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Research Article

Characterization of Patients Assessed in Community Mental Health Clinics in a North-Western Canadian Municipal Region: Patient Profile, Sex Differences, and Follow-Up Referral

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Abstract

Aims: To characterize the sex-specific differences in the demographic and clinical profile as well as psychiatric antecedents, and follow-up referral for new outpatient psychiatric patients in Fort McMurray.

Methods: Information on a new patient data assessment tool was compiled as part of a clinical audit process between 1st January 2014 and 31st December 2014.

Results: Overall, 677 patients were assessed over the 12 month period, comprising 261 (38.6%) males. The mean age for all the patients was 35.67 (SD=13.02). There were statistically significant differences between male and female patients in respect of all the demographic and social characteristics as well as psychiatric antecedents. 249 (36.8%) patients had primary Depressive disorders. With odds ratios ranging between 4.02 and 7.11, outpatients diagnosed with substance related disorders, personality disorders and trauma/stressor related disorders were about 4.5, 5.5, and 7 times respectively less likely to be offered follow-up appointments after their initial assessments compared to patients who had a primary depressive disorder controlling for other variables in a logistic regression model.

Conclusion: By better understanding the outpatient profile and their clinical background, we are able to better understand the potential antecedents associated with greater need for quality psychiatric services.

Keywords

Outpatient; Community; Mental Health; Characteristics

Introduction

Psychiatric disorders are a leading and continually growing burden of disease around the world. The World Health Organization ranks several mental illnesses such as depression, alcohol use disorder, schizophrenia, and bipolar disorder among the top ten leading global causes of disability (as measured by the aggregate years lived with disability) [1]. By 2030, depression alone is projected to be the biggest burden of disease in the world [2]. In Canada, mental health disorders are already the leading cause of workplace disability, costing 70% of total costs, and accounting for 30% of all claims [3]. Canada expends estimated 7.2% of total health care budget on psychiatric disorders [4] and the overall economic cost is estimated to be approximately 2.96% of GDP [3]. In fact, mental illness is currently estimated to be a significantly bigger burden in Canada compared to all cancers or all infectious diseases combined [5].

Despite the growing problem and high costs of mental illness, current evidence suggests that mental health needs of Albertans remain to be only partially met [3,6]. Approximately one in five adult Albertans have experienced an addiction or mental illness problem in 2012 and almost half reported an unmet need for one or more mental health services [3]. In an effort to improve the quality of mental health services, it is important to better understand the demographic and clinical characteristics of the patients seeking mental health services in our communities as well as the subsequent psychiatric follow-up beyond their initial psychiatric consultation. This is especially relevant for regional health providers with diverse and dynamic catchment populations in communities such as Fort McMurray, which serves large segments of rural and transient work camp population. An emergency department study in Fort McMurray has recently reported a notable disparity between the catchment community profile and the psychiatric emergency census, identifying several patient cohorts disproportionately likely to seek emergency psychiatric services as well as documenting a hidden underlying need for additional addiction services [7].

In this study, we have focused on the psychiatric outpatients to try to better document not only the profile of our outpatients but also to test the sex-specific differences, psychiatric antecedents, and follow-up referral of our patients. All outpatient psychiatric clinics in Fort McMurray area collectively joined efforts to participate in this study. This is the first study of its kind to our knowledge in Alberta and one of the few recent studies from the developed countries to examine the detailed profile of patients presenting to psychiatric outpatient services.

Materials and Methods

Setting

Fort McMurray is an oil mining urban service area in northern Alberta in the west of Canada. The urban service area has a population of 125,035 (2015 census conducted by the regional municipal authorities). The urban service area is served by a 101-bed university-based teaching hospital with a 10 bed psychiatric ward. There are four general adult psychiatrists providing mental health care for adult residents of the urban service area and its environs. There is

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also a multidisciplinary outpatient team that provides counseling and assertive outreach services for residents in the catchment area. The four psychiatrists operate four independent outpatient offices in the city center with referrals sourced from family physicians, emergency room crisis nurses and physicians, as well as addiction and mental health counsellors. Following patients' initial assessment in the clinics, they are either offered follow-up appointments or discharged back to primary care with recommendations regarding their ongoing care within primary care settings. In addition to follow-up in primary or secondary care, patients are usually referred to an appropriate addiction or mental health counselling service operated by the Alberta Health Services or a private provider. All of the four psychiatrists in Fort McMurray participated in the data collection.

Data collection and institutional review

As part of a service improvement initiative, the psychiatric team in Fort McMurray designed a data assessment form to assist the psychiatrists gather all relevant demographic and clinical characteristics of assessed patients. The data was compiled using this tool as a part of a clinical audit process between 1st January 2014 and 31st December 2014. The data assessment form was reviewed and approved by the Department of Psychiatry at the Northern Lights Regional Health Centre in Fort McMurray. Information captured on the data assessment form included:

Sociodemographic characteristics

1) Age; 2) Sex: male or female; 3) Highest educational attainment: elementary, high school, graduate; 4) Marital status: married/co-habiting/partnered, divorced/separated/widowed, or single (never married); 5) Employment status: employed, unemployed, retired, or student; 6) Accommodation type: living in own home, living in rented accommodation, or living in a hostel; 7) Forensic history: yes or no

Psychiatric antecedents and predisposing factors

1) Patient has a history of contact with psychiatric services: Yes or No; 2) Patient has a history of self-harm: Yes or No; 3) Patient has a family history of mental illness: Yes or No; 4) History of childhood sexual abuse: Yes or No; 5) Patient is on psychotropic medication: Yes or No.

Reasons for referral

We identified the patients' main reasons for being referred to the outpatient clinic by reviewing and classifying the information on the referral forms as follows: 1) Substance abuse; 2) Suicidal ideation; 3) Low mood; 4) Anxiety; 5) Mood swings; 6) Psychotic symptoms; or 6) others.

DSM V diagnostic group

This category includes the primary DSM V diagnostic grouping assigned by the assessing psychiatrists. We used broad diagnostic categories rather than specific diagnosis, including 1) Trauma and stressor related Disorders; 2) Anxiety disorders; 3) Depressive disorders; 4) Bipolar and related disorder; 5) Schizophrenia spectrum disorders; 6) Substance-related disorder; 7) Personality disorders; or 8) Other disorders.

Clinical insight and outpatient follow-up type

1) We categorized patients in two groups based on their level of insight, namely those with full insight and those with impaired clinical

insight. Patients were deemed to have impaired clinical insight if they fulfilled one or more of the following criteria: they were unaware of their illness, they could not relabel their symptoms, or they could not recognize the need for treatment (David 1990).

2) Follow-up type: discharged to primary care; follow-up by Psychiatrist outpatient department; referred to counsellor; or referred to other.

Data analysis

Data was analyzed using SPSS Version 20 (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp). Cross-tabular univariate analyses with Chi-squared tests were used to analyze the relationship between sex and each of the categorical variables in the study. Descriptive statistics were provided and described in absolute numbers and percentages. In order to better appreciate the interaction between sex and both the DSM V diagnostic grouping and reasons for referral to the outpatient department, we calculated the male-to-female ratios. Cross-tabular univariate analyses with Chi-squared tests were then used to ascertain the relationship between each of the categorical variables in the study and the likelihood a patient was offered follow-up appointment with the clinic. In each situation, missing data was excluded from the analysis such that the outcome was based only on the available information. Statistically significant ($p<0.05$) and nearly significant ($p=0.10$) variables with the likelihood of patient being offered a follow up appointment with the clinic in a univariate analysis were then entered into a logistic regression model. Before performing the logistic regression analysis, correlation diagnostics were performed to ensure that high inter-correlations among the predictor variables were avoided. Odds ratios from the binary logistic regression analysis were examined to determine the association between each of the variables in the model and the likelihood of patients being offered a follow-up appointment, controlling for the other variables in the model.

Results

Demographic and social characteristics

Overall, 677 patients were assessed by the four psychiatrists over the 12 month period, comprising 261 (38.6%) males and 416 (61.4%) females. The mean age for all the patients was 35.67 (SD=13.02) with males having a mean age of 37.55 (SD=13.46) and females having a mean age of 34.50 (SD=12.78). Overall, 563 (83.2%) of the patients were referred by Family Physicians, 70 (10.3%) were refereed by Physicians or Crisis Nurses from the Emergency Room, and the remaining 44 (6.5%) were referred by Addiction and Mental Health Therapists. There were statistically significant differences between male and female patients in respect of all the demographic and social characteristics (Table 1). There was a higher proportion of female patients aged 25 years or less and a higher proportion of male patients aged 26 and above. There were also higher proportions of Caucasian female patients and conversely higher proportions of male Aboriginal, Asian and Black patients compared to their female counterparts respectively. Similarly, a higher proportion of female patients reported that they lived in their own homes compared to their male counterparts and a higher proportion of male patients reported they lived in rented accommodation or in hostels. Furthermore, a higher proportion of female patients reported that they were either married, cohabiting, or had a partner, while higher proportion of males reported either being divorced, separated, widowed, or single.

Table 1: Sex differences in demographic and social characteristics of psychiatric outpatients.

Variables	Total N	Male N	Female N	Chi Squared	DF	p-value
Age (Years)						
17 or less	31 (4.6%)	6 (2.3%)	25 (6.0%)			
18-25	139 (20.5%)	47 (18.0%)	92 (22.1%)			
26-40	285 (42.1%)	111 (42.5%)	174 (41.8%)	10.49	4	0.03
41-65	209 (30.1%)	89 (34.1%)	120 (28.8%)			
66 and over	13 (1.9%)	8 (3.1%)	5 (1.2%)			
Ethnic Background						
Caucasian	500 (73.9%)	179 (68.6%)	321 (77.2%)			
First nation	87 (12.9%)	38 (14.6%)	49 (11.8%)			
Asian	41 (6.1%)	23 (8.8%)	18 (4.3%)	11.01	4	0.03
Black	31 (4.6%)	16 (6.1%)	15 (3.6%)			
other	18 (2.7%)	5 (1.9%)	13 (3.1%)			
Accommodation Type						
Live in own home	309 (45.6%)	105 (40.2%)	204 (49.0%)			
Renting	339 (50.1%)	140 (53.6%)	199 (47.8%)	7.19	2	0.03
Hostel	29 (4.3%)	16 (6.1%)	13 (3.1%)			
Relationship Status						
Married/cohabiting/partnered	392 (57.9%)	131 (50.2%)	261 (62.7%)			
Divorced/Separated/Widowed	67 (9.9%)	35 (13.4%)	32 (7.7%)	11.98	2	0.00
Single(never married)	218 (32.2%)	95 (36.4%)	123 (29.6%)			
Highest Educational Attainment						
Elementary	35 (5.2%)	11 (4.2%)	24 (5.8%)			
High School	428 (63.2%)	187 (71.6%)	241 (67.9%)	13.02	2	0.00
Graduate	214 (31.6%)	63 (24.1%)	151 (36.3%)			
Employment Status						
Employed	456 (67.4%)	200 (76.6%)	256 (61.5%)			
Unemployed	163 (24.1%)	45 (17.2%)	118 (28.4%)			
Retired	40 (5.9%)	8 (3.1%)	32 (7.7%)	19.74	3	0.00
Student	18 (2.7%)	8 (3.1%)	10 (2.4%)			
Forensic History	105 (15.5%)	61 (23.4%)	44 (10.6%)	20.04	1	0.00

A higher proportion of females reported achieving graduate or higher education while a higher proportion of male patients achieved only elementary or high school education. Despite the educational differences, a higher proportion of male patients reported being employed. Lastly, male patients also had a higher proportion of forensic histories compared to female patients. The quantitative results are summarized in Table 1.

Psychiatric antecedents and predisposing factors

The majority of patients referred to the psychiatric clinics were already on psychotropic medication and about half of all patients reported they had family members with mental health problems. Significantly higher proportions of female patients had histories of self-harm, childhood sexual abuse, family histories of mental illness, and were on psychotropic medication compared to their male counterparts respectively as shown in Table 2.

Presenting complaints and DSM V diagnostic group

The majority of patients were referred because of low mood or anxiety. A higher proportion of female patients than male patients were referred with low mood or anxiety compared to their male counterparts. Similarly, depressive disorders and anxiety disorders were the most common primary diagnostic groups assigned to patients; with a higher proportion of female patients being assigned to each of the primary diagnostic groups. Trauma and stressor related disorders were the third most common primary diagnostic group given to patients with a higher incidence in the male sex. As depicted in Table 3 finally, while only one in twenty patients were referred for a substance-related reason, as many as of one in ten patients were given a primary diagnostic group of substance related disorders.

Clinical insight and follow-up type

A significantly higher proportion of male patients presented with impaired clinical insight compared to their female counterparts. Similarly, a significantly higher proportion of male patients were discharged back into primary care following the initial assessment compared to their female counterparts (Table 4).

Univariate analysis

A summary of the results of univariate analysis of the relationship between the predictor variables and the likelihood of a patient being offered a follow-up appointment with the psychiatric clinic is as shown in Table 5. The results below indicate that there was a statistically significant relationship ($p < 0.05$) between nine of the predictor variables and the likelihood a patient was offered a follow-up appointment.

This suggests, for example, that patients who were female, were known to psychiatric services, were on psychotropic medication or had a family history of mental illness were more likely to be offered follow-up appointments compared to patients who were male, not known to psychiatric services, were not on psychotropic medication or had no family history of mental illness respectively.

Logistic regression

Nine of the predictor variables in Table 5 which met the p value threshold of 0.05 were entered into the logistic regression model. The full model containing all nine predictors was statistically significant, X^2 (25, N=677)= 137.6, p<0.00, indicating that the model was able to distinguish between patients who were offered follow-up appointments and those who were discharged back into primary care after their initial assessment. The model as a whole explained

Table 2: Sex differences in psychiatric antecedents and predisposing factors in psychiatric outpatients.

Variables	Total N	Male N	Female N	Chi-squared/Fisher's exact test*	DF	p-value
Patient is known to psychiatric services	235 (34.7%)	84 (32.2%)	151 (36.3%)	1.20	1	0.27
History of self-harm	92 (13.6%)	28 (10.7%)	64 (15.45)	2.96	1	0.09
Patient takes a psychotropic medicine	406 (60.0%)	136 (52.1%)	270 (64.9%)	10.94	1	0.00
On Antidepressants	370 (54.7%)	120 (46.0%)	250 (60.1%)	12.9	1	0.00
On Antipsychotics	24 (3.5%)	11 (4.2%)	13 (3.1%)	0.56	1	0.52
On Benzodiazepines	21 (3.1%)	9 (3.4%)	12 (2.9%)	0.17	1	0.66
On Mood stabilizers	13 (1.9%)	2 (0.8%)	11 (2.6%)	*	1	0.09
On Stimulants	4 (1.5%)	4 (1%)	8 (1.2%)	*	1	0.50
Family history of mental illness	348 (51.4%)	111 (42.5%)	237 (57.0%)	13.40	1	0.00
History of childhood sexual abuse	140 (20.7%)	28 (10.7%)	112 (26.9%)	25.64	1	0.00

Table 3: Sex differences in presenting complaints and primary DSM V diagnoses in psychiatric outpatients.

Variables	Total N (%)	Male N (%)	Female N (%)	Chi Squared	DF	P-value	Sex ratio
Reason for Referral							
Substance abuse	31 (4.6%)	17 (6.5%)	14 (3.4%)				1.94
Suicidal ideation	23 (3.4%)	10 (3.8%)	13 (3.1%)				1.23
Low mood	280 (41.4%)	93 (35.6%)	187 (45.0%)				0.79
Anxiety	196 (29.0%)	75 (28.7%)	121 (29.1%)	13.23	6	0.04	0.99
Mood swings	59 (8.7%)	23 (8.8%)	36 (8.7%)				1.02
Psychotic	17 (2.5%)	11 (4.2%)	6 (1.4%)				2.92
Others	71 (10.5%)	32 (12.3%)	39 (9.4%)				1.31
Primary DSM V Diagnostic Group							
Depressive disorders	249 (36.8%)	86 (33.0%)	163 (39.2%)				0.84
Schizophrenia spectrum disorders	14 (2.1%)	9 (3.4%)	5 (1.2%)				2.87
Bipolar and related disorders	31 (4.6%)	13 (5.0%)	18 (4.3%)				1.15
Anxiety disorders	133 (19.6%)	42 (16.1%)	91 (21.9%)	20.83	9	0.01	0.74
Substance related disorders	66 (9.8%)	36 (13.8%)	30 (7.2%)				1.91
Personality disorders	20 (3.0%)	6 (2.3%)	14 (3.4%)				0.68
Trauma/stressor related Disorders	96 (14.2%)	46 (17.6%)	50 (12.0%)				1.47
Other DSM V diagnosis	68 (10 %)	23 (8.8%)	45 (10.8%)				0.81

Table 4: Sex differences in the level of clinical insight and type of community follow-up.

Variable	Total N	Male N (%)	Female N (%)	Chi Squared	DF	P-value
Impaired Clinical Insight	107 (15.8%)	49 (18.8%)	58 (13.9%)	2.81	1	0.09
Type of follow-up						
Follow up with psychiatry	483 (71.3%)	173 (66.8)	310 (74.2%)	5.32	2	0.03
Discharged to primary care	194 (28.7%)	86 (33.2%)	108 (25.8%)			

between 18.4 % (Cox and Snell R^2) and 26.3% (Nagelkerke R^2) of the variance in the likelihood that a patient will be offered a follow-up appointment and correctly classified 77 % of cases.

As shown in Table 6, only three independent variables (source of referral, relationship status, and primary DSM V diagnostic group) made unique statistically significant contributions to the model. With a Wald value of 74.25, primary diagnostic group made the biggest contribution to the model, followed by source of referral, and then the relationship status. With odds ratios ranging between 4.02 and 7.11, the model suggests that outpatients diagnosed with substance related disorders, personality disorders, trauma/stressor related disorders and other DSM V disorders were about 4.5, 5.5, 7 and 4 times less likely to be classified as being offered follow-up appointments after their initial assessments compared to patients who had a primary depressive disorder. There was no statistically significant difference in the classified model between patients with primary diagnostic category of schizophrenia spectrum disorders, bipolar and related disorders, or anxiety disorders and those who had depressive disorders and the likelihood that patients were offered a follow-up appointment with the clinics. Our model also suggests that patients who were referred from the Emergency Room were classified about two times less likely to be offered a follow-up appointment compared to patients who were referred by Family Physicians. There was no statistically significant difference between patients referred by addiction and mental health therapists and patients referred by Family Physicians in terms of being classified by the model as being offered a follow-up appointment. Finally, our model suggests that patients who were single were about 1.5 times less likely to be classified by the model as being offered a follow-up appointment compared to patients who were either married or cohabiting/partnered, controlling for other variables in the model. There were, however, no statistically significant differences between married, cohabiting/partnered, and those who were divorced/separated/widowed in respect to the model classification of their likelihood of being offered a follow-up appointment, controlling for other variables.

Table 5: Association between demographic and clinical variables and the likelihood of an offer for follow-up psychiatric appointment.

Variables	Offered follow-up appointments	P-value
Source of referral Family Physician ER Physician Addiction and Mental Health Therapists	 408 (72.5%) 41 (58.6%) 34 (77.3%)	0.04
Sex Male Female	 173 (66.3%) 310 (74.5%)	0.02
Age (Years) 17 or less 18-25 26-40 41-65 66 and over	 18 (58.1%) 96 (69.1%) 217 (76.1%) 143 (68.4%) 9 (69.2%)	0.13
Ethnic Background Caucasian Aboriginal Asian Black other	 369 (73.8%) 59 (68.8%) 27 (65.9%) 15 (48.4%) 13 (72.2%)	0.03
Accommodation Type Live in own home Renting Hostel	 223 (72.2%) 242 (71.7%) 17 (58.6%)	0.30
Relationship Status Married/cohabiting/partnered Divorced/Separated/Widowed Single(never married)	 293 (74.3%) 49 (73.1%) 141 (64.7%)	0.03
Highest Educational Attainment Elementary High School Graduate	 28 (80.0%) 303 (70.8%) 152 (71.0%	0.50
Employment Status Employed Unemployed Retired Student	 324 (71.1%) 120 (73.6%) 27 (67.5%) 12 (66.7%)	0.82
Forensic History **Yes** **No**	 75 (71.4%) 408 (71.3%)	1.0
Patient is Known to Psychiatric Services Yes No	 181 (77%) 302 (68.3%)	0.02
History of Self-Harm Yes No	 66 (71.7%) 417 (71.3%)	1.0
On Psychotropic Medication Yes No	 309 (76.1%) 174 (64.2%)	0.00
Family History of Mental Illness Yes No	 260 (74.5%) 223 (67.8%)	0.05
History Of Childhood Sexual Abuse Yes No	 106 (75.7%) 377 (70.2%)	0.21
Reason For Referral Substance Abuse Suicidal Ideation Low Mood Anxiety Mood Swings Psychotic Others	 25 (80.6%) 15 (65.2%) 205 (73.2%) 138 (70.4%) 46 (78%) 15 (88.2%) 39 (54.9%)	0.02

Primary DSM V Diagnostic Group		
Depressive disorders	209 (83.9%)	
Schizophrenia spectrum disorders	14 (100%)	
Bipolar and related disorders	29 (93.5%)	
Anxiety disorders	109 (82%)	0.00
Substance related disorders	35 (53%)	
Personality disorders	10 (50%)	
Trauma/stressor related Disorders	40 (41.7%)	
Other DSM V diagnosis	37 (54.4%)	
Impaired Clinical Insight		
Yes	82 (76.6%)	
No	401 (70.4%)	0.20

Table 6: Logistic regression model predicting likelihood of patients being offered a follow-up appointment.

Predictor	B	SE	Wald	DF	P-value	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Source of Referral								
Family Physician			6.37	3	0.04			
ER Physician	-0.699	0.31	5.14	1	0.02	2.01	1.10	3.68
Addiction and Mental Health Therapists	0.37	0.42	0.79	1	0.37	0.69	0.30	1.57
Sex	-0.26	0.20	1.68	1	0.20	0.77	0.52	1.14
Ethnic Background								
Caucasian			7.01	4	0.14			
First nation	-0.056	0.23	0.04	1	0.85	0.95	0.54	1.67
Asian	0.03	0.40	0.01	1	0.94	1.03	0.47	2.25
Black	1.05	0.42	6.15	1	0.01	2.86	1.25	6.58
other	0.53	0.59	0.83	1	0.36	1.71	0.54	5.43
Relationship Status								
Married/cohabiting/partnered			5.97	2	0.05			
Divorced/Separated/Widowed	0.39	0.35	1.24	1	0.27	1.48	0.75	2.92
Single(never married)	-0.51	0.22	5.71	1	0.02	1.67	1.10	2.55
Patient is Known to Psychiatric Services	0.25	0.23	1.21	1	0.27	1.28	0.82	2.00
On Psychotropic Medication	0.087	0.207	0.18	1	0.67	1.09	0.73	1.64
Family History of Mental Illness	-0.016	0.198	0.006	1	0.94	0.99	0.67	1.45
Reason for Referral								
Substance abuse			5.69	6	0.46			
Suicidal ideation	0.85	0.72	1.38	1	0.24	2.33	0.57	9.54
Low mood	1.04	0.53	3.78	1	0.05	2.82	0.99	8.04
Anxiety	1.12	0.54	4.40	1	0.04	3.07	1.08	8.78
Mood swings	0.80	0.62	1.66	1	0.20	2.22	0.66	7.53
Psychotic	0.70	1.07	0.43	1	0.51	2.10	0.25	16.37
Others	1.30	0.59	4.84	1	0.03	3.65	1.15	11.54
Primary DSM V diagnostic								
Depressive disorders			74.52	7	0.00			
Schizophrenia spectrum disorders	-19.14	10617.17	0.00	1	0.99	0.00	0.00	
Bipolar and related disorders	-0.85	0.80	1.12	1	0.29	0.43	0.09	2.05
Anxiety disorders	0.02	0.33	0.004	1	0.95	1.02	0.54	1.93
Substance related disorders	1.52	0.34	20.14	1	0.00	4.57	2.35	8.88
Personality disorders	1.72	0.55	9.91	1	0.00	5.56	1.91	16.20
Trauma/stressor related Disorders	1.96	0.29	46.10	1	0.00	7.11	4.04	12.52
Other DSM V diagnosis	1.39	0.36	15.09	1	0.00	4.02	1.99	8.11
Constant	-3.03	0.59	26.14	1	0.00	0.048		

Discussion

Females represented 61% of our outpatients. This is a comparable number to an outpatient study from Winnipeg, which has reported 64% of female psychiatric outpatients [8]. More recent studies, however, tend to report more balanced sex distributions in the outpatient clinics especially in other countries. Studies from Spain and Iran reported respectively 59% and 57% of females [9,10]. While recent studies from Pakistan and India reported only 49% and 41% of female outpatients, respectively [11,12]. The psychiatric emergency study from Fort McMurray also indicated a somewhat more balanced sex distribution of psychiatric patients with 52% of females [7].

The mean age of 35.67 (SD=13.12) of our clinical census was within the range of similar outpatient studies which reported mean age from 28 to 40 years [9,10]. The outpatients in our study were on average 8.78% older compared to the local Emergency Department psychiatric census for Fort McMurray. The psychiatric outpatients were also 9.08% older than the average age of the general catchment population [13]. The broad distribution of the respondents was, nonetheless, roughly two thirds below and one third above the age of 40 in the entire outpatient psychiatric sample, the emergency psychiatric sample, as well as the general population of the Regional Municipality of Wood Buffalo. The female outpatients were on average 8.12% younger than the male outpatient which is a similar difference to the 6.78% difference in the emergency psychiatric patients.

At the moment, there are no recent comparable studies from Canada which could provide context to the ethnic composition of our outpatient census. Although some foreign studies such as Killaspy

et al. comment on the ethnic composition of their census, a more accurate comparison is to the local population from which the sample was collected. Compared to the municipal census, our outpatients census consisted of 3% fewer Caucasians, 91% more Aboriginals, 51% fewer Asians, 73% more Blacks, and 19% more other ethnicities. This is similar to the previous local psychiatric emergency study, which has also reported substantially over-represented Aboriginal, Black, and other ethnic minorities. Compared to this Emergency Room census, our outpatients sample had 1% more Caucasians, 11% fewer Aboriginals, 53% more Asians, 10% more Blacks, and 36% fewer other ethnicities. We did not anticipate for this large over-representation of the ethnic minorities and Aboriginal peoples to persist also in the outpatient census. Since these patient cohorts were disproportionately more likely to present to the emergency services for their mental health needs, we erroneously anticipated that this may lead to a lower relative utilization of the outpatient community services. Another interesting finding from this study was that the ethnic differences were significantly different between the two sexes unlike in the Emergency Room study. Our outpatient sample consisted of 12% more Caucasian females, 19% fewer Aboriginal females, 51% fewer Asian females, 41% fewer Black females, and 63% more other ethnicities females compared to the males. The Emergency Room showed opposite trends in the ethnic sex differences - for instance, documenting 21% more Aboriginal females and 77% more black females compared to males. Such large differences can be most likely explained by the limited patient sample size which beyond the two largest ethnic groups (which together account for almost 9 out of 10 patients in both studies) may be too small to accurately document the differences in the other ethnic groups. Cultural differences in attitudes toward mental illness, health care, and gender status could also potentially explain some of the observed ethnic disparities. Potential selective bias through health screening during immigration process and other difficult to discern factors could also play a role [14].

Accommodation status was also significantly different between the male and female outpatients. More males lived in rented or temporary accommodation. Generally, this is in agreement with the Emergency Room census although the proportion of females who rented their accommodation was higher in the outpatient study. A sizeable portion of the male emergency patients was also living in work camps or were homeless. Other outpatient studies such as Baca-Garcia et al. have disclosed their subject's accommodation status; however, the categories were not comparable to our data [9].

Female outpatients in our study reported to be significantly less likely to be single compared to males, despite being of lower average age. Compared to the literature, the total proportion of our married or co-habiting outpatients was 23 to 115% higher [8-10] with one exception of a study from India which reported 20% higher proportion of married outpatients [11]. The outpatient data compared to the psychiatric emergency room data has also revealed that the outpatients were on average 45% (43% for males, and 46% for females) more likely to be co-habiting; 20% (74% for males, 29% for females) less likely to be divorced, separated, or widowed; and 33% less likely to be never married (which was similar to the 34% lower likelihood in females but in stark contrast to the 162% greater likelihood in males). We did not anticipate such a large disparity of almost 4-fold fewer divorced males and almost 3-fold more single males compared to the Emergency Room census (although only approximately 13% of patients were referred to the outpatient clinic from an emergency doctor). The sex disparity in the outpatient sample was less pronounced compared to the emergency psychiatric patients.

Most of our outpatients have reached a secondary education status. Comparable studies have reported 75 to 77% more psychiatric outpatients who have only completed elementary education, 26-49% fewer patients who have completed secondary education, and 12-54% fewer patients with post-secondary education [9,10]. These studies have also reported 6 to 8% of illiterate or uneducated outpatients which was not applicable in our sample. Compared to the Fort McMurray emergency psychiatric sample, the outpatients had 61% (54% for males, 66% for females) fewer elementary educated patients, 30% (70% for males, 23% for females) more secondary educated patients, but 17% fewer post-secondary educated patients (including trades college education). The male outpatients were 50% less likely to have reached post-secondary education while females were 30% more likely compared to the psychiatric emergency patients.

Most of the psychiatric outpatients (especially males) were employed. Compared to other studies, 45 to 182% more of our outpatients were employed [8-11]. The psychiatric outpatients were also 60 to 89% less likely to be students compared to the other studies. The unemployed or retired fraction of our patients was comparable or in most cases lower than in the literature. Compared to the psychiatric emergency census, the outpatients had 18% (17% for males and 24% for females) more employed, 14% (35% for males and 4% for females) fewer unemployed, and 82% (63% for males and 89% for females) fewer students. Similarly to the emergency census, the outpatient males were still approximately twice as likely to have forensic history (at a rate of roughly one in four) but the overall proportion of patients with forensic patients was 17% less.

Clinical antecedents were not commonly reported in comparable studies. Since our study focused on newly assessed outpatients, only approximately 35% of patients have had previous contact with the psychiatric services. Other studies such as Matas et al. and Khazaie et al. reported that majority (57 to 80%) of their patients were known to the psychiatric services [8,10]. 43% of the psychiatric emergency patients from Fort McMurray were also known to the psychiatric team. The outpatients in our sample were about 10% more likely to be on psychotropic medication compared to a United Kingdom study by Killaspy et al. In both studies, majority of the new outpatients were already on psychotropic medication. Compared to the emergency sample, the outpatients were 30% (26% for males and 45% for females) more likely to be already on psychotropic medication. The sex ratio was 0.80 in the outpatients compared to 0.92 in the emergency sample. The outpatients were 62% less likely to self-harm compared to the emergency psychiatric patients. Family history of mental illness was reported by 18% (5% in males and 22% in females) more outpatients compared to the emergency psychiatric patients. The sex ratio was 0.75 compared to the 0.87 in the psychiatric sample. Childhood sexual abuse was reported by approximately one in five outpatients (11% of males compared to 27% of females). This was roughly double the rate of childhood sexual abuse history in the general population and also the psychiatric emergence sample [7,15]. The outpatients reported 90% (88% for males and 70% for females) more commonly childhood sexual abuse than the psychiatric emergency patients. The outpatient childhood sexual abuse sex ratio was 0.40 compared to 0.36 in the emergency patients. Majority of the outpatients were referred to our clinics from family doctors (83%). Most other studies such as Matas et al. and Killaspy et al. also reported that majority (51 to 73%) of their outpatients were referred from family physicians [8].

There was quite a large disparity in the proportions of the primary diagnoses reported in comparable studies. This might be due to

diverse health care accessibility as well as different roles psychiatrists may play in different health care systems and cultures around the world. Similarly to our outpatient study, the most commonly reported diagnoses in the outpatient literature were usually depressive or anxiety disorders. Schizophrenia, personality disorders, or substance related disorders were usually listed as the least common frequent diagnoses which were still reported and not aggregated to "other" category. Use of different diagnostic guidelines and aggregate groupings of diagnoses have caused somewhat limited comparability between the studies.

For depressive disorders, the reported range included 19% to 54% of patients which translates to a 49% fewer to 46% more outpatients compared to our study. We have found only one study from Pakistan which reported sex differences in the primary diagnoses of psychiatric outpatients [12]. The sex ratio for depression in our sample was 0.84 while the Pakistan study reported 0.96. Compared to the local emergency psychiatric patient status, the outpatients were 41% more likely to be diagnosed with depressive disorder. The sex ratio was also substantially less female skewed than the emergency ratio of 0.57.

For schizophrenia spectrum disorders, the reported range included 4 to 15% which was 67% to 624% more than in our study. All of the published studies reported higher rates of schizophrenia spectrum disorders compared to our study. The outpatient sex ratio of 2.83 was quite different from Sarwat et al. ratio of 0.84 [12]. The psychiatric emergency patients were diagnosed with schizophrenia spectrum disorders 129% more commonly compared to the outpatients. There was also substantially higher proportion of male emergency patients with schizophrenia spectrum disorder with a sex ratio of 3.90.

For bipolar and related disorders, only one study from the United Kingdom has reported a comparable category, representing 5% of the new patients which was 14% higher than in our sample. The emergency psychiatric patients were diagnosed with bipolar and related disorders 22% less commonly than our outpatients. The emergency male patients were also more prone to be diagnosed with bipolar disorder with sex ratio of 2.00 compared to the outpatients with sex ratio of 1.16.

For anxiety disorders, the reported range included 13 to 31% (51% if we also include studies which did not discern primary diagnostic group). This translates to 32% fewer to 50% (161% if also including multiple diagnoses) more cases. However, all but one study from India reported greater percentage of anxiety patients compared to our sample. The sex ratio of 0.74 shows an opposite trend to a Pakistani study which reported outpatient ratio of 1.12. The Fort McMurray psychiatric emergency patients were diagnosed with anxiety 8% less commonly and also showed a 1.23 times higher proportion of males compared to females in contrast with the outpatient data.

For personality disorders, the reported range included 1 to 9% which was 78% less to 217% more than in our study. Personality disorders were 213% less commonly diagnosed in the psychiatric emergency study. The sex ratio was skewed more heavily towards females in the emergency sample with 0.39 versus 0.68 in the outpatient sample.

For substance related disorders, the reported range included 7 to 17% which was 28% fewer to 73% more than in our study. Substance use disorders diagnoses were 52% less likely in the outpatient data compared to the emergency study. The sex ratio between the two studies was comparable at 1.92 versus 1.98 respectively.

For trauma/stressor related disorders, there were not a sufficient number of studies which have reported its incidence in an outpatient clinic with the other comparable diagnoses. The emergency psychiatric patients were diagnosed 41% less commonly with trauma/stressor related disorders. The sex ratio was also quite different between the outpatient and the emergency samples at 1.47 and 0.88, respectively.

For other diagnoses, the reported range included 5 to 25% which was from 47% fewer to 149% more than in our study. Some psychiatric reports from developing countries reported treating patients with somatic problems which has skewed the proportion of other diagnoses. The other psychiatric diagnoses category sex ratio in our study was less balanced at 0.81 compared to 0.99 reported by Sarwat et al. The emergency psychiatric sample had 91% higher proportion of other psychiatric diagnoses compared to the outpatient sample. The sex ratio in the psychiatric sample was 0.97 [12].

As anticipated, the level of clinical insight was substantially higher in our outpatient sample compared to the psychiatric emergency patients. There was 67% (60% for males and 72% for females) smaller proportion of outpatients with clinically impaired insight compared to the emergency psychiatric patients. While approximately one in five male outpatients and one in seven female outpatients suffered from impaired insight, almost half of the emergency patients suffered from impaired clinical insight. Correspondingly, the sex ratio was different in the two samples at 1.35 versus 0.95, respectively.

Besides characterization of the patient profile and sex differences in context of the broader community as well as the available body of literature, the aim of this study was also to identify patient characteristics which may reveal greater likelihood of further psychiatric follow-up referral. The only available outpatient literature in this area, however, focuses primarily on the reasons and predictors of treatment nonadherence or discontinuation (particularly missed first or follow-up psychiatric appointments), treatment remission, or adverse clinical outcomes (such as suicide). Our regression model thus elucidates a yet undocumented aspect of psychiatric outpatient care.

The X^2 test identified that outpatients who were referred by Addiction and Mental Health Therapists or Family Physicians; were female; were Caucasian or Other ethnic minority; were married/cohabiting/partnered or divorced/separated/widowed; were known to psychiatric services; were on psychotropic medications prior to their assessment; had familial history of mental illness; were referred for psychotic symptoms, substance abuse, or mood swings; were diagnosed with schizophrenia spectrum disorders, bipolar and related disorders, depressive disorders, or anxiety disorders; and had impaired clinical insight were most likely to be offered follow-up psychiatric treatment. The logistic regression model has further identified that only three of the nine significant patient profile variables - the source of referral, relationship status, and primary DSM V diagnostic group - offered the most unique and significant contribution to predicting the referral status of the patients.

Although the full nine variable logistic regression model offered a modest 77% accuracy on the training data compared to a random chance of 71%, the classifier still provided an additional insight into the demographic and clinical features which may be associated with increased severity of psychiatric complications and thus need for psychiatric follow-up. The information identified by our model

can be especially useful to primary care providers who are the initial gatekeepers for referrals to our psychiatric outpatient clinics, helping them identify patient cohorts who might be at the greatest need for specialized psychiatric services. An example of an interesting finding was that the patients referred to our clinics from the Emergency Room Physicians were 19% less likely to be offered a follow-up appointment compared to the patients referred to us from the Family Physicians. Another unexpected finding was that not only "Other" less common reasons for referral (55%) but also "Suicidal ideation" referrals (65%) and "Anxiety" referrals (70%) were all less likely than average to be provided with a psychiatric follow-up invitation. On the other hand, referrals for substance use disorders which have the widest treatment gap of all mental disorders [16] resulted in the second highest percentage of psychiatric follow-up offers, after patients referred for psychotic symptoms. Substance use disorders are disproportionately more common in Albertans employed in physically demanding occupations outside of urban areas which make addiction a very relevant topic in communities in Northern Canada [17]. The results of our model might be also useful as a baseline reference for tracking regional changes in patient profile or extrapolating the need for regional specialist services based on the patient profile of a given catchment area in similar communities.

The limitations of our study lie in the modest sample size which might make findings for less frequent patient profile variables very susceptible to each individual. Furthermore, the interpretation of our findings was constrained by the lack of recent comparable studies from other Albertan or Canadian cities. Another limitation was that we did not have information on which patients had requested psychiatric consultation as opposed to being recommended for referral for psychiatric consultation by health professionals. This information is important because it may serve as an important confounding factor for where they are referred to after the psychiatric consultation. The major strengths of this study are that it was conducted in all new outpatients in all psychiatric clinics in Fort McMurray for one full year, the data was collected in person by highly trained health care professionals who were involved not only in the data collection tool design but also in the patient treatment, and the patient characteristics included a wide range of demographic and clinical variables which provided a comprehensive profile of the outpatient census. Similar studies in the literature often focus only on a specific disorder or are based on large retrospective billing records, health records, or public telephone surveys which usually do not capture the full spectrum of clinical and demographic information analyzed in our study.

Although most mental health programs and services in Alberta surveyed by Wild et al. indicated that they were not able to accommodate all patients who have sought their services, it is still important to evaluate, analyze, and improve the quality and accessibility of mental health services in our communities [3]. Our study has documented that the profile of our psychiatric outpatients was different in many aspects not only from other psychiatric outpatient studies in the literature but also from both the local psychiatric emergency census as well as the local catchment population. By better understanding the outpatient profile and their clinical background, we are able to better understand not only the mental health needs but also the potential antecedents associated with greater need for psychiatric services. This could guide future researchers and policy makers to not only optimize current treatment options but also help with early screening of the most vulnerable segments of population to ensure adequate access to psychiatric services before substantial deterioration and need for more intensive interventions.

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