________ Research Report _________

# Self-Reported Physical Health Status of Incoming Federally-Sentenced Women Offenders

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# Self-Reported Physical Health Status of Incoming Federally-Sentenced Women Offenders

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## Executive Summary

**Key words:** *physical health conditions, offender health status, women offenders*

The correctional health literature indicates that inmates have higher rates of infectious diseases, chronic diseases, and physical and psychiatric disorders relative to the general population. Given that women constitute a small percentage of incarcerated populations, the majority of studies have focused primarily on men. Nevertheless, women offenders have unique histories that may contribute to health issues and treatment needs during incarceration.

The Correctional Service of Canada (CSC) is responsible for the delivery of health services to inmates. In CSC, Commissioner's Directive 800 series details the operational requirements of institutions to provide access to essential medical, dental, and mental health services. All incoming federal offenders in CSC are routinely approached to consent to a health service assessment at intake. Health professionals interview offenders guided by health assessment forms (i.e., 1244 series) to determine their self-reported health conditions, medications, and health-related risk behaviours.

To provide CSC with information on the prevalence of physical health conditions among newly-admitted federal inmates, a large-scale research project was undertaken to examine the self-reported physical health conditions of all incoming men and women offenders. The study on all federally-sentenced men offenders admitted during a six-month period was completed in 2013 (see Stewart, Sapers, Nolan, & Power, in press). For the current study, health data from 280 women offenders on new warrants of committal were recorded for a 13 month period (from April 2012 to May 2013). Rates of physical health conditions were examined and compared to those of the newly-admitted men offenders collected in the previous research study and to rates in the general Canadian female population (primarily based on the Canadian Community Health Survey) for conditions where these data were available.

Results indicated that the most common health conditions cited by newly-admitted women offenders were back pain (26%), head injury (23%), hepatitis C virus (HCV; 19%), and asthma (16%). The women's prevalence rates of chronic health conditions were similar to those of their male counterparts. Exceptions to this similarity were head injury, which was higher for men than women (34% vs. 23%), and HCV, which was considerably higher for women than men (19% vs. 9%).

Relative to men, health services for incarcerated women may require a greater focus on promoting awareness of and treating some health conditions, such as those that are HCV-related. Overall, the results of this study, in conjunction with those found for incoming men offenders provide valuable information on the self-reported physical health status of offenders at the beginning of their incarceration that can be used as a benchmark to examine health trends in CSC over time.

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## Introduction

The correctional health literature indicates that offenders have higher rates of infectious diseases, chronic diseases, and physical and psychiatric disorders relative to the general population (Fazel & Baillargeon, 2011; Harris, Hek, & Condon, 2007; Robert, 2004; Wilper et al., 2009). Several factors may explain this finding, including that offenders are more likely to engage in higher-risk behaviours such as intravenous drug use, unsafe tattooing, smoking, physical aggression, multiple sexual partners, and alcohol abuse than members of the general population. Other socio-economic factors known to be associated with poorer health are also more common among offender populations, such as poverty, low educational attainment, substandard housing, and unemployment or underemployment (Hamilton & Bhatti, 1996; Public Health Agency of Canada, 2003; World Health Organization, 2003). It is important for correctional facilities to address offenders' health issues during incarceration because untreated conditions can exacerbate difficulties associated with reintegration into society (Leitzell, Madrazo, & Warner-Robbins, 2011; Mallik-Kane & Visher, 2008). Furthermore, the correctional system may provide an environment that supports proper health assessment, treatment, and education. Optimization of inmate health care can promote safety and security within both correctional facilities and in the community on release (Thompson, Zakaria, & Grant, 2011).

Results of two comprehensive international studies of inmate health not only provide estimates of prevalence of health conditions, but highlight which of these conditions are particularly elevated in inmate populations relative to the general population (Indig et al., 2010; National Commission on Correctional Health Care [NCCHC], 2002). In Australia, the state of New South Wales has surveyed the health status of inmates (Indig et al., 2010) on three occasions over the last ten years. The most prevalent chronic conditions among male offenders in the latest study in 2009 were asthma, back problems, and hypertension. In the US, a study extrapolated on data collected from various databases estimated the prevalence of acquired immunodeficiency syndrome (AIDS) among inmates to be 5 times higher than among the general US population, the prevalence of hepatitis C virus (HCV) to be 9 to10 times higher, and the prevalence of active tuberculosis between 4 and 17 times greater (NCCHC, 2004).

**Health Conditions of Women Offenders**

As women offenders constitute a small percentage of incarcerated populations, studies related to offender health have primarily focused on male offenders. Women offenders, however, have unique histories that may contribute to chronic health issues and increase health treatment needs during incarceration. The health histories of women offenders often includes issues such as physical and sexual abuse, chronic illness, and alcohol or drug dependency, and these issues can be overlooked for women when administrators focus on the male offender perspective (Guthrie, 2011).

In examining the prevalence of chronic medical conditions among women offenders in the US, incarceration has been found to be associated with a greater prevalence of hypertension, hepatitis, and cancer among women than men (Binswanger et al., 2009). Using a nationally representative survey of US inmates, Binswanger et al. (2010) investigated gender differences in chronic medical conditions (i.e., cancer, hypertension, diabetes, arthritis, asthma, hepatitis, and cirrhosis) and found that, compared with male inmates, women inmates had significantly higher prevalence of all medical conditions, even after adjustment for sociodemographic factors and substance dependence. In another US study, results revealed that many women entered correctional facilities with health issues that included hypertension, human immunodeficiency virus (HIV)/AIDS, depression, anxiety, and drug addictions (Morgan, 2013).

A health survey conducted with Australian inmates (Indig et al., 2010) found that the most prevalent conditions reported by women were poor eyesight (41%), asthma (40%), and back problems (34%). When asked if they currently suffered from an illness or disability that had troubled them for six months or more, women were more likely than men to indicate yes (54% vs. 46%, respectively). Women were also more likely to report that they suffered from two or more such illnesses or disabilities (22% vs. 12%).

A health care needs assessment of federal inmates in Canada indicated that almost a quarter of incarcerated women offenders (23%) had health concerns requiring immediate attention at intake, compared to just 13% of men (Correctional Service Canada [CSC], 2004). Other major findings indicated that compared to the general Canadian population, women offenders were three times more likely to be treated for diabetes, over two times more likely to be treated for cardiovascular conditions, and almost three times more likely to be treated for asthma.

Several research studies have been conducted concerning the burden of infectious diseases among Canadian inmates. These studies have shown that rates of HIV and HCV among incarcerated populations are much higher than those found in the general population, and this is especially true for women. For instance, a study looking at Quebec provincial inmates found that the prevalence of HIV infection was 2% among the male participants and 9% among the female participants (Poulin et al., 2007). The corresponding prevalence of HCV infection was 17% for men and 29% for women. Among federal inmates, the Correctional Service of Canada (CSC) conducted the National Inmate Infectious Diseases and Risk-Behaviours Survey (NIIDRBS) in 2007. Findings revealed that among all incarcerated women offenders ever tested for HIV infection (either before or during incarceration), 6% of non-Aboriginal women and 12% of Aboriginal women self-reported an HIV-positive result. Similarly, among those ever tested for HCV infection, 30% of non-Aboriginal women and 49% of Aboriginal women reported an HCV-positive result (Thompson et al., 2011). Using the NIIDRBS data, another study revealed that, among women, ever injecting drugs and ever being a sex-trade worker were associated with increased odds of self-reported HCV (Zakaria, 2012). Moreover, even after adjusting for injection drug use and sex-trade risk-behaviours, Aboriginal women's odds of self-reported HCV was 1.80 times greater than that of non-Aboriginal women. These findings suggest that there may be additional important factors associated with HCV that differ between Aboriginal and non-Aboriginal women.

Among women offenders, older women may also present unique health needs that include, but are not limited to, symptoms related to menopause, cancer (of the breast, uterus, and cervix), and osteoporosis. In another Canadian study, interviews were conducted with older federal women offenders. Among these women over the age of 50 years, 96% reported a number of chronic physical health problems, including arthritis, high cholesterol, hypertension, and osteoporosis. Furthermore, nearly two-thirds indicated that their physical health situation affected their daily living, including mobility and the pace at which they complete tasks (Michel, Gobeil, & McConnell, 2012).

## CSC's Health Services

As legislated by Sections 86 of the Corrections and Conditional Release Act (CCRA), CSC is responsible for the delivery of essential health care to inmates. CSC's Commissioner's Directive 800 (CSC, 2011a) sets out the operational requirements of institutions to provide

access to essential medical, dental, and mental health services and specifies the requirement for informed consent and the provision of drugs and medical supplies. Additionally, guidelines and manuals detail the operational level requirements and clinical elements of specific health services and programs (e.g., Management of Viral Hepatitis Guidelines, CSC, 2011b).

There have been several studies completed on the rate of infectious diseases in CSC penitentiaries (see CSC, 2008; Thompson et al., 2011; Zakaria, 2012), and ongoing infectious diseases surveillance has been conducted in CSC since 1998. Furthermore, the national introduction of the Computerized Mental Health Intake Screening System (CoMHISS) in 2009 has facilitated the mental health assessment of incoming federal inmates. Nevertheless, there has been limited research completed on the burden of physical health conditions and diseases among Canadian federal inmates. In the absence of an electronic medical record, estimating the prevalence of chronic medical conditions among incoming federally-sentenced offenders has proved challenging. A comprehensive assessment of the health care needs of CSC inmates was compiled in 2004; however, the conclusions were tentative due to limitations from the lack of reliable data sources. Thus, a recommendation of the report was to collect inmates' health data more systematically.

**The Present Study**

To gather information on the prevalence of chronic health conditions among newly-admitted federal inmates, a large-scale project was undertaken to examine the self-reported physical health conditions of all incoming men and women. The first phase of this research was to examine the health conditions of newly-admitted men offenders over a six-month period (see Stewart, Sapers, Nolan, & Power, in press). Overall, these results demonstrated that the most common health conditions reported by offenders were head injury, asthma, and back pain. With the exception of blood-borne viruses (HIV/AIDS and HCV) and asthma, rates of physical health conditions did not appear to be significantly higher in the male incarcerated offender population than the general Canadian adult male population. Results also revealed that the rates of many health conditions were higher for CSC men offenders over age 50 years than for offenders under 50 years, and compared to non-Aboriginal offenders, Aboriginal men were found to have higher rates of head injury and blood-borne viruses at all ages.

The present study serves as the second phase of this research to collect information on the prevalence of self-reported physical health conditions among incoming federally-sentenced

women offenders. As women offenders may present different health needs than men, a primary purpose of this study was to compare the rates of physical health conditions among women to those of their male counterparts.[1]

[1] This study, therefore, should be considered a companion piece to the results of the research report that examined the self-reported physical health status of incoming federally-sentenced men offenders (Stewart et al., in press).

# Method

## Participants

Participants included all consecutive women offenders admitted on a new Warrant of Committal (WoC)[2] to CSC institutions between April 1, 2012 and May 1, 2013[3]. Health assessment information was collected for 271 women, representing 90% of all new admissions for women offenders over this period. Information for an additional 9 women who had been transferred from foreign countries during the time period was also collected and included.[4] The resulting total number of women offenders included in the present study was 280.

The average age of participating offenders was 35 years ($SD$ = 11; *Range* = 18 – 66). Twenty-seven percent ($n$ = 76) of the women self-identified as being of Aboriginal ancestry.

## Procedure/Materials/Analytic Approach

Within the first 24 hours of admission to CSC custody, all offenders are routinely seen by a nurse to attend to immediate medical needs, explain the health assessment process, and seek informed consent for health services. At this time, part one of an intake health status assessment form is completed that includes questions on current medical health requiring immediate attention. Within two weeks of admission, a comprehensive health assessment is offered to offenders that includes: part two of the intake health status assessment (current vital signs and offenders' self-reported current and past health issues), a form on infectious disease screening (screening and immunization history), and an additional assessment on activities of daily living for offenders aged 50 years and over and/or for those who have a disability. These health assessment forms are referred to as the "1244 series", and have been developed specifically for CSC health services. All completed 1244 forms are placed in the offender's chart for reference during their incarceration.

For this study, over a 13-month period, data from all consecutive admissions extracted from the 1244 health assessment forms were recorded in electronic spreadsheets by regional reception staff. The questions from each of the 1244 series forms that were used to collect the

[2] A Warrant of Committal is a new admission to federal jurisdiction from the courts.
[3] In order to collect enough data for reliable analysis data were collected for a full year for women. The men's study collected data only for 6 months.
[4] Although these women were not technically on a new WoC, a decision was made to include them as we would have no previous record of their health assessments.

data in the present study are provided in Appendix A. Results were analysed in SAS using the prevalence rates of health conditions for the total sample.

Given that we collected information on a cohort of incoming women offenders, the use of inferential statistics was not deemed appropriate. Thus, results were presented descriptively (i.e., frequency tables). In several instances, rates were disaggregated by age group (younger and older than 50 years) and Aboriginal ancestry. The results for the women were also descriptively compared to the results of men obtained in a previous study which collected health data on all consecutive men offenders admitted to CSC institutions between April 1, 2012 and September 30, 2012 (Stewart et al., in press). The total sample of men consisted of 2,273 offenders, representing 96% of the new male admissions over this period. Additionally, the women's results were compared to estimates of some major health conditions in the Canadian female population. This information was primarily extracted from the Chronic Disease Infobase Data Cubes, interactive databases that contain many different types of chronic disease health indictor information (Public Health Agency of Canada, 2013), including data from Statistics Canada's Canadian Community Health Survey (CCHS)[5]. Meanwhile, comparison rates of HCV in Canada were based on a Public Health Agency report (Public Health Agency of Canada, 2007).

Lifestyle risk factor assessment included information extracted from the 1244 intake health status assessment Section II form, as well as the need rating for substance abuse domain derived from the Dynamic Factor Needs Identification and Analysis Revised (DFIA-R) completed at intake by parole officers on all incoming offenders. Each domain consists of multiple indicators to provide a rating of either no immediate need, low need for improvement, moderate need for improvement, or high need for improvement. For the purpose of the present study, ratings of moderate and high were collapsed to indicate a need. This assessment, combined with an assessment of the offenders' static risk factors, has been shown to have a strong association with offender outcomes on release (Brown & Motiuk, 2005). This information is stored on the Offender Management System (OMS), the electronic record on all CSC federal offenders.

[5] The CCHS is a cross-sectional survey that collects information related to health status, health care utilization and health determinants for the Canadian population (Statistics Canada, 2013). Since 2009, all rates are calculated excluding non-response categories ("refusal", "don't know", and "not stated") in the denominator.

## Results

The total number of women offenders with a self-reported health condition collapsed into categories by system/health issue is presented in Table 1. Almost three-quarters of the women reported lifestyle risk factors (i.e., smoking, drinking, drug use, and no physical exercise), and half were overweight or obese based on their body mass index (BMI). Over one-third of the women reported having a health condition that affected their musculoskeletal system; over a quarter reported a condition which affected their central nervous system; 20% reported having a blood-borne virus; about 20% reported conditions affecting their cardiovascular and respiratory systems; 6% reported ever having had cancer or problems with their reproductive system; and 5% reported having diabetes.

Table 1

*Prevalence of Health Conditions among Newly Admitted Women Offenders Grouped by System/Health Issue*

| | | (*N* = 280) | |
|---|---|---|---|
| System/Health Issue | Health Conditions Included | % | *n* |
| Body Mass Index (BMI) over (25+) | Overweight or obese | 53 | 147 |
| Musculoskeletal system | Arthritis, osteoporosis, and back pain | 31 | 87 |
| Central nervous system | Head injury, seizure activity, and spinal injury | 26 | 74 |
| Blood-borne viruses | HIV/AIDS and HCV | 20 | 46 |
| Cardiovascular system | High blood pressure, heart attack, high cholesterol, angina, stroke, and arrhythmia | 18 | 51 |
| Respiratory system | Asthma, bronchitis, and pulmonary disease | 18 | 50 |
| Gastrointestinal system | Ulcers | 7 | 19 |
| Cancer history | Any cancer | 6 | 17 |
| Reproductive system | Cervical/uterine/ovarian problems | 6 | 16 |
| Endocrine system | Diabetes | 5 | 14 |

*Note.* To ensure totals were representative of the known presence of health condition(s) within a particular system, those who did not report the presence of at least one health condition within a system and who also had missing information were excluded from the total. Also, please note that the overall total number will not add to 100% as an offender can have health conditions in multiple system categories. Furthermore, an offender can have multiple health conditions within a single category; in this case, an offender is represented just once per category. HIV/AIDS = human immunodeficiency virus/acquired immunodeficiency syndrome; HCV = hepatitis C virus.

A breakdown of the women's self-reported chronic health conditions within the different categories is presented in Table 2. For the purpose of comparison, this table also displays the total number of self-reported chronic conditions for incoming men offenders over a six month period in 2012 (see Stewart et al., in press). The most commonly reported health condition for men was head injury (34%), while the most commonly reported condition for women was back pain (26%). However, almost one-quarter (23%) of women reported head injury. Other commonly reported conditions for women were symptoms related to menopause, asthma, arthritis, and HCV. Asthma, back pain, and HCV were also commonly reported among the men offenders. It should be noted that when the frequency of women reporting a given health condition was less than five, the prevalence of these conditions were not provided in the table or expressed as a rate. This included the following conditions: heart attack, stroke, pulmonary disease, osteoporosis, prosthesis required, and HIV/AIDS.[6]

Lifestyle risk factors (presented in Table 3) may contribute to some of these health conditions. The most prevalent self-reported lifestyle risk factor examined for women was drinking alcohol (43%), and this was slightly lower than the rate reported by men (53%). Interestingly, on the intake assessment almost three-quarters (73%) of women had a moderate or high need on the substance abuse domain. Curiously, proportionately more women reported engaging in exercise than men, but despite this, they had slightly higher rates of obesity and injection drug use.

[6] This was decided because cells with counts less than five may allow for the identification of participants. Furthermore, inferences drawn from small numbers may be unreliable.

Table 2

*Self-reported Health Conditions among Newly Admitted Federal Offenders by Gender*

| | Women ($N$ = 280) | | Men ($N$ = 2,273) | |
|---|---|---|---|---|
| Health Condition | % | $n$ | % | $n$ |
| Cancer history (any)[a] | 6 | 17 | 2 | 39 |
| Central nervous system | | | | |
| Head injury | 23 | 65 | 34 | 738 |
| Seizure activity | 8 | 21 | 4 | 92 |
| Spinal injury | 4 | 10 | 3 | 56 |
| Cardiovascular system | | | | |
| High blood pressure | 10 | 28 | 9 | 184 |
| Arrhythmia | 5 | 14 | 2 | 34 |
| High cholesterol | 3 | 8 | 5 | 114 |
| Angina | 3 | 8 | 1 | 30 |
| Respiratory system | | | | |
| Asthma | 16 | 44 | 15 | 318 |
| Bronchitis | 3 | 9 | 3 | 63 |
| Gastrointestinal | | | | |
| Ulcers | 7 | 19 | 3 | 69 |
| Reproductive system | | | | |
| Menopause[b] | 19 | 52 | - | - |
| Cervical/uterine/ovarian[a] | 6 | 16 | - | - |
| Pregnant[c] | 2 | 6 | - | - |
| Endocrine system | | | | |
| Diabetes | 5 | 14 | 4 | 88 |
| Musculoskeletal system | | | | |
| Back pain[a] | 26 | 73 | 19 | 411 |
| Arthritis[a] | 9 | 26 | 8 | 177 |
| Walking difficulty[a] | 4 | 11 | 5 | 108 |
| Blood-borne viruses | | | | |
| HCV[d] | 19 | 43 | 9 | 191 |

*Note.* Percentages were calculated using the total $n$ available (excluding missing or unknown values).
Health conditions for women that had self-reported frequencies less than five were not included in the table. This included: heart attack, stroke, pulmonary disease, osteoporosis, and prosthesis required.
[a]$n$ = 1 missing. [b]$n$ = 3 missing. [c]$n$ = 2 missing. $n$ = 50 missing.

Table 3

*Lifestyle Risk Factors Related to Health Outcomes among Newly Admitted Federal Offenders by Gender*

| | Women ($N$ = 280) | | Men ($N$ = 2,273) | |
|---|---|---|---|---|
| Lifestyle Risk Factor | % | *n* | % | *n* |
| Drinks alcohol[a] | 43 | 120 | 53 | 1,049 |
| Obese (BMI 30+)[b] | 30 | 75 | 21 | 476 |
| Overweight (BMI 25–29.9)[b] | 29 | 72 | 30 | 677 |
| Injection drug use[a] | 27 | 76 | 21 | 415 |
| Current smoker[c] | 20 | 54 | 21 | 453 |
| No physical exercise[a] | 12 | 33 | 21 | 407 |
| Substance abuse need[d] | 73 | 146 | 61 | 1,232 |

*Note.* Percentages were calculated using the total *n* available (excluding missing or unknown values).
[a]*n* = 2 missing. [b]BMI = Body Mass Index; missing information for *n* = 31. [c]*n* = 9 unknown. [d]Criminogenic need ratings of moderate or high completed by intake parole officers; *n* = 79 missing.

Tables 4 and 5 compare the results of the women's health survey to the estimates of some major health conditions in the Canadian female population. Most of the cited rates represent results from Canadian female respondents aged 20 years and older; however, there are also some estimates that are based on all age respondents or respondents aged 12 and over. The CSC women offender population is aged 18 and over. Thus, these comparisons should be made with some caution given the differing age ranges. Again, it should be noted that health conditions for women that had self-reported frequencies of less than five were not presented in the Table. This included heart attack, stroke, pulmonary disease, osteoporosis, prosthesis required, and HIV/AIDS.

Of particular note, rates of self-reported HCV are 19% in the offender sample, whereas they are only 1% in the Canadian female population. Otherwise, with the exception of asthma, back pain, and obesity, health conditions do not appear to be significantly higher among newly admitted women offenders than the Canadian female population. In fact, rates of high blood pressure, arthritis, and diabetes are lower, possibly because the CSC population has a lower proportion of older adults than in the general population (Beaudette & Stewart, in press).

Table 4

*CSC Women Offenders' Self-Reported Health Conditions compared with the Canadian Female Population*

| Health Condition | CSC Women Offenders ($N$ = 280) % | Canadian Female Population ($N$ varies) % |
|---|---|---|
| Cancer history (any) | 6 | 5[a] |
| Central nervous system | | |
| Head injury | 23 | - |
| Seizures | 8 | - |
| Spinal injury | 4 | - |
| Cardiovascular system | | |
| High blood pressure | 10 | 20[b] |
| Arrhythmia | 5 | - |
| High cholesterol | 3 | - |
| Angina | 3 | - |
| Respiratory system | | |
| Asthma | 16 | 10[b] |
| Bronchitis | 3 | - |
| Gastrointestinal | | |
| Ulcers | 7 | 3[a] |
| Reproductive system | | |
| Menopause | 19 | - |
| Cervical/uterine/ovarian | 6 | - |
| Pregnant | 2 | - |
| Endocrine system | | |
| Diabetes | 5 | 6[b] |
| Musculoskeletal system | | |
| Back pain | 26 | 20[ac] |
| Arthritis | 9 | 23[b] |
| Walking difficulty | 4 | - |
| Blood-borne viruses | | |
| HCV | 19 | 1[d] |

*Note*. Health conditions for women that had self-reported frequencies less than five were not included in the table. This included: heart attack, stroke, pulmonary disease, osteoporosis, prosthesis required, and HIV/AIDS (human immunodeficiency virus/acquired immunodeficiency syndrome). HCV = hepatitis C virus.
*Note*. – signals that the data were not available in the Public Health Agency of Canada Infobase Data Cubes.
[a]2009/10, ages 12+ years, from the Canadian Community Health Survey (CCHS). [b]2011, ages 20+, from CCHS.
[c]Excludes fibromyalgia and arthritis. [d]2007, HCV prevalence all ages, from: www.phac-aspc.gc.ca/sti-its-surv-epi/model/pdf/model07-eng.pdf

Table 5

*CSC Women Offenders' Self-Reported Lifestyle Risk Factors Compared with the Canadian Female Population*

| Lifestyle Risk Factor | CSC Women Offenders (*N* = 280) % | Canadian Female Population (*N* varies) % |
|---|---|---|
| Drinks alcohol | 43 | - |
| Obese (BMI 30+) | 30 | 17[a] |
| Overweight (BMI 25 – 29.9) | 29 | 28[a] |
| Injection drug use | 27 | - |
| Current smoker | 20 | 19[a] |
| No physical exercise | 12 | 51[a] |

[a]2011, ages 20+, from the Canadian Community Health Survey (CCHS).
*Note*. – signals that the data were not available in the Public Health Agency of Canada Infobase Data Cubes.

Within the newly-admitted sample of women offenders, only 11% (*n* = 30) were over the age of 50 years. Given these small numbers, results were grouped by system or health issue when comparing women younger than 50 years and women older than 50 years. As shown in Table 6, there were a substantially greater proportion of older women who reported a health condition affecting their cardiovascular system than among the younger women offenders (47% vs. 15%). Additionally, there were a greater proportion of older women with diabetes and a BMI indicating they were overweight or obese. Younger women had a greater proportion of individuals who reported health conditions that affected their central nervous, respiratory, and musculoskeletal systems. Interestingly, both groups of women reported a similar rate of blood-borne viruses.

Table 6

*Self-Reported Health Conditions Grouped by System/Health Issue of Newly Admitted Federal Women Offenders Aged <50 Years and 50+ years*

| | | <50 years ($n$ = 250) | | 50+ years ($n$ = 30) | |
|---|---|---|---|---|---|
| System/Health Issue | Health Conditions Included | % | $n$ | % | $n$ |
| Body Mass Index (BMI) over (25+) | Overweight and obese | 52 | 129 | 60 | 18 |
| Cardiovascular system | High blood pressure, heart attack, high cholesterol, angina, stroke, and arrhythmia | 15 | 37 | 47 | 14 |
| Musculoskeletal system | Arthritis, osteoporosis, and back pain | 32 | 79 | 28 | 8 |
| Central nervous system | Head injury, seizure activity, and spinal injury | 27 | 68 | 20 | 6 |
| Endocrine system | Diabetes | 4 | 9 | 17 | 5 |
| Blood-borne viruses | HIV/AIDS and HCV | 20 | 41 | 22 | 5 |
| Respiratory system | Asthma, bronchitis, and pulmonary disease | 18 | 46 | 13 | 4 |
| Cancer history | Any cancer | 6 | 14 | 10 | 3 |
| Gastrointestinal system | Ulcers | 7 | 17 | 7 | 2 |
| Reproductive system | Cervical/uterine/ovarian | 6 | 15 | 3 | 1 |

*Note.* To ensure totals were representative of the known presence of health condition(s) within a particular system, those who did not report the presence of at least one health condition within a system and who also had missing information were excluded from the total. Also, please note that the overall total number will not add to 100% as an offender can have health conditions in multiple system categories. Furthermore, an offender can have multiple health conditions within a single category; in this case, an offender is represented just once per category. HIV/AIDS = human immunodeficiency virus/acquired immunodeficiency syndrome; HCV = hepatitis C virus.

An additional assessment of functional needs conducted at intake determines the number of offenders who require assistance with daily routines. As noted in the methodology section, this assessment is completed for offenders who are over the age of 50 and for all offenders who have a disability. Results revealed that 12% of the women in the sample required assistance with some aspect of daily living activities. The number of women who required assistance was under 10% for all individual types of routines (i.e., laundry, transferring, physical ambulation, eating, dressing, bathing, toileting, food preparation, communication, and housekeeping).

In the current sample, 28% ($n$ = 76) of the women identified as Aboriginal. Table 7 examines the prevalence of self-reported health conditions (grouped by system/health issue) of newly admitted women offenders by Aboriginal ancestry. Results indicated that a greater proportion of Aboriginal women reported blood-borne viruses than non-Aboriginal women (27% vs. 17%). When looking at HCV infections only, 27% of Aboriginal women reported being

HCV-positive, compared to 16% of non-Aboriginal women. Additionally, a slightly greater proportion of Aboriginal women reported diabetes, ulcers, and a health condition affecting the central nervous system than non-Aboriginal women.

As seen in Table 8, Aboriginal women offenders also had generally higher rates of lifestyle risk factors than non-Aboriginal women offenders, including higher rates of obesity, drinking alcohol, cigarette smoking, and injection drug use. Indeed, over 90% of the Aboriginal women were rated as having a moderate or high need on the substance abuse domain at intake.

Table 7

*Self-Reported Health Conditions Grouped by System/Health Issue of Newly Admitted Federal Women Offenders by Aboriginal Ancestry*

| | | Aboriginal ($n$ = 76) | | Non-Aboriginal ($n$ = 200) | |
|---|---|---|---|---|---|
| System/Health Issue | Health Conditions Included | % | $n$ | % | $n$ |
| Musculoskeletal system | Arthritis, osteoporosis, and back pain | 32 | 24 | 31 | 61 |
| Central nervous system | Head injury, seizure activity, and spinal injury | 29 | 22 | 25 | 50 |
| Blood-borne viruses | HIV/AIDS and HCV | 27 | 18 | 17 | 27 |
| Cardiovascular system | High blood pressure, heart attack, high cholesterol, angina, stroke, and arrhythmia | 17 | 13 | 19 | 37 |
| Respiratory system | Asthma, bronchitis, and pulmonary disease | 16 | 12 | 19 | 38 |
| Endocrine system | Diabetes | 11 | 8 | 3 | 6 |
| Gastrointestinal system | Ulcers | 11 | 8 | 6 | 11 |
| Reproductive system | Cervical/uterine/ovarian | 9 | 7 | 5 | 9 |
| Cancer history | Any cancer | 8 | 6 | 6 | 11 |

*Note.* To ensure totals were representative of the known presence of health condition(s) within a particular system, those who did not report the presence of at least one health condition within a system and who also had missing information were excluded from the total. Also, please note that the overall total number will not add to 100% as an offender can have health conditions in multiple system categories. Furthermore, an offender can have multiple health conditions within a single category; in this case, an offender is represented just once per category. HIV/AIDS = human immunodeficiency virus/acquired immunodeficiency syndrome; HCV = hepatitis C virus.

Table 8

*Lifestyle Risk Factors Related to Health Outcomes among Newly Admitted Women Offenders by Aboriginal Ancestry*

| | Aboriginal ($n$ = 76) | | Non-Aboriginal ($n$ = 200) | |
|---|---|---|---|---|
| Lifestyle Risk Factor | % | $n$ | % | $n$ |
| Overweight (BMI 25-29.9) | 30 | 20 | 29 | 51 |
| Obese (BMI 30+) | 37 | 25 | 28 | 49 |
| Drinks alcohol | 51 | 38 | 40 | 79 |
| No physical exercise | 7 | 5 | 14 | 27 |
| Injection drug use | 39 | 29 | 23 | 46 |
| Current smoker | 28 | 21 | 17 | 32 |
| Substance abuse need[a] | 94 | 59 | 63 | 85 |

*Note.* Percentages were calculated using the total *n* available (excluding missing or unknown values). [a]Criminogenic need ratings of moderate or high completed by intake parole officers.

Given the role of social factors in contributing to health status, we also profiled the prevalence of health conditions by some key lifestyle factors (see Table 8). Results indicated that self-reported injection drug use was associated with higher rates of numerous health conditions, including head injury, seizures, spinal injury, angina, pulmonary disease, ulcers, back pain, arthritis, and HCV infection. In fact, rates of HCV were approximately 8 times higher among the women who injected drugs than those who did not. Obesity among the newly admitted women offenders was associated with higher rates of spinal injury, and, as would be expected, high blood pressure, high cholesterol, angina, stroke, diabetes, and back pain. Current smoking among newly admitted women offenders was associated with higher rates of seizures, spinal injury, bronchitis, ulcers, back pain, and HCV. These results should be interpreted with caution, however, due to the ambiguous wording of the question used to assess the status "current smoker." This potential limitation is discussed further in the discussion section.

Table 9

*Self-Reported Health Conditions among Newly Admitted Women Offenders by Lifestyle Risk Factors*

| | Obese[a] | | Current Smoker[b] | | Drinks Alcohol[c] | | Injected Drugs[d] | |
|---|---|---|---|---|---|---|---|---|
| | Yes (*n* = 75) | No (*n* = 205) | Yes (*n* = 54) | No (*n* = 217) | Yes (*n* = 120) | No (*n* = 156) | Yes (*n* = 76) | No (*n* = 199) |
| Health Condition | % | % | % | % | % | % | % | % |
| Cancer history | 8 | 5 | 4 | 7 | 5 | 7 | 9 | 5 |
| Central nervous system | | | | | | | | |
| Head injury | 23 | 21 | 30 | 21 | 25 | 22 | 42 | 17 |
| Seizure activity | 4 | 6 | 15 | 6 | 8 | 8 | 18 | 4 |
| Spinal injury | 7 | 2 | 7 | 3 | 3 | 4 | 7 | 3 |
| Cardiovascular system | | | | | | | | |
| High blood pressure | 15 | 6 | 6 | 11 | 5 | 14 | 9 | 11 |
| High cholesterol | 7 | 2 | 2 | 3 | 2 | 4 | 1 | 4 |
| Angina | 5 | 1 | 2 | 3 | 3 | 3 | 7 | 2 |
| Respiratory system | | | | | | | | |
| Asthma | 17 | 14 | 15 | 16 | 13 | 18 | 21 | 14 |
| Bronchitis | 3 | 4 | 7 | 2 | 4 | 3 | 5 | 3 |
| Gastrointestinal | | | | | | | | |
| Ulcers | 5 | 6 | 11 | 5 | 6 | 8 | 1 | 4 |
| Endocrine system | | | | | | | | |
| Diabetes | 12 | 2 | 6 | 5 | 5 | 5 | 3 | 6 |
| Musculoskeletal system | | | | | | | | |
| Back pain | 33 | 22 | 35 | 24 | 25 | 27 | 36 | 23 |
| Arthritis | 11 | 8 | 9 | 9 | 6 | 12 | 16 | 7 |
| Blood-borne viruses | | | | | | | | |
| HCV[e] | 20 | 17 | 38 | 13 | 16 | 21 | 47 | 6 |

*Note.* Percentages were calculated using the total *n* available (excluding missing or unknown values). Health conditions for women that had self-reported frequencies less than five were not included in the table. This included: heart attack, stroke, pulmonary disease, osteoporosis, prosthesis required, and HIV/AIDS (human immunodeficiency virus/acquired immunodeficiency syndrome). HCV = hepatitis C virus.
[a]Obese = BMI 30+. [b]Response to question “Current smoker?”. [c]Response to question “Do you drink alcohol?”. [d]Response to question “Have you ever injected drugs?”.

## Discussion

The present study provides an overview of the self-reported physical health conditions of women offenders admitted to CSC institutions over a 13-month period, from April 2012 to May 2013. Results revealed that the most common health conditions cited by newly-admitted women offenders were back pain (26%), head injury (23%), HCV (19%), and asthma (16%). In general, the women's prevalence rates of physical health conditions were similar to, or higher than, those of their male counterparts. Exceptions to this finding were head injury, which was higher for men, and HCV, which was higher for women. The high rates of HCV infection among federally-sentenced women are consistent with previous research that has shown higher rates of HCV among incarcerated populations than the general population, as well as higher rates among women offenders than men offenders (e.g., Poulin et al., 2007; Thompson et al., 2011). In the present study, 19% of women reported a positive result, whereas in the men's study, only 9% reported a positive result. The current results are also consistent with prior research that has shown particularly high rates of HCV among Aboriginal women offenders in comparison to their non-Aboriginal counterparts (Thompson et al., 2011; Zakaria, 2012). In the present study, 27% of Aboriginal women reported a positive result, while 16% of non-Aboriginal women did so. Interestingly, the rates of HCV in the present study are lower than the rates found in CSC's NIIDRS (Thompson et al., 2011). In that study, 49% of Aboriginal women self-reported HCV compared to 30% of non-Aboriginal women. Lower rates in the present study may be due to exclusive use of self-reported HCV at intake to custody, whereas the NIIDRS study surveyed all incarcerated women. Thus, it is possible that many women in the present study were not yet tested, or were tested and had yet to receive their results. CSC currently offers testing and treatment to all consenting offenders within 14 days of intake. Given that the screening process may detect previously undiagnosed infection among new admissions, the self-reported data reported in the current report may be an underestimate of the true prevalence.

HCV is associated with liver disease in women with a history of intravenous drug use and heavy alcohol consumption (Leitzell, Madrazo, & Warner-Robbins, 2011). Consistent with these finding, Aboriginal women in the present study reported higher rates of drinking alcohol and injection drug use than non-Aboriginal women. HCV-related health conditions may be particularly important to address during incarceration, as chronic HCV is often asymptomatic but can progress to symptomatic liver disease and death (Rhodes, Taxman, Friedmann, & Cropsey,

2008). Interestingly, however, Zakaria (2012) found that, even after adjusting for injection drug use and sex-trade behaviours, Aboriginal women were still more likely than non-Aboriginal women to report having HCV. This finding suggests that there may be additional important behavioural and social factors associated with HCV that differ between Aboriginal and non-Aboriginal women that are not being captured. Thus, future research could examine the extent to which blood-borne viruses such as HIV/AIDS and HCV are linked to other lifestyle and risk behaviours among women offenders. This research would help to shed light on the higher rates of HCV infections, especially among Aboriginal women and assist in designing health promotion and awareness programs.

In the present study, Aboriginal women offenders also reported higher rates of obesity than their non-Aboriginal counterparts. For instance, 37% of Aboriginal women were recorded as having a BMI that classified them as obese, while this occurred for 28% of the non-Aboriginal women. Obesity may increase the risk of many diseases and health issues such as type 2 diabetes and cardiovascular disease (Clarke & Waring, 2012). In fact, in the present study, Aboriginal women had a higher rate of self-reported diabetes than non-Aboriginal women (11% vs. 3%). Obesity at intake to custody is particularly problematic given that there is some evidence that inmates may gain weight during their incarceration due to stress, high-calorie diet, and lack of physical exercise (Douglas, Pulgge, & Fitzpatrick, 2009). It should be noted that the present study did not take into consideration specific subsamples of Aboriginal offenders. For instance, being of Aboriginal ancestry was not disaggregated by First Nations, Métis, or Inuit status, and living on or off of a reserve was not taken into consideration. The prevalence of health conditions may vary based on such factors, and future research in this area may be warranted.

CSC's offender population has been aging, with a steady increase in the proportion of offenders over the age of 50 years (Stewart et al., in press). As previously noted, older women offenders may present unique needs related to their age (e.g., increased symptoms related to menopause, higher rates of cancer and osteoporosis). Overall, we did not find a large difference between the health status of younger and older women offenders in the present study. Given the very small number of women over the age of 50 years ($n$ = 30), however, these results should be interpreted with caution. A greater proportion of older women did report menopause, diabetes, and a health condition affecting their cardiovascular system, while younger women had a greater proportion of individuals who reported health conditions that affected their central nervous,

respiratory, and musculoskeletal systems.

## Limitations

The primary limitation of the present study is that only BMI and vital signs were objectively measured by health care professionals, and all other data were self-reported by the offenders. Nevertheless, this methodology is similar to that used in other health prevalence studies, both among the general population (e.g., CCHS) and with offenders (e.g., NIIDRS).

There are a small number of women offenders at CSC, and the present research, although collecting data over 13 months, only resulted in a sample of 280. The smaller numbers of women offenders can make it difficult to examine relationships between different health conditions within subsamples, especially when examining group differences such as those between younger and older women and between Aboriginal and non-Aboriginal women. Future research could collect data on women for a longer period of time to ensure representative estimates of health issues for sub-populations of women offenders.

As previously noted, there may have been some confusion over several of the lifestyle risk factor questions in the assessment interview, including the questions related to smoking and drinking alcohol, which may have weakened the possible association between these behaviours and health outcomes. For instance, women are required to cease smoking upon admittance to a federal institution and indeed may have stopped smoking if they were held in provincial custody pending trial. The smoking question, however, is unclear regarding whether it refers to women who have continued to smoke while incarcerated, or women who smoked up until their current incarceration. Furthermore, the nature of the question “Do you drink alcohol?” makes it unclear whether it targets current drinkers or women who *have* drunk prior to their incarceration. The rating on the substance abuse domain of the DFIA-R may be a preferred method of determining the association of substance abuse with health conditions.

## Conclusions

Of the physical health conditions assessed in this study, back pain, head injury, HCV, and asthma were the most prevalent among women offenders at intake to federal custody. In general, women’s prevalence rates were similar to, or slightly higher than, those of their male counterparts. The exceptions to this were that head injury was higher for men and HCV was higher for women. Aboriginal women offenders demonstrated higher rates of HCV than non-Aboriginal women.

Overall, this study and the study conducted with men (i.e., Stewart et al., in press) provide valuable information on the health status of offenders at the beginning of their incarceration. Such information provides administrative data on the burden of chronic health conditions which allows for an evidence-based estimate of health needs and associated costs that need to be allocated to treat them. The current results on incarcerated women offenders can be used in conjunction with those found for incoming men offenders to provide a benchmark that CSC can use to examine offenders' health trends over time.

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Appendix A: Questions Used from Each of the 1244 Series Forms

**Intake Health Status Assessment: Section I**

| Current Medical Health | | |
|---|---|---|
| Draining Wound | ☐ No | ☐ Yes |
| Current Smoker | ☐ No | ☐ Yes |
| If yes, Discussed smoking ban and cessation option: | ☐ | |
| **Alerts** | | |
| Prosthesis Required | ☐ No | ☐ Yes |
| Pregnant | ☐ No | ☐ Yes |
| If yes, Due Date: | | |

**Intake Health Status Assessment: Section II**

| Anthropometrics and Current Vital Signs | | | |
|---|---|---|---|
| Height: | (m) | Weight: | (kg) |
| **Cancer History** | | | |
| Have you ever had cancer? | | ☐ No | ☐ Yes |
| If yes, specify: | | | |
| **Central Nervous System** | | | |
| Do you have or have ever had problems with: | | | |
| Head Injury | (specify): | | |
| Seizure Activity | (specify) : | | |
| Spinal Cord Injury | (specify) : | | |
| **Cardiovascular System** | | | |
| Do you have or have ever had problems with: | | | |
| High Blood Pressure | (specify) : | | |
| Heart Attack | (specify) : | | |
| Elevated Cholesterol | (specify) : | | |
| Angina | (specify) : | | |
| Stroke | (specify) : | | |
| Other: | Arrhythmia | | |
| **Otolaryngeal System, Respiratory System and Eyes** | | | |
| Do you have or have ever had problems with: | | | |
| Asthma | (specify) : | | |
| Chronic Bronchitis | (specify) : | | |
| Chronic Obstructive Pulmonary Disease | (specify) : | | |

| GastroIntestinal | | |
|---|---|---|
| A) Stomach/Oesophagus | | |
| Do you have or have ever had problems with: | | |
| Ulcers | (specify) : | |
| Urinary/Reproductive Systems | | |
| A) Male Health Issues | | |
| Prostate Problems? | ☐ No | ☐ Yes |
| If yes, specify: | | |
| B) Female Health Issues | | |
| Previous Reproductible Problems | | |
| Cervical/Uterine/Ovarian Cancer | | |
| Endocrine System | | |
| Do you have or have ever had problems with: | | |
| Diabetes | (specify): | |
| Musculoskeletal System | | |
| Do you have or have ever had problems with: | | |
| Difficulty Walking | (specify): | |
| Arthritis/Rheumatism | (specify): | |
| Osteoporosis | (specify): | |
| Back Pain | (specify): | |
| Blood/Immune Systems | | |
| Do you have or have ever had problems with: | | |
| Hodgkin’s Disease | (specify): | |
| Leukemia | (specify): | |

**Health Status Admission Assessment: For Those Aged Fifty and Older and/or Those with Self Care Needs**

| Activities of Daily Living | |
|---|---|
| **Eating** | |
| ☐ | Eats without assistance |
| ☐ | Eats without assistance but requires special devices |
| ☐ | Requires assistance<br>(specify): |
| **Toileting** | |
| ☐ | Needs no assistance. Is independent with or without equipment |
| ☐ | Requires someone to bring equipment or to assist to bathroom |
| ☐ | Equipment required<br>(specify): |
| ☐ | Assistant required<br>(specify): |
| **Transferring** | |
| ☐ | Needs no assistance. Is independent with or without equipment |
| ☐ | Depends on equipment and needs another person to position wheelchair, walker, etc. but otherwise manages transfer alone |
| ☐ | Equipment required<br>(specify): |
| ☐ | Assistance required<br>(specify): |
| **Dressing** | |
| ☐ | Dresses without assistance; may use special devices |
| ☐ | Needs help assembling clothes or equipment |
| ☐ | Special devices required<br>(specify): |
| **Bathing** | |
| ☐ | Bathes self (tub, shower, sponge) without help |
| ☐ | Bathes self with help getting in and out of tub/shower |
| ☐ | Requires reminding to bathe |
| ☐ | Assistance required<br>(specify): |
| **Physical Ambulation** | |
| ☐ | Walks around all areas of the prison, including stairs, without any assistive device |
| ☐ | Walks around all areas of the prison but is unable to climb stairs (for any reason), does not require an assistive device |
| ☐ | Walks independently for short distances only i.e., can ambulate in own living area but requires wheelchair or vehicle to go outside of living unit |
| | Requires assistance: |
| ☐ | Walking with another person |
| ☐ | Wheelchair, independent |
| ☐ | Wheelchair, not independent |
| ☐ | Cane |
| ☐ | Walker |

| Food Preparation | |
|---|---|
| ☐ | Able to prepare own meals (could manage in environment with small group feeding) |
| ☐ | Able to prepare own meals but requires assistive devices (structural changes to kitchen, personal assistive devices) |
| ☐ | Needs to have meals prepared |
| | (specify): |

| Housekeeping | |
|---|---|
| ☐ | Able to maintain own cell |
| ☐ | Able to do light tasks only (sweeping, washing dishes) |
| ☐ | Unable to maintain an acceptable level of cleanliness of environment |
| | (specify): |

| Laundry | |
|---|---|
| ☐ | Does personal laundry completely |
| ☐ | Must have laundry done for him/her |
| | (specify): |

| Communication | |
|---|---|
| ☐ | Communication is unimpaired |
| ☐ | Impaired communication |
| | (specify): |
| | Impaired communication is due to: |
| ☐ | Physical impairment |
| ☐ | Language barrier |
| ☐ | Cognitive impairment |

**Intake Health Status Assessment: Infectious Disease Screening (1244-ID)**

| Screening History | | Outcome | |
|---|---|---|---|
| | | Positive | Negative |
| ☐ | HIV/AIDS | ☐ | ☐ |
| ☐ | Hepatitis C | ☐ | ☐ |

| Lifestyle | | | |
|---|---|---|---|
| Yes | No | Unknown | |
| ☐ | ☐ | ☐ | Do you do any physical exercise? |
| ☐ | ☐ | ☐ | Do you drink alcohol? |
| ☐ | ☐ | ☐ | Have you ever injected drugs (including steroids)? |