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## RESEARCH REPORT

### Prevalence of Mental Disorder among Federally Sentenced Women Offenders: In-Custody and Intake Samples

2018 N° R-420

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**Prevalence of Mental Disorder among Federally Sentenced Women Offenders:  
In-Custody and Intake Samples**

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## Executive Summary

**Key words:** *Federally sentenced women offenders; lifetime and current prevalence of mental disorders; co-occurring disorders; Indigenous women offenders*

A considerable body of international and Canadian research has established a high prevalence of mental disorder among women prison inmates, up to four times or more the prevalence found in the general population. An estimated three-quarters of women inmates have an alcohol/substance use disorder (e.g., Brown et al., 2018), and half or more of have a co-occurring mental disorder with substance abuse or personality disorder (e.g., Bebbington et al., 2017; Derkzen, Booth, McConnell & Taylor, 2012).

The current report compares and combines the results of the previously reported 2016 study of the prevalence of mental disorder among in-custody federal women inmates with the recent results of the 2017 intake sample of federal women inmates.

Between February 25, 2016 – October 11, 2016 a total of 160 women in custody were interviewed on the SCID-I/NP and SCID-II to assess both lifetime and current prevalence of the following disorders: 1) mood; 2) psychotic; 3) substance use; 4) anxiety; 5) eating; 6) pathological gambling; 7) Antisocial Personality Disorder (APD); and 8) Borderline Personality Disorder (BPD). Following the completion of the in-custody study, between October 11, 2016 – December 31, 2017, a total of 86 women recently admitted to federal custody completed the SCID-I and SCID-II instruments. Compared to the in-custody sample participants, women in the intake sample were similar in demographic and criminal history characteristics, but the prevalence of mental disorder among the intake sample participants was statistically significantly lower. This is consistent with other research that noted that in-custody prison populations include a higher proportion of long-term and higher risk offenders who are also more likely to have a higher prevalence of mental disorder compared to samples of recently admitted prisoners (e.g., Brown, Hirdes & Fries, 2013; Moffit et al., 2010; Stewart et al., 2010).

For the purposes of analysis, and to more validly estimate the prevalence of mental disorder among the federal women, the in-custody and intake samples were combined into one sample ( $N = 246$ ). Results showed that more than three-quarters of women inmates had a lifetime or current mental disorder and at least two-thirds of the women reported a lifetime co-occurring mental disorder with alcohol/substance use or borderline or antisocial personality disorder. More than half (52.0%) of the women in the combined sample reported a major mental illness at some point in their lifetime (psychosis, major depression or bi-polar disorder), and 17.9% report symptoms consistent with a current major mental illness. One-third (33.3%) of women with a current mental disorder had a GAF score  $\leq 50$ , indicating serious impairment in psychological and social functioning. Indigenous women had the highest prevalence of mental disorder and the most serious impairment in functioning.

The results from the in-custody, intake, and combined samples of federal women inmates confirm findings from international and other Canadian studies of a high prevalence of mental disorder posing a significant challenge to provision of effective treatment programs and services.





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## Introduction

International and Canadian studies have demonstrated a high prevalence of mental disorder among prison inmates (Al-Rousan, Rubenstein, Sieleni, Deol & Wallace, 2017; Beaudette & Stewart, 2016; Brown et al., 2018; Fazel & Seewald, 2012; Mundt, Kastner, Mir, & Priebe, 2015). The prevalence of a major mental illness (psychosis, major depression, bi-polar disorder) among inmates is estimated to be four times or more the rate found in the general population (Bebbington et al., 2017; Prins, 2014; Public Health Agency of Canada, 2015; Steel et al., 2014). Women inmates have higher rates of major mental illness than their male counterparts with estimates two to four times greater (Al-Rousan et al., 2017; Baillargeon et al., 2009; Bebbington et al., 2017; Brown, Hirdes & Fries, 2013; Derkzen, Booth, McConnell & Taylor, 2012; Fazel, Hayes, Bartellas, Clerici & Trestman, 2016; Prins 2014). The prevalence of substance use and personality disorders among inmates is estimated to be as high as 80%, eight times greater than estimates in the general population (Beaudette, & Stewart, 2016; Derkzen et al., 2012; Fazel, Yoon & Hayes, 2017; Proctor & Hoffmann, 2012; Slade & Forrester, 2013; Stewart et al., 2010). As many as half of prison inmates have co-occurring disorders, most frequently a mental disorder in combination with a personality or substance use disorder (Beaudette, & Stewart, 2016; Butler, Indig, Allnutt & Mamoon, 2011; Fazel & Danesh, 2002; Proctor & Hoffman, 2012). Internationally, Indigenous offenders are over-represented in prison systems relative to their numbers in the general population (Grant, 2016; Jacobson, Heard & Fair, 2017). The prevalence of mental disorder among Indigenous inmates has been found to be similar to that of non-Indigenous prisoners (Beaudette & Stewart, 2016; Doyle et al., 2015), though higher rates of substance use disorder and antisocial personality disorder have been reported (Beaudette, Power & Stewart, 2015; Derkzen et al., 2012; Dolan, Rodas & Bode, 2015).

Estimates of prevalence across constituencies should be interpreted with caution due to differences in the definition of mental disorder used, variability in the instruments used to assess symptoms, and the research design and sampling methodology employed (Baillargeon et al., 2009; Dean & Korobanova, 2017; Fazel et al., 2016; Prins, 2014). When alcohol or substance misuse or personality disorders are included in the overall estimate of mental disorder, prevalence among prison inmates may exceed 80% (Brink, Doherty & Boer, 2001; James & Glaze, 2006; Vicens et al., 2011; Macciò et al., 2015; Beaudette & Stewart, 2016), while other

studies that focus exclusively on serious mental disorders such as psychosis, bi-polar disorder or major depression will report substantially lower estimates, in the range of 5% - 15% (Al-Rousan et al., 2017; Fazel & Seewald, 2012; Senior et al., 2013; Steadman, Osher, Robbins, Case & Samuels, 2009). Screening, self-report and other lay person-administered instruments have been reported to yield substantially greater estimates of the prevalence of mental disorder among inmates than clinical diagnostic instruments (Fazel et al., 2016; Martin, Potter, Crocker, Wells & Colman, 2016; Narrow, Rae, Robins & Regier, 2002; Perälä et al., 2007; Prins, 2014; Sandanger, Nygård & Sørensen, 2002). Cross-sectional, in-custody studies of mental disorder among prison inmates are designed to estimate the proportion of the population demonstrating the condition or characteristic at a specific point in time and may over-estimate the prevalence of serious mental disorders (Brandt, 2012; Brown et al., 2013; Fazel et al., 2016; Moffitt et al., 2010). Intake studies are designed to estimate the prevalence of mental disorder among recently admitted inmates, and may capture higher overall rates of mental disorder, in particular anxiety, depression and substance use disorder, which longitudinal research shows decline in frequency and severity as adjustment to imprisonment occurs over time (Bebbington et al., 2017; Brandt, 2012; Davoren et al., 2015; Fazel, Yoon & Hayes, 2017; Hassan et al., 2011; James & Glaze, 2006; Walker et al., 2014).

The current report compares and combines the results of the previously reported mental health survey of a national cross-sectional sample of federal women inmates who were in custody with the results of the 2017 intake sample of federal women inmates. The SCID-I/NP and SCID-II mental health assessment instruments, widely considered to be the ‘gold standard’ for assessing and clinically diagnosing DSM-IV-TR Axis I and Axis II disorders (Corrigan, Mueser, Bond, Drake, & Solomon, 2008), were employed in both studies to ensure comparability of the data. The goal of the current report is to present a comprehensive description of mental disorder among Canadian federal women offenders to support planning, programs and treatment to meet their mental health needs.

## Method

### Participants

In the 2016 in-custody study, all women incarcerated in the six federal women's institutions across the five federal regions during the study period February 25, 2016 – October 11, 2016 were eligible to participate in the study. A total of one hundred and fifty-four women completed the mental health assessment instruments. Six additional SCID assessments completed with federal women offenders being treated at the Regional Psychiatric Centre in Saskatoon in December 2017 were later added to the in-custody sample, for a total  $N = 160$ ,<sup>1</sup> representing 22.9% of all federal women prisoners incarcerated during the study period.

In the 2017 intake study, all women admitted to the six federal institutions across the five federal regions during the study period October 11, 2016 – December 31, 2017, and incarcerated no longer than 90 days, were eligible to participate. As most women incarcerated at the Okimaw Ohci Healing Lodge are admitted elsewhere, the researchers did not visit the lodge for the intake study. A total of 86 women completed the SCID-I/NP and SCID-II assessments during the course of the intake study, representing 17.6% of all federal women admitted into federal prisons during the study period.

None of the women included in the in-custody sample were eligible for inclusion in the intake sample. Comparison of the proportion of in-custody and intake samples participants with the total population of federal women inmates, by institution, is presented in Table 1. The number of prisoners the researchers were unable to contact or declined/withdrew their participation is also reported for the intake study.<sup>2</sup> Given the small overall sample sizes, institutional or regional comparisons are not presented. Owing to the larger institutional capacity

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<sup>1</sup> Though plans were made to conduct additional assessments with federal women prisoners being treated under contract at the Institut Philippe Pinel in Montreal, it was not possible to complete a separate ethical review and obtain permission to conduct the assessments by time of completion of the in-custody sample collection.

<sup>2</sup> The number of prisoners whom the researchers were unable to contact or declined/withdrew their participation during the 2016 in-custody study is previously reported (Brown et al., 2018).

of the Edmonton Institution for Women and the Grand Valley Institution, and consequently greater number of admissions during the course of the intake study, both of these sites were visited twice by the researchers, accounting for the larger number of completed assessments recorded for each.

Table 1

*Comparison of In-Custody Sample (N = 160) and Intake Sample (N = 86) Participants and Non-Participants by Institution*

Institution	In-Custody Study		Intake Study			
	Count <i>n</i>	Participants % ( <i>n</i> )	Total Admissions In Period <i>n</i>	Participants % ( <i>n</i> )	Unable to Contact/No Show % ( <i>n</i> )	Declined/ Withdrawn % ( <i>n</i> )
Fraser Valley Institution	112	29.5 (33)	32	9.4 (3)	-	12.5 (4)
Edmonton Institution for Women	167	19.2 (32)	179	19.0 (34)	3.9 (7)	3.9 (7)
Okimaw Ohci Healing Lodge	44	38.6 (17)	64	-	-	-
Grand Valley Institution	171	20.5 (35)	150	16.0 (24)	-	6.7 (10)
Joliette Institution	115	14.8 (17)	81	12.3 (10)	-	2.5 (2)
Nova Institution	81	24.7 (20)	59	25.4 (15)	-	1.7 (1)
Regional Psychiatric Centre	11	54.5 (6)	-	-	-	-
Other			11	-	-	-
Total	700	22.9 (160)	576	14.9 (86)	1.2 (7)	4.2 (24)

Comparison of the demographic and criminal history characteristics of the intake sample participants with non-participating admissions during the study period October 11, 2016 – December 31, 2017 is shown in Appendix A, Table A. There were no statistically significant differences in the distribution of demographic or criminal history characteristics between the intake sample participants and non-participant admissions.

The demographic and criminal history characteristics of the in-custody sample and intake sample participants are compared in Table 2. There are a few significant differences in the distribution of characteristics between the two samples. The in-custody sample participants have a significantly greater criminal history level on admission compared to the intake sample participants ( $X^2(2, n = 242) = 11.703, p = 0.003$ ) and a statistically significantly longer sentence length ( $t(215, n = 217) = 2.192, p = 0.029$ ).

## **Measures/Material**

### **Structured Clinical Interview for DSM-IV-TR Axis I and Axis II Disorders (SCID-I and SCID-II)**

The SCID-I is a semi-structured clinical interview used to determine a diagnosis for DSM-IV3 Axis I mental disorders (First & Gibbon, 2004; First, Spitzer, Gibbon, & Williams, 2007). The Research Version of the SCID (SCID-I/NP) was used in both the in-custody and intake studies. Both the lifetime and current (i.e., in the past month) prevalence of mental disorder were assessed where sufficient information was available to the interviewers. The SCID-I/NP assesses the most common DSM-IV Axis I disorders (Pez et al., 2010). In both the in-custody and intake studies the SCID-I/NP was used to assess the following disorders: 1) mood, 2) psychotic, 3) substance use, 4) anxiety, 5) eating, and 6) pathological gambling. The SCID-II (First, Gibbon, Spitzer, Williams & Benjamin, 1997; First & Gibbon, 2004) is used to assess DSM-IV-TR personality disorders. In both studies the SCID-II was used to assess specifically for 7) anti-social personality disorder (APD) and 8) borderline personality disorder (BPD).

The psychometric properties of the SCID and its various versions are well established and researched (Biometrics Research, 2017a, 2017b, 2017c; Chmielewski, Clark, Bagby, & Watson, 2015; DeMarce, Lash, Parker, Burke, & Grambow, 2013; Fennig, Craig, Lavelle, Kovaszny & Bromet, 1994; Germans, Van Heck, Masthoff, Trompenaars, & Hodiamont, 2010; Lobbestael, Leurgans, & Arntz, 2011; Ryder, Costa, & Bagby, 2007; Zanarini & Frankenburg, 2001), and their description and use in mental health research with Canadian federal prisoners is reported elsewhere (Beaudette et al., 2015; Brown et al., 2018).

Table 2

Demographic and Criminal History Characteristics of In-Custody ( $N = 160$ ) and Intake Samples ( $N = 86$ )

	In-Custody Sample % (n)	Intake Sample % (n)	$\chi^2$	df
Ethnicity				
Indigenous	32.5 (52)	24.4 (21)	5.227	4
Black	3.8 (6)	9.3 (8)		
White	55.0 (88)	53.5 (46)		
Other	6.9 (11)	10.5 (9)		
*Missing	1.9 (3)	2.3 (2)		
Marital status				
Single	51.3 (82)	52.3 (45)	0.081	3
Married/common-law	30.6 (49)	29.1 (25)		
Divorced, separated, or widowed	15.0 (24)	15.1 (13)		
Other	3.1 (5)	3.5 (3)		
Criminogenic need level (at intake)				
Low	10.6 (17)	16.3 (14)	2.794	2
Medium	36.3 (58)	37.2 (32)		
High	53.1 (85)	41.9 (36)		
*Missing	-	4.7 (4)		
Criminal history risk level (at intake)				
Low	32.5 (52)	37.2 (32)	11.703**	2
Medium	33.8 (54)	45.3 (39)		
High	33.8 (54)	12.8 (11)		
*Missing	-	4.7 (4)		
Major admitting offence				
Homicide related	24.4(39)	9.3 (8)	12.657	7
Robbery	10.0 (16)	12.8 (11)		
Drug offences	31.3 (50)	41.9 (36)		
Assault	8.1 (13)	3.5 (3)		
Sexual offences	3.1 (5)	5.8 (5)		
Property offences	15.0 (24)	15.1 (13)		
Other violent offences	2.5 (4)	4.7 (4)		
Other non-violent offences	5.6 (9)	7.0 (6)		
Security level (at intake)				
Minimum	40.0 (64)	48.8 (42)	NR	
Medium	42.5 (68)	41.9 (36)		
Maximum	17.5 (28)	1.2 (1)		
*Missing	-	8.1 (7)		
Sentence type				
Determinate	83.1 (133)	97.7(84)	NR	
Indeterminate	16.9 (27)	2.3 (2)		
Average sentence length in years (SD)	3.8 (1.9)	3.1 (2.0)	$t =$ 2.192*	215

NR Information not reported due to cell sizes &lt;5

## **Modified Global Assessment of Functioning – Revised (GAF)**

Although the World Health Organization Disability Assessment Schedule 2 (WHODAS 2.0) replaced the GAF in the DSM-5 as the recommended assessment of functioning (Gold, 2014; Sjonnesen, Bulloch, Williams, Lavorato & Patten, 2016), for the purposes of consistency and comparability of results with a previous in-custody study of federal men prisoners (Beaudette et al., 2015) and the 2016 in-custody study of federal women inmates, the GAF measure of symptom severity and global level of functioning was also used in the 2017 intake study of federal women inmates. The GAF has been the most widely used measure of psychological, social and occupational functioning in clinical and research settings, and by insurance companies and other third-parties making decisions about level of impairment and eligibility for treatment (Gold, 2014; Sjonnesen et al., 2016; Støre-Valen et al., 2015). Ratings on the GAF scale range from 90 (absent or minimal symptoms) to 0 (serious symptoms and functional impairment, danger to self or others, mental illness), with a GAF score of 50 or less representing serious symptoms or impairment of functioning (Hall, 1995; WHO, 2004). The research version of the GAF scale has been well researched and shown to have adequate reliability and validity (Burlingame et al., 2005; Rush et al., 2008; Söderberg, Tungström, & Åke Armelius, 2005; Smith et al., 2011).

## **Procedures/Analytic Approach**

### **Research Design**

Both the in-custody and intake studies of federal women inmates were conducted under the terms of the Memorandum of Understanding (MOU) between the Correctional Service of Canada and the Institute for Applied Social Research (IASR) of the School of Criminology and Criminal Justice at Nipissing University. The Research Ethics Board at Nipissing University (NUREB) reviewed and approved both studies according to the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*, including Chapter Nine – Research Involving the First Nations, Inuit and Métis Peoples of Canada (Government of Canada, 2014). A senior clinical researcher and an experienced research assistant were responsible for organizing the data collection and conducting the SCID-I/NP and SCID-II interviews. CSC organizational support for the study was provided by Interventions and Women Offenders Research and by the Aboriginal Initiatives Directorate.

As in the in-custody study, a survey research design (Rothman, Greenland, & Lash, 2008; Pearce, 2012) was used to estimate the prevalence of mental disorder, limited to only those federal women who had been incarcerated no longer than 90 days. Owing to the national scope of the study, the relatively low number of incoming women offenders in CSC and the five institutional sites involved in the research, the survey was conducted over an extended period, from October 11, 2016 to December 31, 2017.

### **Assessor Training**

In undertaking the original in-custody study, the IASR researchers were trained in the administration of the SCID-I/NP and SCID-II instruments by completing the self-directed training package provided by Biometric Research (<http://scid4.org/index.html>) under the supervision of the senior research clinician who has had extensive prior experience in using mental health assessment instruments within the federal women's prison environment. In the initial phases of the in-custody study, the SCID assessments were conducted with two members of the research team present to ensure consistency. The IASR researchers completed 160 SCID-I/NP and SCID-II assessments for the in-custody study. Upon completing data collection for the in-custody study, the IASR researchers, now well-experienced with the SCID instruments, began conducting assessments for the intake study.

### **Participant Recruitment**

The IASR researchers scheduled at least one visit of 3- 5 days in length to each of the federal women's institutions over the October 11, 2016 – December 31, 2017 period. As was the procedure for the in-custody study, before each visit an information letter was sent by the Director, Research Branch CSC to the Warden of the institution, explaining the research and asking for an on-site contact to be designated to assist the IASR researchers in making the arrangements to conduct the research. Upon arriving at each institution, the IASR researchers would meet with the designated on-site contact to review the arrangements and any institutional requirements, and to provide any clarification or additional information if required.

Making use of the list of recent admissions on new warrants of committal to each institution provided by CSC's Interventions and Women Offenders Research staff, and with the assistance of the designated on-site contact, the IASR researchers attempted to contact each of

the recently admitted women on the admissions list, either in person or by telephone, to inform them about the purpose of the research and to request their participation. A total of 86 women (17.6% of total federal female inmate admissions during the intake study period) volunteered to participate and completed the SCID-I/NP and SCID-II interviews; 7 of the women listed as recent admissions could not be contacted or did not show up for the assessment; 24 women approached (4.9% of total admissions) declined to participate or did not complete the interview.

### **Informed Consent and Data Management**

No compensation or other form of incentive was provided in return for participating in the study. The women who volunteered to participate were provided with a verbal summary of the informed consent form, and encouraged to ask questions about the procedures to be employed and the terms of their participation. All participants were asked to sign a paper copy of the informed consent form prior to proceeding with the SCID interviews, which included a request for permission to access their offender management system (OMS) file for the purpose of the research. Debriefing procedures were outlined on the consent form. Interviews were conducted in English at the Nova, Grand Valley, Edmonton and Fraser Valley institutions, and in French or English at the Joliette institution. As the SCID-I/NP and SCID-II assessments were used for research and not diagnostic purposes, the results were not shared with the participants.

The SCID-I/NP and SCID-II interviews were completed in paper form. A unique study participant identifier number was created so that inmate names and FPS numbers were not recorded on the completed interviews, but rather kept in a separate, secure file location accessible only to the IASR Senior Research Assistant. Completed interviews were returned by the IASR researchers to Nipissing University, and kept in a locked filing cabinet in a secure research office. An IASR student research assistant entered the completed interview data into the IBM SPSS Statistics 24 (IBM Corporation, 2016) program for the purposes of the data analysis. A merged data file, which combined the SCID-I and SCID-II data from the in-custody and intake studies with inmates' demographic and offender characteristics in a de-identified form, was created by CSC Interventions and Women Offenders Research staff for the purpose of the current comparative analysis and reporting of results.

### **Statistical Techniques**

Chi-square analyses and Student's t-tests of differences between means were conducted

to identify statistically significant differences in demographic and criminal history characteristics between the intake study sample participants and the population of non-participating admissions during the study period October 11, 2016 – December 31, 2017. In addition, chi-square analyses and Student's t-tests of differences between means were conducted to identify statistically significant differences in the demographic and criminal history characteristics between the in-custody and intake sample participants, and in the distribution of major diagnostic categories of mental disorder and level of functioning. Estimates of lifetime and current prevalence of mental disorder in each of the in-custody and intake samples are based on the number of sample participants meeting the diagnostic criteria for a particular disorder (or group of disorders) divided by the total respective sample size. Due to the relatively small sample sizes, no comparisons by region or institution are provided, and estimates should be interpreted with caution.

## Results

### **Prevalence of Mental Disorders among Federally Sentenced Women: Comparison of In-Custody and Intake Samples**

Prevalence rates for major diagnostic categories of mental disorders for the in-custody ( $N = 160$ ) and intake ( $N = 86$ ) samples of incarcerated federally sentenced women are presented in Table 3. Owing to the very small numbers of women reported for many of the differential diagnostic categories, only the major diagnostic categories are presented here, and complete results for all SCID-I and SCID-II diagnostic categories assessed in the in-custody and intake samples are reported in Appendix B, Tables B1 and B2. The major diagnostic category prevalence rates represent the percentage of inmates with at least one diagnosis within the major category. Only the lifetime prevalence of alcohol or substance use disorder is reported, as it was not possible to validly assess current use among the women while they were incarcerated.

Table 3

*Prevalence Rates of Mental Disorders Among Federal Women Offenders: In Custody Sample (N = 160) and Intake Sample (N = 86)*

Disorder	In-Custody Sample (N = 160)		Intake Sample (N = 86)		$\chi^2$ Test of Difference In-Custody – Intake Samples	
	Lifetime % (n)	Current % (n)	Lifetime % (n)	Current % (n)	Lifetime $\chi^2, df = 1$	Current $\chi^2, df = 1$
Any disorder	93.1 (149)	80.0 (128)	79.1 (68)	67.4 (58)	10.626***	4.783*
Mood disorders <sup>a</sup>	63.1 (101)	23.1 (37)	34.9 (30)	16.3 (14)	17.921***	1.595
Psychotic disorders <sup>b</sup>	9.4 (15)	6.9 (11)	5.8 (5)	1.2 (1)	0.976	NR
Alcohol and substance use disorders (lifetime only) <sup>c</sup>	76.9 (123)	-	61.6 (53)	-	6.387**	NR
Anxiety disorders <sup>d</sup>	57.5 (92)	53.8 (86)	44.2 (38)	38.4 (33)	3.979*	5.297*
Eating disorders <sup>e</sup>	16.3 (26)	10.6 (17)	9.3 (8)	1.2 (1)	2.267	NR
Pathological gambling	13.1 (21)	0.6 (1)	12.8 (11)	3.5 (3)	0.009	NR
Borderline personality disorder (lifetime only)	35.0 (56)	-	25.6 (22)	-	2.292	
Antisocial personality disorder (lifetime only)	50.6 (81)	-	38.4 (33)	-	3.377	

*Note.* Percentages may not add to 100% as participants could meet the diagnostic criteria for more than one disorder.

\*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

<sup>a</sup> **Mood disorders** include bi-polar I disorder, bi-polar II disorder, other bi-polar disorder; major depressive disorder, dysthymic disorder, depressive disorder not otherwise specified, mood disorder due to a general medical condition, and substance-induced mood disorder.

<sup>b</sup> **Psychotic disorders** include schizophrenia, schizophreniform, schizoaffective, delusional disorder, brief psychotic disorder, substance abuse or general medical condition causing psychotic symptoms, substance induced psychotic disorder, and psychotic disorder not otherwise specified

<sup>c</sup> **Alcohol and substance use disorders** include alcohol abuse or dependence and non-alcohol substance abuse or dependence.

<sup>d</sup> **Anxiety disorders** include panic disorder, agoraphobia without history of panic, social phobia, specific phobia, obsessive-compulsive disorder, posttraumatic stress disorder, generalized anxiety disorder, anxiety disorder due to a general medical condition, substance-induced anxiety disorder, and anxiety disorder not otherwise specified

<sup>e</sup> **Eating disorders** include anorexia nervosa, bulimia nervosa and binge-eating disorder

The prevalence of mental disorder is greater in the in-custody sample compared to the intake sample across every major diagnostic category, both lifetime and current, and is statistically significantly different for any mental disorder both lifetime ( $\chi^2(1, n = 246) = 10.626$ ,  $p = 0.001$ ) and current ( $\chi^2(1, n = 246) = 4.783$ ,  $p = 0.029$ ), mood disorder, lifetime ( $\chi^2(1, n = 246) = 17.921$ ,  $p = 0.001$ ), current psychotic disorder ( $\chi^2(1, n = 245) = 3.969$ ,  $p = 0.046$ ),

lifetime alcohol or substance use disorder ( $\chi^2(1, n = 246) = 6.387, p = 0.011$ ) and both lifetime ( $\chi^2(1, n = 246) = 3.979, p = 0.046$ ) and current ( $\chi^2(1, n = 246) = 5.297, p = 0.021$ ) anxiety disorder. A similar finding was noted in the 2010 CoMHIS (Computerized Mental Health Intake Screening System) study of Canadian federal male offenders. Men in-custody which included men who were serving longer sentences and had returned to custody on parole violations or new criminal charges, demonstrated a greater prevalence of both lifetime and current mental health issues compared to newly admitted male offenders (Stewart et al., 2010), a finding also observed in an Ontario study of remand and sentenced inmates (Brown et al., 2013), and found in other cross-sectional studies (Brandt, 2012; Moffit et al., 2010). In addition, compared to male inmates, women have been reported to demonstrate high, ongoing and even worsening mental health symptoms while in-custody (Harner & Riley, 2013; Hassan et al., 2011). As reported in other international and Canadian studies, women inmates demonstrate lifetime and current prevalence of mental disorder at rates four times or greater than those observed in the general population (Gilmour, 2014; Public Health Agency of Canada, 2015; Steel et al., 2014), and one and a half to two times greater than those reported among men prison inmates (Beaudette & Stewart, 2016; Lafortune, 2010; Prins, 2014; Schnittker & Bacak, 2016; Steadman et al., 2009). Lifetime prevalence of alcohol and substance use disorders are two to eight times greater than observed in the general population (Fazel et al., 2016; Fazel, Bains & Doll, 2006; Pearson, Janz & Ali, 2013; Reynolds, Pietrzak, El-Gabalawy, Mackenzie & Sareen, 2015). Compared to the results of the 2015 national study of recently admitted male offenders (Beaudette et al., 2015), female offenders in the intake sample demonstrated a greater prevalence of both lifetime and current mental disorder across all major diagnostic categories, with the exception of alcohol and substance use disorders.

A comparison of the prevalence of mental disorders in the intake sample of federal women by Indigenous and non-Indigenous ancestry, for the major diagnostic categories of mental disorder, is shown in Appendix C, Table C. Due to the very small number of women reported for many of the diagnostic categories, caution should be exercised in interpreting the results. Over ninety percent of the Indigenous women in the intake sample report a lifetime mental disorder. With a few exceptions, the lifetime and current prevalence of any mental disorder is greater among Indigenous women than non-Indigenous women. The major diagnostic category for mood disorder is the key exception, with non-Indigenous inmates demonstrating a

higher prevalence. The lifetime and current prevalence of psychotic disorders is greater among Indigenous women, along with lifetime substance use disorders, anxiety disorders, eating disorders and borderline and antisocial personal disorders. Pathological gambling is more prevalent, both lifetime and current, among Indigenous women. A greater prevalence of mental disorders among Indigenous women inmates has been reported in other research (Butler, Allnutt, Kariminia & Cain, 2007), though others (Derkzen et al., 2012; Heffernan, Andersen, Dev & Skinner, 2012) reported almost no difference in the prevalence of mental disorder between Indigenous and non-Indigenous prisoners, except with respect to substance misuse.

### **Prevalence Rates of Mental Disorder and Major Mental Illness**

In order to identify needs for treatment services, including services that may be beyond the scope of delivery in the prison environment (Brown et al., 2013; Fries et al., 2013), recent studies of mental disorder in prison populations distinguish between major mental illness, substance abuse, and personality disorder given different disorders require distinct treatment and institutional management responses (Brandt, 2012; Fazel & Seewald, 2012; Lynch et al., 2014; Steadman et al., 2009). Lifetime and current rates for any mental disorder, with and without alcohol and substance use or antisocial or borderline personality disorders included, are reported for the intake ( $N = 86$ ) sample of federal women in Table 4, along with lifetime and current estimates of the prevalence of major mental illness (major depressive disorder, bi-polar disorder or psychotic disorder) not including alcohol, substance use or personality disorders (if they are the only mental disorders).

Table 4

*Prevalence Rates of Mental Disorder and Major Mental Illness among Federally Sentenced Women Offenders: Intake Sample (N = 86)*

	% (n)
Criteria met for any disorder – lifetime	79.1 (68)
Criteria met for any disorder – current	67.4 (58)
Any disorder not including APD or BPD only	
Criteria met – lifetime	79.1 (68)
Criteria met – current	48.8 (42)
Any disorder not including alcohol/substance use disorders only <sup>a</sup>	
Criteria met for any disorder – lifetime	70.9 (61)
Criteria met for any disorder – current	65.1 (56)
Any disorder not including APD or BPD or alcohol/substance use disorders only	
Criteria met for any disorder – lifetime	58.1 (50)
Criteria met for any disorder – current	40.7 (35)
Rates of major mental illness <sup>b</sup> – lifetime	33.7 (29)
Rates of major mental illness <sup>b</sup> – current	16.3 (14)

*Note.* APD = Antisocial personality disorder; BPD = Borderline personality disorder. Reference to these calculations not including SUD or APD or BPD does not mean that women with these disorders were not included but rather that they were not contributing to the prevalence considered if the ONLY diagnosis was for these disorders.

<sup>a</sup> Rates of current alcohol/substance use disorder could not be validly assessed given that women are in-custody when they participated in the study.

<sup>b</sup> Major mental illness corresponds to a diagnosis of any one of the following: major depressive disorder, bi-polar I disorder, bi-polar II disorder, or any psychotic disorder.

Nearly 80% of women in the intake sample met the criteria for a lifetime mental disorder, and more than two-thirds (67.4%) met the criteria for a current mental disorder. Excluding alcohol or substance use disorders, and antisocial personal disorder (APD) and borderline personal disorders (BPD), the prevalence of lifetime (58.1%) and current (40.7%) mental disorder is still more than double that observed in the general Canadian population (Gilmour, 2014; Public Health Agency of Canada, 2015). The prevalence of lifetime and current mental disorder, with and without alcohol and substance use and/or personality disorder among the women in the intake sample is almost the same as reported for men in the 2015 national study of recently admitted male offenders, though the prevalence of current major mental illness is greater for women inmates (C: 16.9%) than that reported for men inmates (C: 12.4%) (Beaudette et al., 2015). Compared to the in-custody sample, lifetime and current prevalence rates for any mental disorder, with and without alcohol and substance use or antisocial or borderline personality disorders included, and for major mental illness, are between 13% and 28%, with rates being lower for women in the intake sample.

## Prevalence of Co-occurring Disorders

The prevalence of lifetime mental disorder co-occurring with alcohol and substance use and personality disorders, by Indigenous and non-Indigenous ancestry and for the total intake sample ( $N = 86$ ), is shown in Table 5.<sup>3</sup>

Table 5

*Co-occurring Disorders among Federal Women Offenders: Intake Sample ( $N = 86$ )*

	Indigenous	Non-Indigenous	Total Sample
	$n = 21$ % ( $n$ )	$n = 65$ % ( $n$ )	$N = 86$ % ( $n$ )
Lifetime prevalence rates	$n = 19$	$n = 49$	$n = 68$
Any mental disorder <u>and</u> alcohol/substance misuse <sup>a</sup>	94.7 (18)	71.4 (35)	77.9 (53)
Any mental disorder <u>and</u> APD or BPD	68.4 (13)	55.1 (27)	58.8 (40)

*Note.* APD = Antisocial Personality Disorder; BPD = Borderline Personality Disorder

<sup>a</sup> Rates of current substance use were limited given that women are in-custody when they participated in the study; therefore, substance abuse and alcohol use disorders diagnoses rely on lifetime estimates only. Rates of current alcohol/substance use disorder could not be validly assessed given that women are in-custody when they participated in the study.

In combination with their greater lifetime prevalence of mental disorder, Indigenous women in the intake sample demonstrate a greater prevalence of comorbid disorders, in particular mental disorder in combination with alcohol or substance use disorder, compared to the non-Indigenous women. The same result was reported for the in-custody sample (Brown et al., 2018). The combination of mental disorder with alcohol/substance use disorder or personality disorder poses a significant challenge to the design and delivery of effective mental health

<sup>3</sup> As APD and BPD were assessed for lifetime occurrence only, and as it was only possible to validly assess alcohol and substance use disorders for (previous to incarceration) lifetime occurrence, only lifetime co-occurring disorders are reported here.

treatment to inmates (Mir et al., 2015; Priester et al., 2016), and high rates of comorbid disorders among prison inmates have been linked to increases in the frequency of institutional infractions and greater likelihood of negative outcomes on release from prison (Beaudette et al., 2015; Lynch et al., 2014; Priester et al., 2016).

### **Mental Disorder and Global Assessment of Functioning (GAF)**

A GAF scale score of  $\leq 50$  is considered to represent serious to severe symptoms of mental disorder and/or impairment of psychological and social functioning (Hall, 1995; WHO, 2004). The GAF scale scores for a current major mental illness (major depression, bi-polar disorder I, bi-polar disorder II or psychotic disorder), or BPD or APD, and for any Axis I disorder for the in-custody ( $N = 160$ ) and intake ( $N = 86$ ) samples of federal women inmates are reported in Table 6.

Table 6

GAF Scale Scores, by Categories of Current Mental Disorder: In-Custody and Intake Samples

	In-Custody Sample $N = 160$		Intake Sample $N = 86$	
	% ( $n$ )		% ( $n$ )	
	$\leq 50$	$> 50$	$\leq 50$	$> 50$
Major mental illness <sup>a</sup>	13.8 (22)	5.0 (8)	9.3 (8)	7.0 (6)
Either major mental illness or BPD or APD	25.0 (40)	36.9 (59)	18.6 (16)	33.7 (29)
Either major mental illness or BPD	22.5 (36)	18.8 (30)	18.6 (16)	16.3 (14)
Any Axis I disorder (excluding alcohol and substance abuse if they are the only disorders)	25.6 (41)	35.6 (57)	15.1 (13)	25.6 (22)

<sup>a</sup> Major mental illness corresponds to a diagnosis of any one of the following: major depressive disorder, bi-polar I disorder, bi-polar II disorder, or any psychotic disorder.

A greater proportion of women in the in-custody sample demonstrate GAF scale scores  $\leq 50$  than among those in the intake sample indicating greater impairment. Of women inmates with a major mental illness, 73% (22/30) of those in the in-custody sample and 57% (8/14) of those in the intake sample have a GAF score less than or equal to 50; of those women with either a major mental illness or a personality disorder, 40% (40/99) of those in the in-custody sample and 36% (16/45) in the intake sample have a GAF score less than or equal to 50. Overall, 28% (45/160) of

women in the in-custody sample and 20% (17/86) in the intake sample have GAF scores of less than or equal to 50, indicating a serious level of impairment in functioning.

### **Summary of Results from Comparison of In-Custody and Intake Samples**

Lifetime and current prevalence rates for any mental disorder, for major mental illness, alcohol/substance use, personality disorder and co-occurring disorders were consistently greater in the in-custody sample compared to the intake sample, and this was further reflected in a greater proportion of women in the in-custody sample with GAF scale scores less than or equal to 50. As demonstrated in other international (Brandt, 2012; Moffit et al., 2010) and Canadian research (Brown et al., 2013; Stewart et al., 2010), the composition of cross-sectional in-custody samples of prison inmates, including those serving longer sentences for more serious crimes and those suffering from more serious mental disorders, leads to higher estimations of the prevalence of mental health problems. At the same time, using some screening tools, it has been estimated that mental health screening tools used at admission capture one-third or less of inmates with a serious mental illness (Peters, Bartoi & Sherman, 2008; Senior et al., 2013)<sup>4</sup>, contributing to the greater prevalence of subsequently identified serious mental disorder among those in custody. Gallagher, Carbonell & Gottfried (2013) observe that admissions mental health screening tools may under-estimate serious mental disorder among women, further contributing to the higher estimated prevalence of serious mental health problems among women in custody. In both the in-custody and intake samples, the prevalence of lifetime and current mental disorder is somewhat greater among women compared to male inmates, paralleling the findings from other international (Al-Rousan et al., 2017; Fazel & Seewald, 2012; Mundt, Kastner, Mir & Priebe, 2015) and Canadian (Beaudette & Stewart, 2016; Brown et al., 2018) research. The greater prevalence of mental disorder among Indigenous women compared to non-Indigenous women inmates in both the in-custody and intake samples, and in particular for co-occurring disorders

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<sup>4</sup> It should be noted that in CSC the CoMHSS screener has not been shown to under-estimate mental health disorder (Martin et al., 2016; Stewart et al., 2010).

involving alcohol/substance use, may call for a focus of treatment resources being directed to this group of women offenders.

## **Results – Combined In-Custody and Intake Samples ( $N = 246$ )**

### **Method**

The demographic and criminal history characteristics for the combined ( $N = 246$ ) in-custody and intake samples are shown in Table 7, with a comparison to a January 1, 2017 snapshot of the composition of the total Canadian federal women inmate population.

Given the equivalent research design, mental health assessment tools and sampling methodology employed in the in-custody and intake studies, and the few statistically significant differences (criminal history level on admission and sentence length) between the demographic and criminal history characteristics of the two samples, combining the in-custody and intake samples of federal women inmates collected over the period February 25, 2016 – December 31, 2017 (a total 22 months) approximates a longitudinal period prevalence estimate of mental disorder, as opposed to the more typically reported cross-sectional point estimate of prevalence. Point prevalence is estimated from cross-sectional surveys, and is an estimate of prevalence of a condition at a one designated point in time (Pearce, 2012; Szklo & Nieto, 2019). Most prevalence studies are, however, actually period prevalence studies, which estimate the prevalence of a condition over an extended period of time (Szklo & Nieto, 2019; Webb, Bain, & Page, 2016), normally not more than 5 years in length (Ward, 2013), and they include both new cases entering a population, as well as existing cases (Bruce, Pope & Stanistreet, 2008; Joanna Biggs Institute, 2014; Steel et al., 2014), with prevalence calculated as the number of cases identified with the condition as a proportion of the mid-period reference population (Szklo & Nieto, 2019; Webb et al., 2016). Period prevalence studies provide a more comprehensive measure of the total number of cases in a population that have been exposed or diagnosed with a condition over the period of interest, and are especially useful for designing and managing assessment and treatment services (Mantel-Teeuwisse, Klungel, Verschuren, Porsius & de Boer, 2001; Steel et al., 2014; Vicens et al., 2011).

Almost without exception, the demographic and criminal history characteristics of the combined sample ( $N = 246$ ) and total population ( $N = 552$ ) are statistically significantly different, most notably with respect to higher levels of criminogenic need, criminal history risk,

violent offences security level, sentence type and sentence length, reflecting the disproportionate representation of long-term, violent and indeterminate sentenced women within the total population of federal women inmates, contrasted with the more recently admitted women inmates in the combined sample.

The prevalence rates of mental disorder for the combined in-custody and intake samples (N = 246) are shown in Table 8.

Table 7

*Demographic and Criminal History Characteristics of Participants: Combined In-Custody and Intake Samples (N = 246) and January 1, 2017 Population*

	Combined (N = 246) % (n) <sup>a</sup>	Total Population (N = 552) % (n) <sup>a</sup>	$\chi^2$	df
Ethnicity				
Indigenous	29.7 (73)	37.5 (207)	11.656**	3
Black	5.7 (14)	5.4 (30)		
White	54.5 (134)	43.5 (240)		
Other	8.1 (20)	13.6 (75)		
*Missing	2.0 (5)	-		
Marital status				
Single	51.6 (127)	55.7 (296)	5.858	3
Married/common-law	30.1 (74)	25.6 (136)		
Divorced, separated, or widowed	15.0 (37)	12.2 (65)		
Other	3.3 (8)	6.4 (34)		
*Missing	-	3.8 (21)		
Criminogenic need level (at intake)				
Low	12.6 (31)	6.5 (36)	15.899***	2
Medium	36.6 (90)	29.9 (165)		
High	49.2 (121)	63.6 (351)		
*Missing	1.6 (4)	-		
Criminal history risk level (at intake)				
Low	34.1 (84)	25.2 (139)	8.315*	2
Medium	37.8 (93)	40.9 (226)		
High	26.4 (65)	33.9 (187)		
*Missing	1.6 (4)	-		
Major admitting offence				
Homicide related	19.1 (47)	26.0 (143)	18.796**	7
Robbery	11.0 (27)	14.4 (79)		
Drug offences	35.0 (86)	25.8 (142)		
Assault	6.5 (16)	11.1 (61)		
Sexual offences	4.1 (10)	2.7 (15)		
Property offences	15.0 (37)	10.0 (55)		
Other violent offences	3.3 (8)	4.4 (24)		
Other non-violent offences	6.1 (15)	5.6 (31)		
		0.4 (2)		
Security level (at intake)				
Minimum	43.1 (106)	27.4 (151)	23.810***	2
Medium	42.3 (104)	52.2 (288)		
Maximum	11.8 (29)	20.5 (113)		
*Missing	2.8 (7)	-		
Sentence type				
Determinate	88.2 (271)	81.9 (452)	10.800***	1
Indeterminate	11.8 (29)	18.1 (100)		
Average sentence length in years (SD)	3.5 (2.9)	3.8 (2.2)	6.959***	796

NR Information not reported due to cell sizes <5

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 8

*Prevalence Rates of Mental Disorders in Federal Women Prisoners: Combined In-Custody and Intake Samples (N = 246)*

Disorder	Lifetime % (n)	Current % (n)
<b>Any mental disorder</b>	<b>88.2 (217)</b>	<b>75.6 (186)</b>
<b>Mood disorders</b>	<b>53.3 (131)</b>	<b>20.7 (51)</b>
Bi-polar disorders <sup>a</sup>	10.6 (26)	4.1 (10)
Major depressive disorder	36.6 (90)	9.8 (24)
Dysthymic disorder	7.7 (19)	7.3 (18)
Mood Disorders – other <sup>b</sup>	7.7 (19)	2.4 (6)
<b>Psychotic disorders<sup>c</sup></b>	<b>8.1 (20)</b>	<b>4.9 (12)</b>
<b>Alcohol and substance use disorders<sup>d</sup></b>	<b>71.5 (176)</b>	-
Alcohol abuse or dependence	44.3 (109)	-
Non-alcohol substance abuse or dependence	63.8 (157)	-
<b>Anxiety disorders</b>	<b>52.8 (130)</b>	<b>48.4 (119)</b>
Panic disorder	20.7 (51)	16.3 (40)
Phobias <sup>e</sup>	16.7 (41)	15.4 (38)
Obsessive-compulsive disorder	8.1 (20)	7.7 (19)
Posttraumatic stress disorder	28.9 (71)	27.2 (67)
Generalized anxiety disorder	14.6 (36)	14.2 (35)
Anxiety Disorders – other <sup>f</sup>	5.7 (14)	4.9 (12)
<b>Eating disorders</b>	<b>13.8 (34)</b>	<b>7.3 (18)</b>
Anorexia Nervosa	5.3 (13)	1.2 (3)
Bulimia Nervosa	5.7 (14)	4.5 (11)
Binge-eating disorder	3.7 (9)	2.4 (6)
<b>Pathological gambling</b>	<b>13.0 (32)</b>	1.6 (4)
<b>Borderline personality disorder (lifetime only)</b>	<b>31.7 (78)</b>	-
<b>Antisocial personality disorder (lifetime only)</b>	<b>46.3 (114)</b>	-

Percentages may not add to 100% as participants could meet the diagnostic criteria for more than one disorder.

<sup>a</sup> The following bi-polar disorders are included: bi-polar I disorder, bi-polar II disorder and other bi-polar disorder;

<sup>b</sup> The following mood disorders are included: depressive disorder not otherwise specified, mood disorder due to a general medical condition, substance-induced mood disorder;

<sup>c</sup> Psychotic disorders included are: schizophrenia, schizophreniform, schizoaffective, delusional disorder, brief psychotic disorder, substance abuse or general medical condition causing psychotic symptoms, substance induced psychotic disorder, and psychotic disorder not otherwise specified;

<sup>d</sup> Diagnosis of substance abuse disorders relies on lifetime estimates only

<sup>e</sup> The following phobias are included: agoraphobia without history of panic, social phobia and specific phobia;

<sup>f</sup> The following anxiety disorders are included: anxiety disorder due to a general medical condition, substance-induced anxiety disorder and anxiety disorder not otherwise specified

Compared to prevalence estimates for the in-custody sample, estimates for the combined sample are lower, the effect of ‘adding’ in the lower prevalence estimates observed in the intake sample. However, the period prevalence estimates for the combined sample may represent a more valid estimate of the prevalence of mental disorders across the federal women inmate population. More than three-quarters of federal women inmates have a lifetime or current mental disorder, and nearly three-quarters (71.5%) have an alcohol/substance use disorder, including a high prevalence (63.8%) of non-alcohol substance use or dependence. About one-half of women have a lifetime or current anxiety disorder, and more than half (53.3%) have a lifetime history of a mood disorder; one-third or more have borderline personality disorder (31.7%) or antisocial personality disorder (46.3%). Prevalence rates of mental disorder for the combined ( $N = 246$ ) sample of federal women inmates, including lifetime (8.1%) and current (4.9%) psychosis, are in line with rates reported in international research reviews (Fazel & Seewald, 2012; Prins, 2014), and with results reported in Canadian research (Brown et al., 2018; Derkzen et al., 2012), and are one and a half to two times greater than reported for men inmates (Beaudette & Stewart, 2016).

A breakdown of the prevalence of mental disorders for the combined sample ( $N = 246$ ) of federal women inmates, by major categories of mental disorder and Indigenous and non-Indigenous ancestry, is shown in Appendix D, Table D. Due to the very small number of women reported in many of the diagnostic categories, the results should be interpreted with a strong measure of caution. With few exceptions, as in both the separate in-custody and intake samples, the prevalence of mental disorder is greater among the Indigenous women. Both lifetime and current psychotic disorders, major depression, alcohol/substance use disorders and anxiety disorders are greater among Indigenous women, along with lifetime pathological gambling and borderline and antisocial personality disorders. Notably, lifetime and current mood disorders generally, and bi-polar disorders, are more prevalent among non-Indigenous women inmates. Though a previous Canadian study (Derkzen et al., 2012) observed almost no difference in the prevalence of mental disorder among Indigenous versus non-Indigenous Canadian federal women inmates, a greater prevalence of mental disorders among Indigenous women has been observed in the in-custody, intake and combined samples of Canadian federally sentenced women (Brown et al., 2017) and in other national and international research (Brown et al., 2013; Butler, Alnutt, Kariminia & Cain, 2007; Ogloff, Pfeifer, Shepherd & Ciorciari, 2017). Of note

given high rates of trauma (early history of child abuse and involvement in abusive relationships) among federally sentenced women (Stewart, Wardrop, Wilton, Thompson, Derkzen, & Motiuk, 2017) is a current rate of PTSD for the combined group of 27%, and a rate of 33% among Indigenous women.

**Prevalence Rates of Mental Disorder and Major Mental Illness (N = 246)**

Lifetime and current prevalence rates for any mental disorder, with and without alcohol or substance use disorder or antisocial or borderline personality disorder, are reported for the combined in-custody and intake samples of federal women (N = 246) in Table 9.

Table 9

*Prevalence Rates of Any Mental Disorder and Major Mental Illness among Federally Sentenced Women Offenders: Combined In-Custody and Intake Samples (N = 246)*

	% (n)
Criteria met for any disorder – lifetime	88.2 (217)
Criteria met for any disorder – current	75.6 (186)
Any disorder not including APD or BPD only <sup>a</sup>	
Criteria met for any disorder – lifetime	87.0 (214)
Criteria met for any disorder – current	57.7 (142)
Any disorder not including alcohol/substance use disorders only	
Criteria met for any disorder – lifetime	81.7 (201)
Criteria met for any disorder – current <sup>a</sup>	74.4 (183)
Any disorder not including APD or BPD or alcohol/substance use disorder only <sup>a</sup>	
Criteria met for any disorder – lifetime	75.2 (185)
Criteria met for any disorder – current	54.1 (133)
Rates of major mental illness <sup>b</sup> – lifetime	52.0 (128)
Rates of major mental illness <sup>b</sup> – current	17.9 (44)

Note. APD = Antisocial personality disorder. BPD = Borderline personality disorder.

<sup>a</sup> Rates of current substance use were limited given that women were incarcerated when they participated in the study; therefore, substance abuse disorders rely on lifetime estimates only.

<sup>b</sup> Major mental illness corresponds to a diagnosis of any one of the following: major depressive disorder, bi-polar I disorder, bi-polar II disorder, or any psychotic disorder.

Even without alcohol/substance use disorders or borderline or antisocial personality disorders included, three-quarters of the women report symptoms consistent with a lifetime

history of mental disorder (75.2%), and more than one-half (54.1%) reported symptoms consistent with a diagnosis of a current mental disorder. Half of the women in the combined sample have a lifetime history of a major mental illness (psychosis, major depression, bi-polar disorder), and 17.9% a current major mental illness. Among Canadian federal women inmates, the prevalence of mental disorders and major mental illness is five times greater than reported for the general Canadian population (Gilmour, 2014), and 1.5 to 2 times greater than reported among federal men inmates (Beaudette & Stewart, 2016).

Comparison of lifetime and current prevalence rates for any mental disorder, with and without alcohol or substance use disorder or antisocial or borderline personality disorder, by Indigenous and non-Indigenous ancestry, is reported in Table 10. With the exception of the greater lifetime prevalence of major mental illness among non-Indigenous women inmates, the prevalence of diagnoses is consistently greater among Indigenous women, with or without alcohol/substance use or borderline or antisocial personality disorder being considered.

Table 10

*Prevalence Rates of Any Mental Disorder and Major Mental Illness in Indigenous and Non-Indigenous Women Federal Offenders: Combined In-Custody and Intake Samples (N = 246)*

	Indigenous N = 73 % (n)	Non-Indigenous N = 173 % (n)
Criteria met for any disorder – lifetime	97.3 (71)	84.4 (146)
Criteria met for any disorder – current	89.0 (65)	69.9 (121)
Any disorder not including APD or BPD only <sup>a</sup>		
Criteria met for any disorder – lifetime	93.2 (68)	84.4 (146)
Criteria met for any disorder – current	63.0 (46)	55.5 (96)
Any disorder not including alcohol/substance use disorders only		
Criteria met for any disorder – lifetime	91.8 (67)	77.5 (134)
Criteria met for any disorder – current <sup>a</sup>	87.7 (64)	68.8 (119)
Any disorder not including APD or BPD or alcohol/substance use disorder only <sup>a</sup>		
Criteria met for any disorder – lifetime	80.8 (59)	72.8 (126)
Criteria met for any disorder – current	58.9 (43)	52.0 (90)
Rates of major mental illness <sup>b</sup> – lifetime	49.3 (36)	53.2 (92)
Rates of major mental illness <sup>b</sup> – current	23.3 (17)	15.6 (27)

Note. APD = Antisocial personality disorder. BPD = Borderline personality disorder.

<sup>a</sup> Rates of current substance use were limited given that women were incarcerated when they participated in the study; therefore, substance abuse disorders rely on lifetime estimates only

<sup>b</sup> Major mental illness corresponds to a diagnosis of any one of the following: major depressive disorder, bi-polar I disorder, bi-polar II disorder, or any psychotic disorder.

### Prevalence of Co-Occurring Disorders (N = 246)

The prevalence of lifetime mental disorder co-occurring with an alcohol/substance use disorder or antisocial or borderline personality disorder, by Indigenous and non-Indigenous ancestry, is reported in Table 11. Overall, the lifetime prevalence estimates for co-occurring disorders among the federal women inmates are in line with other international (Houser & Welsh, 2014) and Canadian research (Beaudette & Stewart, 2016), with higher prevalence consistently reported for Indigenous women, particularly for the combination of mental disorder with alcohol/substance use disorders.

Table 11

*Co-Occurring Disorders among Federal Women Prisoners: Combined In-Custody and Intake Samples (N = 246)*

	Indigenous	Non-Indigenous	Total Sample
	<i>n</i> = 73	<i>n</i> = 173	<i>N</i> = 246
	% ( <i>n</i> )	% ( <i>n</i> )	% ( <i>n</i> )
Lifetime prevalence rates	<i>n</i> = 71	<i>n</i> = 146	<i>n</i> = 217
Any mental disorder and alcohol/substance use disorder <sup>a</sup>	91.5 (65)	76.0 (111)	81.1 (176)
Any mental disorder <u>and</u> APD or BPD	83.1 (59)	53.4 (78)	63.1 (137)

*Note.* APD = Antisocial Personality Disorder; BPD = Borderline Personality Disorder

<sup>a</sup> Rates of current substance use were limited given that women are incarcerated when they participated in the study; therefore, substance abuse disorders rely on lifetime estimates only

### Mental Disorder and Global Assessment of Functioning (N = 246)

A GAF score of  $\leq 50$  is considered to measure at least serious impairment of functioning (Hall, 1995; WHO, 2004; Gold, 2014). The grouped GAF scale scores for the combined sample of federal women inmates (*N* = 246), for DSM-IV Axis I and Axis-II – APD and BPD personality disorder dimensions, are shown in Table 12. More than 40% of women with an Axis-I disorder have a serious level of functional impairment, with a GAF scale score less than or equal to 50. Among those with an Axis I disorder in combination with APD or BPD, the proportion grows to more than half (52.9%), indicating a serious level of functional impairment in psychological and social functioning, and detracting from the capability of women’s involvement in programs and services (Aas, 2011).

Table 12

*GAF Scale Scores by Current Axis I and Personality Disorder Diagnoses: Combined In-Custody and Intake Samples (N = 246)*

GAF Score	Axis I <sup>a</sup> Disorders <i>n</i> = 133 % ( <i>n</i> )	APD only <i>n</i> = 27 % ( <i>n</i> )	BPD only <i>n</i> = 5 % ( <i>n</i> )	Axis I & APD or BPD <i>n</i> = 87 % ( <i>n</i> )
51-90 - moderate to absent	59.4 (79)	96.3 (26)	80.0 (4)	47.1 (41)
50 – 1 some serious to immediate danger to self	40.6 (54)	3.7 (1)	20.0 (1)	52.9 (46)

Note. GAF = Global Assessment of Functioning.

<sup>a</sup>Excluding alcohol and substance use disorders if they are the only disorders in Axis I.

The grouped GAF scale scores  $\leq 50$  for current major mental illness and BPD and APD, and any Axis I disorder (excluding alcohol and substance use where they are the only disorders) are shown in Table 13. For women with a major mental illness, 68.2% (30/44) demonstrate serious impairment in functional ability, representing 12.2% of the total combined sample  $N = 246$ . Of women with a diagnosis of major mental illness and APD or BPD, 37.6% (35/93) have a GAF score  $\leq 50$ , and 52.5% (32/61) of those women with major mental illness and BPD demonstrate serious impairment of functioning. Among women in the combined in-custody and intake sample with any current mental disorder, one-third (33.3%) demonstrate a serious level of impairment in functioning.

Table 13

*GAF Scale Scores  $\leq 50$ , by Categories of Mental Disorder: Combined In-Custody and Intake Samples (N = 246)*

	<i>N</i> = 246 GAF scores $\leq 50$ % ( <i>n</i> )
Major mental illness <sup>b</sup> ( <i>n</i> = 44)	12.2 (30/246)
Either major mental illness or BPD or APD ( <i>n</i> = 144)	22.8 (56)
Either major mental illness or BPD ( <i>n</i> = 96)	21.1 (52)
Any Axis I disorder (excluding alcohol/substance abuse if they are the only disorders) ( <i>n</i> = 133)	22.0 (54)

<sup>b</sup>Major mental illness corresponds to a diagnosis of any one of the following: major depressive disorder, bi-polar I disorder, bi-polar II disorder, or any psychotic disorder.

The grouped GAF scale scores for the combined sample ( $N = 246$ ), by Indigenous and non-Indigenous ancestry, are displayed in Table 14. The proportion of Indigenous women with a GAF score  $\leq 50$  is statistically significantly greater ( $X^2(1, n = 246) = 4.503, p = 0.034$ ) than among non-Indigenous women.

Table 14

*GAF Scale Scores by Indigenous Ancestry: Combined In-Custody and Intake Samples ( $N = 246$ )*

Level of Impairment (GAF score)	Indigenous $n = 73$ % ( $n$ )	Non-Indigenous $n = 173$ % ( $n$ )	Total Sample $N=246$ % ( $n$ )
51-90 - moderate to absent	65.8 (48)	78.6 (136)	74.8 (184)
50-1 – some serious to immediate danger to self	34.3 (25)	21.4 (37)	25.2 (62)

*Note:* Lower scores indicate greater impairment

## Discussion

A considerable body of international (Al-Rousan et al., 2017; Fazel & Seewald, 2012; Fazel et al., 2016; Hales, Somers, Reeves & Bartlett, 2015; Houser & Welsh, 2014; Lynch et al., 2014; Mundt, Kastner, Mir & Priebe, 2015; Prins, 2014) and Canadian research (Beaudette & Stewart, 2016; Brown et al., 2018; Brown et al., 2013; Derkzen et al., 2012; Lafortune, 2010; Leschied, 2011) has established a high prevalence of mental disorder among female prison inmates, in the order of four times or more the prevalence found in the general population (Public Health Agency of Canada, 2015; Steel et al., 2014). Across studies, as many as three-quarters of women inmates have an alcohol/substance use disorder, and half or more of female inmates have a co-occurring mental disorder with substance abuse or personality disorder (Brown et al., 2018; Wright, Walters & Strang, 2016). More than half of women inmates have a mood or anxiety disorder, or a personality disorder (Lynch et al., 2014; Wright, Walters & Strang, 2016). The prevalence of mental disorder among women inmates is two to four times greater than among male inmates (Al-Rousan et al., 2017; Baillargeon et al., 2009; Bebbington et al., 2017; Fazel, Hayes, Bartellas, Clerici & Trestman, 2016; Prins 2014).

The results of the in-custody and intake samples, and the combined sample, confirm the high prevalence of mental disorder among Canadian federal women inmates, including a high prevalence of alcohol/substance use and borderline and antisocial personality disorders, with two-thirds or more of women having a lifetime co-occurring mental disorder with alcohol/substance use or borderline or antisocial personality disorder. More than half (52.0%) of women in the combined sample ( $N = 246$ ) report a lifetime major mental illness (psychosis, major depression, bi-polar disorder) and 17.9% have a current, major mental illness. One-third (33.3%) of women with a current mental disorder have a GAF score  $\leq 50$ , indicating at least a serious level of impairment in psychological and social functioning. Indigenous women consistently demonstrate a higher prevalence of mental disorder, alcohol/substance use and personality disorders, and co-occurring disorders, along with a greater prevalence of psychotic disorders. Indigenous women with mental disorder demonstrate a statistically significantly higher level of functional impairment (GAF  $\leq 50$ ) in the combined sample ( $N = 246$ ) compared to non-Indigenous women.

## **Limitations of Study**

The national scale of the Canadian federal prison system, and the comparatively small number of women inmates (about 4.5% of the total CSC population) distributed in six institutions across the country make it a challenge to conduct in-person, clinical mental health assessments in a timely fashion, accounting for the seemingly lengthy time-frame over which the in-custody sample (February 25, 2016 – October 11, 2016) and the intake sample (October 11, 2016 – December 31, 2017) data were collected. It is possible that changes in policy or practice within the women's institutions during these periods could have affected the women available and volunteering to complete the SCID-I and SCID-II assessments. At the same time, except for the later addition into the in-custody sample in December 2017 of the six women assessed at the Regional Psychiatric Centre in Saskatoon, the most severely mentally disordered women being treated in specialized mental health units and women held in administrative segregation or women deemed at too great a risk to participate could not be assessed by the researchers, possibly contributing to an underestimation of the true prevalence of mental disorder in the population of women inmates.

The combination of the in-custody ( $N = 160$ ) and intake ( $N = 86$ ) samples into a combined sample ( $N = 246$ ) for the purposes of analysis served to decrease the in-custody sample estimates of the prevalence of mental disorder by adding in mental health assessments from more recently admitted women who reported lower prevalence of mental disorder compared to longer-term women included in the in-custody sample. The decrease in prevalence estimates in the combined sample speaks to the difficulty in accurately estimating the true prevalence of mental disorder among prison populations that are both somewhat fluid, and which retain a preponderance of inmates serving longer sentences for more serious crimes, who are returned to custody and who are often for these reasons a higher risk – and more likely to have a mental disorder. In combining the in-custody and intake samples in an approximation of a 'period prevalence' measure of mental disorder among the Canadian federal women inmates, a more accurate estimate of prevalence may have been obtained. Future research on prevalence of mental disorder should strive to incorporate sampling strategies or statistical controls to account for length of time incarcerated, seriousness of offence and criminogenic risk level.

As is typically an issue in research on women inmates, the comparatively small number made it difficult to generalize the research findings to specific regional or institutional contexts,

though such differences affecting the estimates of prevalence of mental disorder among women inmates may exist.

Despite these limitations, the in-custody and intake samples, and combined sample results represent the best available research and evidence of the prevalence of mental disorder among Canadian federal women inmates, and the results of the research parallel findings from other current international and Canadian research, supporting the reliability and validity of the research.

## **Conclusions**

The prevalence of mental disorder among Canadian federal women inmates is four times or greater than that estimated of women the general population in the latest Statistics Canada research; at least half of these women offenders reported symptoms consistent with a co-occurring disorder with alcohol/substance use or borderline or antisocial personality disorder. One-third of the women have at least a serious level of functional impairment as measured by the GAF scale. The prevalence of mental disorder is higher among women compared to men inmates, and highest among Indigenous women.

The high prevalence of mental disorder and of co-occurring disorders among women inmates pose a challenge to an agency charged with the design, and provision of effective mental health treatment. The significant level of functional impairment we found could also be a factor that would interfere with receptiveness and responsiveness to treatment (Grant, 2014; Harner & Riley, 2013; Lynch et al., 2014; Martel et al., 2011; Ogloff, 2017). Having established with a strong research design the elevated prevalence of mental disorder among Canadian federal women inmates, research efforts should now be devoted to determining which types of treatment, including design and delivery considerations, are most effective to reduce symptoms and improve outcomes among this disadvantaged group.

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## Appendix A

Table A

*Demographic and Criminal History Characteristics of In-Custody (N = 160) and Intake Sample (N = 86) Participants, and Comparison of Intake Sample Participants' Characteristics with Intake Sample Non-Participants (N = 490)*

	In-Custody Sample Participants % (n)	Intake Sample Participants % (n)	Non-Participating Admissions In Intake Sample Period % (n)	X <sup>2</sup>	df
<b>Ethnicity</b>					
Indigenous	32.5 (52)	24.4 (21)	35.3 (173)	3.963	3
Black	3.8 (6)	9.3 (8)	6.3 (31)		
White	55.0 (88)	53.5 (46)	48.4 (237)		
Other	6.9 (11)	10.5 (9)	10.0 (49)		
*Missing	1.9 (3)	2.3 (2)	-		
<b>Marital status</b>					
Single	51.3 (82)	52.3 (45)	53.7 (263)	4.807	3
Married/common-law	30.6 (49)	29.1 (25)	25.7 (126)		
Divorced, separated, or widowed	15.0 (24)	15.1 (13)	10.8 (53)		
Other	3.1 (5)	3.5 (3)	9.8 (48)		
<b>Criminogenic need level (at intake)</b>					
Low	10.6 (17)	16.3 (14)	12.3 (59)	2.901	2
Medium	36.3 (58)	37.2 (32)	34.2 (164)		
High	53.1 (85)	41.9 (36)	53.4 (256)		
*Missing		4.7 (4)			
<b>Criminal history risk level (at intake)</b>					
Low	32.5 (52)	37.2 (32)	38.0 (182)	1.444	2
Medium	33.8 (54)	45.3 (39)	43.2 (207)		
High	33.8 (54)	12.8 (11)	18.8 (90)		
*Missing		4.7 (4)			

Table A *Continued*

	In-Custody Sample Participants % (n)	Intake Sample Participants % (n)	Non-Participating Admissions In Intake Sample Period % (n)	X <sup>2</sup>	df
Major admitting offence					
Homicide related	24.4(39)	9.3 (8)	10.0 (49)	2.840	7
Robbery	10.0 (16)	12.8 (11)	10.4 (51)		
Drug offences	31.3 (50)	41.9 (36)	38.6 (189)		
Assault	8.1 (13)	3.5 (3)	6.9 (34)		
Sexual offences	3.1 (5)	5.8 (5)	4.1 (20)		
Property offences	15.0 (24)	15.1 (13)	15.9 (78)		
Other violent offences	2.5 4	4.7 (4)	5.5 (27)		
Other non-violent offences	5.6 (9)	7.0 (6)	8.6 (42)		
Security level (at intake)					
Minimum	40.0 (64)	48.8 (42)	49.9 (233)	2.524	
Medium	42.5 (68)	41.9 (36)	44.8 (209)		
Maximum	17.5 (28)	1.2 (1)	5.4 (25)		
*Missing		8.1 (7)			
Sentence type					
Determinate	83.1 (133)	97.7(84)	95.7 (469)	0.733	1
Indeterminate	16.9 (27)	2.3 (2)	4.3 (21)		
Average sentence length in years (SD)	3.8 (1.9)	3.1 (2.0)	3.2 (2.0)	0.000	574

†Information suppressed due to frequencies fewer than 5 in one category.

<sup>1</sup>chi-square calculated for 2 X 7 table due to low cell count for participants 'Other violent offences'

\*  $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

## Appendix B

Table B1

*Prevalence Rates of Mental Disorders Among Federal Women Offenders: In Custody Sample (N = 160)*

Disorder	Lifetime % (n)	Current % (n)
<b>Mood disorders</b>	<b>63.1 (101)</b>	<b>23.1 (37)</b>
Bi-polar I disorder	9.4 (15)	1.9 (3)
Bi-polar II disorder	0.6 (1)	1.3 (2)
Other bi-polar disorders	0.6 (1)	1.3 (2)
Major depressive disorder	45.6 (73)	9.4 (15)
Dysthymic disorder (current only)		10.0 (16)
Depressive disorder not otherwise specified	6.3 (10)	3.8 (6)
Mood disorder due to a general medical condition	0	0
Substance-induced mood disorder	4.4 (7)	0
<b>Psychotic disorders<sup>a</sup></b>	<b>9.4 (15)</b>	<b>6.9 (11)</b>
<b>Alcohol and substance use disorders</b>	<b>76.9 (123)</b>	--
Alcohol abuse or dependence	50.6 (81)	--
Non-alcohol substance abuse or dependence	71.3 (114)	--
<b>Anxiety disorders</b>	<b>57.5 (92)</b>	<b>53.8 (86)</b>
Panic disorder	19.4 (31)	14.4 (23)
Agoraphobia without history of panic	3.8 (6)	3.8 (6)
Social phobia	10.0 (16)	8.8 (14)
Specific phobia	5.6 (9)	5.6 (9)
Obsessive-compulsive disorder	10.6 (17)	10.6 (17)
Posttraumatic stress disorder	35.0 (56)	33.8 (54)
Generalized anxiety disorder	14.4 (23)	13.8 (22)
Anxiety disorder due to a general medical condition	1.3 (2)	1.3 (2)
Substance-induced anxiety disorder	0	0
Anxiety disorder not otherwise specified	5.6 (9)	5.6 (9)
<b>Eating disorders</b>	<b>16.3 (26)</b>	<b>10.6 (17)</b>
Anorexia Nervosa	5.6 (9)	1.9 (3)
Bulimia Nervosa	6.9 (11)	6.3 (10)
Binge-eating disorder	4.4 (7)	3.1 (5)
<b>Pathological gambling</b>	<b>13.1 (21)</b>	<b>0.6 (1)</b>
<b>Borderline personality disorder (lifetime only)</b>	<b>35.0 (56)</b>	--
<b>Antisocial personality disorder (lifetime only)</b>	<b>50.6 (81)</b>	--

*Note.* “(0)” indicates no participant received a rating for that category. Percentages may not add to 100% as participants could meet the diagnostic criteria for more than one disorder. <sup>a</sup> = Psychotic disorders included: schizophrenia, schizophreniform, schizoaffective, delusional disorder, brief psychotic disorder, substance abuse or general medical condition causing psychotic symptoms, substance induced psychotic disorder, and psychotic disorder not otherwise specified.

Table B2

*Prevalence Rates of Mental Disorders Among Federal Women Offenders: Intake Sample (N = 86)*

Disorder	Lifetime % (n)	Current % (n)
<b>Mood disorders</b>	<b>34.9 (30)</b>	<b>16.3 (14)</b>
Bi-polar I disorder	9.3 (8)	3.5 (3)
Bi-polar II disorder	1.2 (1)	1.2 (1)
Other bi-polar disorders	0	0
Major depressive disorder	19.8 (17)	10.5 (9)
Dysthymic disorder (current only)	2.3 (2)	2.3 (2)
Depressive disorder not otherwise specified	1.2 (1)	0
Mood disorder due to a general medical condition	0	0
Substance-induced mood disorder	2.3 (2)	0
<b>Psychotic disorders<sup>a</sup></b>	<b>5.8 (5)</b>	<b>1.2 (1)</b>
<b>Alcohol and substance use disorders</b>	<b>61.6 (53)</b>	--
Alcohol abuse or dependence	32.6 (28)	--
Non-alcohol substance abuse or dependence	50.0 (43)	--
<b>Anxiety disorders</b>	<b>44.2 (38)</b>	<b>38.4 (33)</b>
Panic disorder	23.3 (20)	19.8 (17)
Agoraphobia without history of panic	7.0 (6)	4.7 (4)
Social phobia	4.7 (4)	4.3 (4)
Specific phobia	8.1 (7)	9.3 (8)
Obsessive-compulsive disorder	3.5 (3)	2.3 (2)
Posttraumatic stress disorder	17.4 (15)	15.1 (13)
Generalized anxiety disorder	15.1 (13)	15.1 (13)
Anxiety disorder due to a general medical condition	0	0
Substance-induced anxiety disorder	2.3 (2)	0
Anxiety disorder not otherwise specified	1.2 (1)	1.2 (1)
<b>Eating disorders</b>	<b>9.3 (8)</b>	<b>1.2 (1)</b>
Anorexia Nervosa	4.7 (4)	0
Bulimia Nervosa	3.5 (3)	1.2 (1)
Binge-eating disorder	2.3 (2)	1.2 (1)
<b>Pathological gambling</b>	<b>12.8 (11)</b>	<b>3.5 (3)</b>
<b>Borderline personality disorder (lifetime only)</b>	<b>25.6 (22)</b>	--
<b>Antisocial personality disorder (lifetime only)</b>	<b>38.4 (33)</b>	--

*Note.* "(0)" indicates no participant received a rating for that category. Percentages may not add to 100% as participants could meet the diagnostic criteria for more than one disorder. <sup>a</sup> = Psychotic disorders included: schizophrenia, schizophreniform, schizoaffective, delusional disorder, brief psychotic disorder, substance abuse or general medical condition causing psychotic symptoms, substance induced psychotic disorder, and psychotic disorder not otherwise specified.

## Appendix C

Table C

*Prevalence Rates of Mental Disorder among Indigenous and non-Indigenous Federal Women  
Offenders: Intake Sample (N = 86)*

Disorder	Indigenous (N = 21)		Non-Indigenous (N = 65)	
	Lifetime	Current	Lifetime	Current
<b>Any disorder</b>	90.5 (19)	71.4 (15)	75.4 (49)	66.2 (43)
<b>Mood disorders</b>	28.6 (6)	14.3 (3)	36.9 (24)	16.9 (11)
Bi-polar disorders <sup>a</sup>	4.8 (1)	4.8 (1)	12.3 (8)	4.6 (3)
Major depressive disorder	9.5 (2)	9.5 (2)	23.1 (15)	10.8 (7)
Dysthymic disorder	4.8 (1)	4.8 (1)	1.5 (1)	1.5 (1)
Mood Disorders – other <sup>b</sup>	14.3 (3)	0	0	0
<b>Psychotic disorders<sup>c</sup></b>	14.3 (3)	4.8 (1)	3.1 (2)	0
<b>Alcohol and substance use disorders<sup>d</sup></b>	85.7 (18)	-	53.8 (35)	-
Alcohol abuse or dependence	61.9 (13)	-	23.1 (15)	-
Non-alcohol substance abuse or dependence	61.9 (13)	-	46.2 (30)	-
<b>Anxiety disorders</b>	52.4 (11)	33.3 (7)	41.5 (27)	40.0 (26)
Panic disorder	28.6 (6)	14.3 (3)	21.5 (14)	21.5 (14)
Phobias <sup>e</sup>	4.8 (1)	4.8 (1)	21.5 (14)	20.0 (13)
Obsessive-compulsive disorder	4.8 (1)	4.8 (1)	3.1 (2)	1.5 (1)
Posttraumatic stress disorder	19.0 (4)	14.3 (3)	16.9 (11)	15.4 (10)
Generalized anxiety disorder	9.5 (2)	9.5 (2)	16.9 (11)	16.9 (11)
Anxiety Disorders – other <sup>f</sup>	9.5 (2)	0	1.5 (1)	1.5 (1)
<b>Eating disorders</b>	19.0 (4)	0	6.2 (4)	1.5 (1)
Anorexia Nervosa	14.3 (3)	0	1.5 (1)	0
Bulimia Nervosa	4.8 (1)	0	3.1 (2)	1.5 (1)
Binge-eating disorder	0	0	3.1 (2)	1.5 (1)
<b>Pathological gambling</b>	23.8 (5)	4.8 (1)	9.2 (6)	3.1 (2)
<b>Borderline personality disorder (lifetime only)</b>	33.3 (7)	-	23.1 (15)	-
<b>Antisocial personality disorder (lifetime only)</b>	57.1 (12)	-	32.3 (21)	-

*Note.* Percentages may not add to 100% as participants could meet the diagnostic criteria for more than one disorder.

<sup>a</sup> **Mood disorders** include bi-polar I disorder, bi-polar II disorder, other bi-polar disorder; major depressive disorder, dysthymic disorder, depressive disorder not otherwise specified, mood disorder due to a general medical condition, and substance-induced mood disorder.

<sup>b</sup> **Psychotic disorders** include schizophrenia, schizophreniform, schizoaffective, delusional disorder, brief psychotic disorder, substance abuse or general medical condition causing psychotic symptoms, substance induced psychotic disorder, and psychotic disorder not otherwise specified

<sup>c</sup> **Alcohol and substance use disorders** include alcohol abuse or dependence and non-alcohol substance abuse or dependence.

<sup>d</sup> **Anxiety disorders** include panic disorder, agoraphobia without history of panic, social phobia, specific phobia, obsessive-compulsive disorder, posttraumatic stress disorder, generalized anxiety disorder, anxiety disorder due to a general medical condition, substance-induced anxiety disorder, and anxiety disorder not otherwise specified

<sup>e</sup> **Eating disorders** include anorexia nervosa, bulimia nervosa and binge-eating disorder

## Appendix D

Table D

*Prevalence Rates of Mental Disorder among Indigenous and non-Indigenous Federal Women*

*Offenders: Combined Sample (N = 246)*

Disorder	Indigenous (N = 73)		Non-Indigenous (N = 173)	
	Lifetime	Current	Lifetime	Current
<b>Mood disorders</b>	<b>50.7 (37)</b>	<b>21.9 (16)</b>	<b>54.3 (94)</b>	<b>20.2 (35)</b>
Bi-polar disorders	4.1 (3)	2.7 (2)	13.3 (23)	4.6 (8)
Major depressive disorder	32.9 (24)	11.0 (8)	38.2 (66)	9.3 (16)
Dysthymic disorder (current only)	9.6 (7)	9.6 (7)	6.9 (12)	6.4 (11)
Mood Disorders – other	13.7 (10)	5.5 (4)	5.2 (9)	1.2 (2)
<b>Psychotic disorders<sup>c</sup></b>	<b>16.4 (12)</b>	<b>11.0 (8)</b>	<b>4.6 (8)</b>	<b>2.3 (4)</b>
<b>Alcohol and substance use disorders (lifetime only)</b>	<b>89.0 (65)</b>	-	<b>64.2 (111)</b>	-
Alcohol abuse or dependence	71.2 (52)	-	33.0 (57)	-
Non-alcohol substance abuse or dependence	76.7 (56)	-	58.4 (101)	-
<b>Anxiety disorders</b>	<b>58.9 (43)</b>	<b>52.1 (38)</b>	<b>50.3 (87)</b>	<b>46.8 (81)</b>
Panic disorder	26.0 (19)	20.6 (15)	18.5 (32)	14.5 (25)
Phobias	16.4 (12)	16.4 (12)	16.8 (29)	15.0 (26)
Obsessive-compulsive disorder	9.6 (7)	9.6 (7)	7.5 (13)	6.9 (12)
Posttraumatic stress disorder	35.6 (26)	32.9 (24)	26.0 (45)	24.9 (43)
Generalized anxiety disorder	13.7 (10)	12.3 (9)	15.0 (26)	15.0 (26)
Anxiety Disorders – other	8.2 (6)	5.5 (4)	4.6 (8)	4.6 (8)
<b>Eating disorders</b>	<b>21.9 (16)</b>	<b>13.7 (10)</b>	<b>10.4 (18)</b>	<b>4.6 (8)</b>
Anorexia Nervosa	8.2 (6)	2.7 (2)	4.1 (7)	0.6 (1)
Bulimia Nervosa	12.3 (9)	9.6 (7)	2.9 (5)	2.3 (4)
Binge-eating disorder	2.7 (2)	2.7 (2)	4.1 (7)	2.3 (4)
<b>Pathological gambling</b>	<b>16.4 (12)</b>	<b>1.4 (1)</b>	<b>11.6 (20)</b>	<b>1.7 (3)</b>
<b>Borderline personality disorder (lifetime only)</b>	<b>46.6 (34)</b>	-	<b>25.4 (44)</b>	-
<b>Antisocial personality disorder (lifetime only)</b>	<b>76.7 (56)</b>	-	<b>33.5 (58)</b>	-