (Table 11-5). There were no differences by rank, marital status, self-rated health, or self-rated mental health.



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Table 11-5: Months spent away from home in the past two years among Regular Force personnel

Variable	Category	Mean	(95% CI) ^a
Overall		6.7	(6.4, 7.0)
Age (years)	18 – 29	7.6	(6.9, 8.2) ^b
	30 – 39	6.5	(5.9, 7.1) ^c
	40 – 49	6.2	(5.6, 6.8) ^d
	50 – 60	5.9	(5.1, 6.5) ^d
Sex	Female	5.5	(5.1, 5.9) ^b
	Male	6.9	(6.5, 7.3) ^d
Service element	Air	6.0	(5.4, 6.5) ^b
	Sea	7.8	(7.0, 8.7) ^d
	Land	6.7	(6.3, 7.2) ^c

^a Mean only includes personnel who spent at least one month away from home in the past two years.

^b Reference category.

^c Significantly different from the reference category at the 95% confidence level ($p < 0.05$).

^d Significantly different from the reference category at the 99% confidence level ($p < 0.01$).

11.3 Job Satisfaction

Job satisfaction is an assessment of whether a job is favourable or unfavourable to an individual (Meier, 2015). Satisfaction ratings assess the degree to which a position fulfills one's needs and wants (Cranny, 1992). Job satisfaction assessments can reflect internal factors, such as personality traits (e.g., hardiness), or external factors such as workplace harassment (Faragher, 2005). Self-reported job satisfaction is a reliable indicator of employee well-being and correlates strongly with mental health and psychosocial problems. To a lesser extent, job satisfaction is also associated with physical health. Low job satisfaction has been linked with counterproductive behaviour, turnover and burnout. Long periods of inadequate satisfaction or dissatisfaction may lead to mild levels of depression and anxiety (Meier, 2015; Faragher, 2005).

Overall, 63.9% of Regular Force personnel reported having been very satisfied or satisfied with their jobs in the past 12 months. An additional 16.6% of personnel were reportedly neither satisfied nor dissatisfied (Table 11-6). These findings resemble those of a British Armed Forces survey, in which 57% of personnel were found to be either satisfied or very satisfied with their military jobs (Ministry of Defence, 2014).



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Table 11-6: Job satisfaction in the past 12 months, among Regular Force personnel

Variable	Category	Percent (95% CI)			Odds Ratio	(95% CI) ^a
		Very Satisfied or Satisfied	Neither Satisfied nor Dissatisfied	Dissatisfied or Very Dissatisfied		
Overall		63.9 (61.3, 66.6)	16.6 (14.5, 18.8)	19.4 (17.2, 21.7)		
Age (years)	18 – 29	57.6 (52.4, 62.9)	19.4 (15.1, 23.7)	23.0 (18.3, 27.6)	Reference	
	30 – 39	61.0 (55.8, 66.2)	17.7 (13.6, 21.9)	21.2 (16.8, 25.7)	1.14	(0.85, 1.53)
	40 – 49	70.1 (65.6, 74.5)	14.2 (10.8, 17.6)	15.8 (12.3, 19.2)	1.69	(1.26, 2.27)
	50 – 60	75.1 (71.1, 79.0)	11.7 (8.9, 14.6)	13.2 (10.1, 16.3)	2.16	(1.61, 2.90)
Rank	NCM	61.0 (57.6, 64.4)	18.5 (15.8, 21.2)	20.5 (17.7, 23.4)	Reference	
	Officer	72.7 (69.5, 75.9)	11.1 (8.9, 13.3)	16.2 (13.5, 18.9)	1.63	(1.31, 2.02)
Marital status	Married or common-law	67.6 (64.4, 70.7)	14.2 (11.8, 16.6)	18.2 (15.6, 20.9)	Reference	
	Widowed, separated or divorced	60.2 (51.5, 69.0)	17.1 (10.2, 24.0)	22.7 (15.0, 30.3)	0.73	(0.50, 1.08)
	Single	54.5 (48.5, 60.5)	23.7 (18.4, 29.0)	21.8 (16.7, 26.9)	0.63	(0.48, 0.82)
Major depression ^b	No	66.8 (64.1, 69.6)	15.7 (13.6, 17.9)	17.4 (15.2, 19.7)	Reference	
	Yes	30.7 (21.3, 40.1)	25.0 (15.6, 34.4)	44.3 (33.7, 54.9)	0.24	(0.17, 0.36)
Further PTSD evaluation required ^c	No	66.8 (64.0, 69.6)	16.0 (13.8, 18.2)	17.2 (14.9, 19.5)	Reference	
	Yes	44.8 (35.8, 53.8)	18.3 (11.3, 25.3)	36.9 (28.1, 45.8)	0.38	(0.26, 0.56)
Suicide ideation in last 12 months	No	66.2 (63.5, 69.0)	15.6 (13.5, 17.8)	18.1 (15.9, 20.4)	Reference	
	Yes	29.0 (16.7, 41.4)	27.3 (13.7, 40.9)	43.7 (29.1, 58.2)	0.25	(0.15, 0.41)

^a Odds ratios computed with ordinal logistic regression. See Methods section for more details.

^b Measured using the Patient Health Questionnaire (PHQ-2). See Chapter 2 for more details.

^c Measured using the primary care post-traumatic stress disorder scale. See Chapter 2 for more details.



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Higher job satisfaction levels were more likely to be reported by: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 29 years; (2) officers compared to NCMs; (3) married and common-law personnel compared to single personnel; (4) personnel who screened negative for major depressive disorder²² compared to personnel who screened positive; (5) personnel who screened negative for PTSD²³ compared to personnel who screened positive; and (6) personnel who did not report suicide ideation in the last 12 months compared to personnel who reported recent suicide ideation (Table 11-6). There were no differences by sex, service element, recent overseas deployment, or time spent away from home in the past two years. Due to changes in questionnaire design, comparisons to previous HLIS surveys were not possible.

The association between job satisfaction and age could be explained by self-selection; individuals who are dissatisfied with their jobs might change careers at a relatively young age. As a result, older individuals still serving in the CAF may be those who were the most satisfied with their military careers to begin with.

The association between job satisfaction and mental health is not surprising, and is consistent with previous findings. However, given the cross-sectional nature of this survey, it is not possible to infer a causal relationship between psychological problems and job satisfaction. It is unclear if low job satisfaction is causing poor mental health, or if poor mental health is causing low job satisfaction.

11.4 Occupational Exposures and Protective Measures

Inherent to military service, all CAF personnel are at risk of injury or death while engaged in warfare and during times of peace (Burrell, 2006). However, the inherent risks of service should be separated from unnecessary risks that can be minimized. There are occupational exposures and behaviours that can be mitigated to increase productivity and reduce injuries.

11.4.1 Seatbelt Use

Seatbelt legislation has been enacted in all Canadian jurisdictions since 1991. Seatbelt use is the best preventive measure for reducing injury severity and mortality during a collision. “Unrestrained occupants of light duty vehicles involved in collisions have a 3 times greater likelihood of being injured and a 16 times greater likelihood of fatal injury, as compared to restrained occupants” (PHAC, 2012).

In the early 1990s, the Canadian Council of Motor Transport Administrators (CCMTA) developed the National Occupant Restraint Program (NORP), aiming to achieve and maintain 95% seatbelt use among Canadian drivers and passengers (CCMTA, 2012). This objective was recently achieved, with 95.3% of all Canadian vehicle occupants wearing a seatbelt in 2010 (CCMTA, 2012).

11.4.1.1 Seatbelt Use in Civilian Vehicles

The majority (93.3%) of Regular Force personnel reported always wearing a seatbelt while driving a civilian vehicle (Table 11-7). Always wearing a seatbelt while driving a civilian vehicle was more likely in: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; and (3) officers compared to NCMs (Table 11-7). There were no differences by service element. These results

²² Major depressive disorder screened for using the PHQ-2 measurement tool. See Chapter 2 for more details.

²³ PTSD screened for using the PC-PTSD measurement tool. See Chapter 2 for more details.

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are consistent with those of a Transport Canada survey, in which female sex and older age were found to be associated with higher seatbelt use (Transport Canada, 2011).

Table 11-7: Percentage of Regular Force personnel who always wear a seatbelt while operating a civilian vehicle

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		93.3	(91.8, 94.8)		
Age (years)	18 – 29	87.8	(84.2, 91.5)	Reference	
	30 – 39	95.1	(92.6, 97.5)	2.67	(1.42, 5.00)
	40 – 49	95.4	(93.1, 97.6)	2.86	(1.55, 5.29)
	50 – 60	96.8	(95.1, 98.4)	4.13	(2.20, 7.78)
Sex	Female	97.5	(96.6, 98.5)	Reference	
	Male	92.6	(90.9, 94.3)	0.32	(0.20, 0.50)
Rank	NCM	92.1	(90.1, 94.0)	Reference	
	Officer	96.8	(95.6, 98.0)	2.63	(1.64, 4.22)

11.4.1.2 Seatbelt Use in Military Vehicles

Approximately three-quarters (77.0%) of Regular Force personnel reported always buckling up while operating a military vehicle equipped with seatbelts (Table 11-8). Always buckling while operating a military vehicle equipped with seatbelts was more likely in: (1) personnel aged 30 – 60 years compared to personnel aged 18 – 29 years; (2) females compared to males; (3) officers compared to NCMs; and (4) Air and Sea personnel compared to Land personnel (Table 11-8).



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Table 11-8: Percentage of Regular Force personnel who always wear a seatbelt while operating a military vehicle

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		77.0	(74.5, 79.5)		
Age (years)	18 – 29	61.9	(56.5, 67.4)	Reference	
	30 – 39	77.6	(72.8, 82.3)	2.13	(1.49, 3.03)
	40 – 49	85.6	(81.8, 89.3)	3.64	(2.49, 5.32)
	50 – 60	95.0	(92.8, 97.1)	11.63	(7.04, 19.22)
Sex	Female	88.6	(86.3, 90.8)	Reference	
	Male	75.3	(72.5, 78.1)	0.39	(0.30, 0.52)
Rank	NCM	73.0	(69.8, 76.1)	Reference	
	Officer	89.9	(87.8, 92.0)	3.30	(2.49, 4.38)
Service element	Air	86.9	(83.4, 90.4)	Reference	
	Sea	94.9	(91.7, 98.0)	2.78	(1.36, 5.68)
	Land	64.9	(60.9, 68.8)	0.28	(0.19, 0.40)

Regular Force personnel were more likely to wear a seatbelt while driving a civilian vehicle than a military vehicle (Figure 11-2). These results may reflect situational and operational differences between civilian and military vehicles use. A study of British Forces in Iraq found that personnel felt seatbelts were restrictive, hindering exit from the vehicle and interfering with weapons (Okpala, 2007). In deployment and training situations, similar rationale may apply to Regular Force personnel; however, there is no comparable Canadian research.

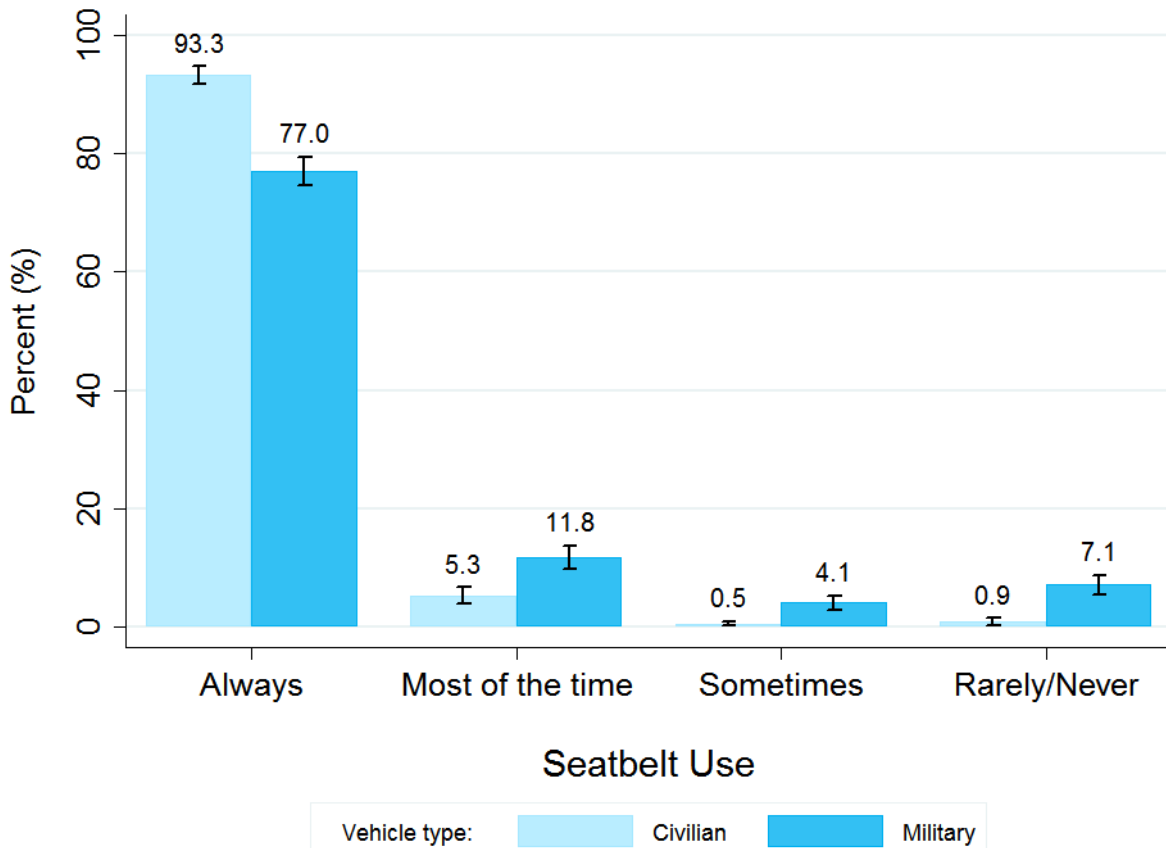


Figure 11-2: Reported seatbelt use in Regular Force personnel operating civilian and military vehicles^a.
^a Excludes personnel who reported never operating vehicles.

11.4.2 Unsafe Work Behaviours

Having a trusting relationship with teammates is associated with higher morale and better work engagement (Ivey, 2015). Trust within a military team can be diminished if other personnel are perceived to be engaging in unsafe behaviours. Only 5.6% of Regular Force personnel reported ever feeling unsafe while in-garrison, on exercise, or on deployment because a co-worker was under the influence of alcohol or drugs. Having ever felt unsafe because of an intoxicated co-worker was more likely in NCMs compared to officers (Table 11-9). There were no differences by age, sex, or service element.



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Table 11-9: Percentage of Regular Force personnel who reported ever feeling unsafe while in-garrison, on exercise, or on deployment because a co-worker was under the influence of alcohol or drugs

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		5.6	(4.3, 7.0)		
Rank	NCM	6.6	(4.9, 8.4)	Reference	
	Officer	2.6	(1.5, 3.7)	0.38	(0.22, 0.64)

11.4.3 Occupational Exposures in the Workplace

Harmful occupational exposures, such as airborne hazards during deployment, are known to contribute to human disease (Falvo, 2015). Workplace exposures, or perceived exposures, can also affect psychological health. Perceived risk from employment exposures, such as poor quality of water or exposure to radiation, leads to decreased job satisfaction and the negative effects of dissatisfaction discussed above (Faragher, 2005).

Overall, 63.7% of Regular Force personnel believed that some occupational exposures were harming their health. Reporting harmful occupational exposures was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; (2) males compared to females; and (3) NCMs compared to officers (Table 11-10). There were no differences by service element.

Table 11-10: Percentage of Regular Force personnel who reported that workplace occupational exposures were harming their health

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		63.7	(61.2, 66.2)		
Age (years)	18 – 29	73.1	(68.6, 77.7)	Reference	
	30 – 39	65.9	(61.0, 70.7)	0.71	(0.52, 0.97)
	40 – 49	58.1	(53.5, 62.8)	0.51	(0.38, 0.69)
	50 – 60	45.0	(40.5, 49.5)	0.30	(0.22, 0.40)
Sex	Female	55.8	(52.4, 59.2)	Reference	
	Male	64.9	(62.1, 67.8)	1.47	(1.22, 1.77)
Rank	NCM	68.0	(64.9, 71.1)	Reference	
	Officer	50.7	(47.2, 54.3)	0.48	(0.40, 0.59)

The most commonly reported harmful occupational exposures were: (1) noise; (2) dust and fibres; and (3) awkward postures (Figure 11-3). However, data were not collected on the availability and use of protective devices to limit the adverse health impact of the occupational exposures listed in Figure 11-3.



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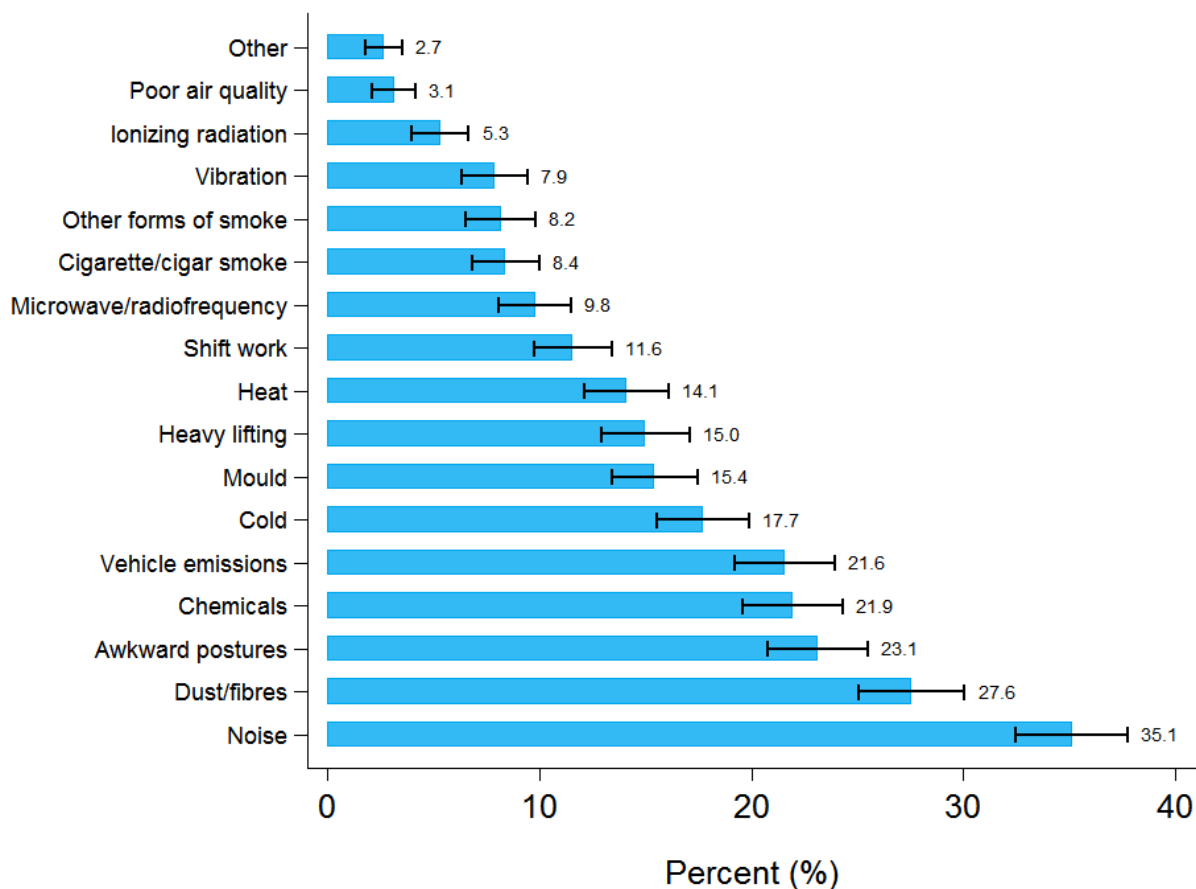


Figure 11-3: Percentage of Regular Force personnel who feel various occupational exposures are harming their health.

Long term exposure to occupational hazards, whether real or perceived, may cause mental and physical harm. Regular Force personnel should be encouraged to bring these concerns forward by reporting to their local Preventive Medicine Technician, or to the attention of the chain of command.

11.4.3.1 Exposure to Excessive Noise Levels

Approximately one-third of Regular Force personnel reported being exposed to harmful noise levels in their workplace. Exposure to harmful noise levels was more likely in: (1) personnel aged 18 – 29 years compared to personnel aged 30 – 60 years; (2) males compared to females; (3) NCMs compared to officers; and (4) Air personnel compared to Sea and Land personnel (Table 11-11). However, the use of hearing protection when exposed to harmful noise levels was not ascertained.



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Table 11-11: Percentage of Regular Force personnel who reported exposure to harmful noise levels in their workplace

Variable	Category	Percent	(95% CI)	Odds Ratio	(95% CI)
Overall		35.1	(32.5, 37.8)		
Age (years)	18 – 29	43.3	(38.0, 48.6)	Reference	
	30 – 39	35.2	(30.1, 40.3)	0.71	(0.52, 0.97)
	40 – 49	31.0	(26.5, 35.5)	0.59	(0.43, 0.80)
	50 – 60	22.9	(19.1, 26.6)	0.39	(0.29, 0.53)
Sex	Female	22.3	(19.4, 25.1)	Reference	
	Male	37.1	(34.1, 40.1)	2.06	(1.67, 2.54)
Rank	NCM	39.4	(36.1, 42.8)	Reference	
	Officer	22.1	(19.1, 25.0)	0.43	(0.35, 0.54)
Service element	Air	40.1	(35.5, 44.7)	Reference	
	Sea	32.2	(26.1, 38.3)	0.71	(0.51, 1.00)
	Land	33.5	(29.6, 37.4)	0.75	(0.58, 0.98)

Hearing conservation is complicated by the fact that personnel must be prepared for high intensity sounds while also being able to attend to faint noise cues. DND has several initiatives underway to address hearing protection. First, the Hearing Conservation Program, which is designed to protect personnel against hearing loss in the CAF work environment, is currently being revised. Second, a study evaluating barriers to the use of hearing protection devices among CAF personnel is in progress. Third, a periodic health assessment, which includes a hearing status assessment, administered by CF Health Services is done every five years for personnel under age 40 and every two years for personnel aged 40 and older. Further investigation on the frequency, use, and type of hearing protection by Regular Force personnel may be warranted, as well as an evaluation of the revised Hearing Conservation Program to ascertain the effectiveness of, and compliance with, the current program.

11.4.4 Adequacy of Training and Equipment

Previous research suggests that individuals in the workplace will make a self-assessment of the prevalence of occupational hazards and the severity of their outcomes. In demanding work environments, the awareness of occupational hazards can contribute to burnout and exhaustion. A sense of control over occupational hazards, established through proper safety training and the provision of personal protective equipment (PPE), can diminish one's assessment of risk and reduce burnout (Leiter, 1997).

Only about one-quarter (22.8%) of all Regular Force personnel reported that their training and PPE were always adequate to protect their health against workplace hazards. An additional 55.3% reported that their training and PPE were usually adequate to protect their health. Feeling that training and PPE were adequate to protect one's health against harmful workplace exposures was more likely in: (1) personnel aged 40 – 60 years compared to personnel aged 18 – 39 years; and (2) officers compared to NCMs (Table 11-12). There were no differences by sex, or service element.



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Table 11-12: Frequency at which Regular Force personnel believe their training and personal protective equipment offers adequate protection against workplace hazards

Variable	Category	Percent (95% CI)			Odds Ratio	(95% CI) ^a
		Always	Usually	Sometimes / Never		
Overall		22.8 (20.6, 25.0)	55.3 (52.5, 58.1)	21.9 (19.5, 24.4)		
Age (years)	18 – 29	16.7 (12.8, 20.6)	54.6 (49.1, 60.1)	28.7 (23.6, 33.8)	Reference	
	30 – 39	18.8 (14.7, 22.9)	58.2 (52.9, 63.6)	23.0 (18.3, 27.7)	1.26 (0.94, 1.70)	
	40 – 49	28.9 (24.4, 33.4)	54.2 (49.1, 59.2)	17.0 (13.1, 20.9)	2.03 (1.51, 2.73)	
	50 – 60	37.9 (33.3, 42.5)	49.9 (45.2, 54.7)	12.1 (9.1, 15.2)	3.07 (2.30, 4.11)	
Rank	NCM	20.0 (17.3, 22.8)	55.0 (51.5, 58.6)	24.9 (21.8, 28.1)	Reference	
	Officer	31.4 (27.9, 34.8)	56.0 (52.3, 59.7)	12.6 (10.1, 15.1)	1.98 (1.63, 2.41)	

^a Odds ratios computed with ordinal logistic regression. See Methods section for more details.

11.5 Conclusion

Fewer Regular Force personnel had spent at least one month away from home because of military-related activities in the two years preceding the HLIS 2013/14 than in the two years preceding the HLIS 2008/9 (82.6% vs. 87.6%). Among personnel who had to leave home because of military-related activities in the past two years, the average time spent away from home was 6.7 months in 2013/14 compared to 8.6 months in 2008/9. The decrease in time spent away from home is most likely attributable to the end of combat operations in Afghanistan.

Approximately 25% of all service time accrued by Regular Force personnel in the two years preceding the HLIS 2013/14 were spent away from home. The biggest contributors to time spent away from home were courses and military exercises.

Over the past 12 months, 63.9% of Regular Force personnel reported having been very satisfied or satisfied with their jobs. An additional 16.6% of personnel were neither satisfied nor dissatisfied. Higher levels of job satisfaction were reported by older personnel. In line with previous research, personnel with indications of mental health disorders tended to have low levels of job satisfaction.

The majority (93.3%) of Regular Force personnel reported always wearing a seatbelt when driving a civilian vehicle. On the other hand, only 77.0% of personnel reported always wearing a seatbelt when operating a military vehicle. This difference may be partly attributable to the operational challenges of working inside a military vehicle (e.g., handling weapons, exiting a vehicle rapidly). Nevertheless, seatbelt use in military vehicles requires further investigation.

Nearly two-thirds (63.7%) of Regular Force personnel believed that some workplace exposures were harming their health. The most commonly reported harmful workplace exposures were: (1) excessive noise levels; (2) dust and fibres; and (3) awkward postures. However, data were not collected on the use of protective equipment to mitigate the harmful health impact of these exposures. Moreover, 21.9% of personnel reported



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sometimes, rarely, or never feeling adequately protected from workplace hazards. Further exploration of the type and use of personal protective equipment is warranted.

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Appendix A – Sample Size Formulae

To calculate the sample sizes, the following formulae were used.

The formula for the derivation of the necessary sample size (n^*). Assumptions include a level of confidence of 95%, as well as rounding the Z value for 95% from 1.96 to 2:

$$n^* = \frac{1}{e^2 + \frac{1}{N}}$$

where:

e is the desired margin of error (ME)

N is the total sample size of the population of interest.

Furthermore, the actual required sample size (n) must be inflated in order to account for the anticipated level of response, where the response rate (r) is specific to each sex X rank X age sub-group:

$$n = \frac{n^*}{r}$$





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12. ABSTRACT (Brief and factual summary of the document.)

Introduction: The Health and Lifestyle Information Survey (HLIS) is a quadrennial population-based survey that provides a snapshot of the current health status of Canadian Armed Forces (CAF) personnel. The survey captures data on a broad range of health and lifestyle factors, including health care utilization and satisfaction. Data from the survey is used to monitor and improve the health and well-being of CAF personnel by guiding program and policy development to sustain a healthy, fit, and deployable military force.

Methods: In 2013, 4,312 Regular Force personnel were randomly selected from a population of 56,574 personnel to complete a paper-based mail survey. The sample size was calculated to estimate health indicators within a +/- 3% margin of error by sex and rank at a 95% level of confidence. Data were weighted to reflect the age, sex, and rank distribution of the 2013 Regular Force. Descriptive statistics were used to summarize the data and regression techniques were used to establish statistical significance at the 95% confidence level between key demographic variables and the outcome of interest. Direct standardization to the 2013 Regular Force population was used to compare estimates between previous surveys conducted in 2004 and 2008/9.

Results: The adjusted response rate was 60%. Encouraging trends were noted for smoking and physical activity. The prevalence of smoking decreased from 23.0% in 2008/9 to 17.6% in 2013/14 and the percentage of physically active CAF personnel increased from 78.7% in 2008/9 to 85.2% in 2013/14. Conversely, indicators of poor diet were also noted. In 2013/14, a greater percentage of Regular Force personnel were obese (body mass index ≥ 30 kg/m²) than personnel in 2004 (25.0% vs. 20.2% respectively). Additionally, in 2013/14 only 28.7% of personnel ate vegetables and fruits more than six times per day (a proxy used for servings). A significant increase in the annual rate of repetitive strain injuries was noted from 22.6% in 2008/9 to 32.3% in 2013/14 with musculoskeletal injury cited by personnel as the most common reason for being unable to deploy in the past two years. Conditions that were unchanged from 2008/9 included: the prevalence of mental health conditions, acute injuries, the percentage of personnel who engaged in harmful drinking, and self-rated health.

Conclusion: Findings from the Regular Force HLIS 2013/14 indicate some encouraging trends in the health of CAF personnel as well as some challenges. Areas requiring further investigation that could enhance the health of CAF personnel include: obesity, diet, repetitive strain injuries, and alcohol use.

13. KEYWORDS, DESCRIPTORS or IDENTIFIERS (Technically meaningful terms or short phrases that characterize a document and could be helpful in cataloguing the document. Use semi-colons as delimiters.)

Alcohol; behavioural risk factors; chronic conditions; cross-sectional survey; deployment health; depression; diet; health behaviours; health care satisfaction; health care use; health promotion; health status; injuries; mental health; military; nutrition; obesity; occupational health; overweight; physical activity; post-traumatic stress disorder (PTSD); preventive health care; psychological distress; screening; substance use; suicide; tobacco; women's health.