Use of the emergency department as a first point of contact for mental health care by immigrant youth in Canada: a population-based study

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ABSTRACT

BACKGROUND: Emergency department visits as a first point of contact for people with mental illness may reflect poor access to timely outpatient mental health care. We sought to determine the extent to which immigrants use the emergency department as an entryway into mental health services.

METHODS: We used linked health and demographic administrative data sets to design a population-based cohort study. We included youth (aged 10–24 yr) with an incident mental health emergency department visit from 2010 to 2014 in Ontario, Canada (*n* = 118 851). The main outcome measure was an emergency department visit for mental health reasons without prior mental health care from a physician on an outpatient basis. The main predictor of interest was immi-

grant status (refugee, non-refugee immigrant and non-immigrant). Immigrant-specific predictors included time since migration, and region and country of origin. We used Poisson models to estimate adjusted rate ratios (aRRs) and 95% confidence intervals (CIs).

RESULTS: The cohort included 2194 (1.8%) refugee, 6680 (5.6%) non-refugee immigrant and 109 977 (92.5%) non-immigrant youth. Rates of first mental health contact in the emergency department were higher among refugee (61.3%) and non-refugee immigrant youth (57.6%) than non-immigrant youth (51.3%) (refugee aRR 1.17, 95% CI 1.13–1.21; non-refugee immigrant aRR 1.10, 95% CI 1.08–1.13). Compared with non-refugee immigrants, refugees had a higher rate of first mental health contact

in the emergency department (aRR 1.06, 95% CI 1.02–1.11). We also observed higher rates among recent versus longer-term immigrants (aRR 1.10, 95% CI 1.05–1.16) and immigrants from Central America (aRR 1.17, 95% CI 1.08–1.26) and Africa (aRR 1.15, 95% CI 1.06–1.24) versus from North America and Western Europe.

INTERPRETATION: Immigrant youth are more likely to present with a first mental health crisis to the emergency department than non-immigrants, with variability by region of origin and time since migration. Immigrants may face barriers to access and use of outpatient mental health services from a physician. Efforts are needed to reduce stigma and identify mental health problems early, before crisis, among immigrant populations.

Most major mental illnesses begin in adolescence and young adulthood. About 20% of youth will experience mental illness and challenges in ensuring access to high-quality care are increasingly recognized in this population.[1,2] Emergency departments play a critical role in crisis management and often act as a gateway for those requiring admission to hospital for psychiatric care. However, emergency departments are not an ideal environment for youth to engage with the mental health system for the first time, as such visits are associated with worse outcomes, including more severe disease at presentation, longer duration of untreated illness and higher future use of acute care services.[3–5] Use of the emergency

department as a first point of contact with the mental health system is now a health system performance measure, as the emergency department may be the only access point for youth if the system is not functioning properly.[1,4,6] This indicator reflects factors that contribute to how, when, where and who receives mental health care. It can signal under-recognition of disease before crisis, lack of access to timely diagnosis and treatment, stigma, poor access to primary care and cultural differences in expectations regarding the health system or disease.[6] These factors all translate to poor access to care, characterized by high rates of emergency department visits for mental illness with no previous outpatient care.

We recently showed that more than half of youth who present to the emergency department for the first time with a mental health concern had not been seen by a physician as an outpatient for a mental illness ("first-contact emergency department visit"), with variability by sociodemographic and primary care factors.[6] Specifically, first-contact emergency department visits occurred in relatively more immigrant than Canadian-born youth. The study highlighted a population in need of more targeted mental health supports before they present to an emergency department. Immigrants, who now make up 21.9% of the Canadian population,[7] have unique mental health needs based on their family, culture, health-seeking behaviours and previous exposures. Although immigrants in Canada use the mental health system at lower rates than Canadian-born youth, their use of this system varies by region of origin, duration of residence in Canada and visa class, suggesting that aggregating access to care results by immigrant status may miss important variation within this heterogeneous population.[8–10] Variation may be related to a combination of differences in disease prevalence, stigma, settlement supports, poverty, language and education among immigrants.[11,12] Population-based health system indicators that can be tracked over time are important for understanding system responsiveness to the needs of immigrant populations so that mental health services can be better aligned with specific populations' needs. To build on descriptive analyses of this important health system indicator, our objectives were to determine whether immigration and immigration-related factors are associated with using the emergency department as an entryway into mental health services in Ontario, Canada.

Methods

Study design and setting
We conducted a population-based, cross-sectional study of a cohort of youth who presented to an emergency department in Ontario for a mental health concern.

Data sources
We obtained the data from health and demographic administrative databases available through an agreement between ICES and the Ontario Ministry of Health and Long-Term Care. We used unique, coded health identification numbers that linked several databases available at ICES to identify youth. The Registered Persons Database, Ontario's universal health insurance registry, identified residents in Ontario eligible for the Ontario Health Insurance Plan (OHIP). From this database, we obtained sociodemographic information, including age, sex and postal code, for individuals who met study inclusion criteria. We used Statistics Canada's Postal Code Conversion File to link patients' postal codes to derive area-level neighbourhood income quintiles from the 2006 Canadian Census and the Rurality Index for Ontario[13] to determine rural and urban residence from postal codes.

We used the Ontario portion of the Immigration, Refugees and Citizenship Canada Permanent Resident Database to ascertain immigrant status. This database contains individual-level demographic information on immigrants who arrived in Ontario from 1985 to 2012. Available immigration characteristics include immigration visa class (refugee, non-refugee), duration of residence in Canada, and region and country of origin (based on country of birth). This database is probabilistically and deterministically linked to the Registered Persons Database, with validation of linkage previously described.[14] Immigrants with permanent resident status are eligible for provincial health insurance if they have resided in Ontario for 3 months. Refugees with permanent resident status may obtain provincial health insurance coverage upon arrival.[15] Data from asylum-seekers (those arriving in Canada and subsequently seeking refugee status) who have not yet received permanent residency are not captured in this database, as they are not eligible for publicly funded provincial health insurance and are therefore not linkable to existing databases.

The National Ambulatory Care Reporting System identified emergency department visits, and the Canadian Institute for Health Information Discharge Abstract Database and the Ontario Mental Health Reporting System identified hospital admissions. To determine outpatient use of physician services, we used the OHIP physician billings database to ascertain mental health visits to primary care physicians and psychiatrist outpatient visits. In Ontario, visits to social workers, psychologists and other non-physician mental health service providers are not captured through available databases. There are several models for the delivery of primary care in Ontario.[16] We obtained the primary care enrolment model, the care model to which each individual patient is assigned, through the Client Agency Program Enrolment Database.

Study population
We included all youth aged 10 to 24 years, living in Ontario and eligible for provincial health insurance with an unscheduled incident visit to any emergency department for a mental health condition or for a deliberate self-harm attempt (International Classification of Diseases 10th Edition [ICD-10-CA] codes F04-F99, X60-X84, Y10-Y19, and Y28) between Apr. 1, 2010 and Mar. 31, 2014. Incident emergency department visits were defined as any unscheduled emergency department visit for a mental health condition where the individual had had no mental health–related emergency department visit or hospital admission in the preceding 2 years. We excluded youth whose health card number was invalid or missing, or for whom information on age or sex were missing. Also excluded were those whose primary care provider provided their regular care at a community health centre (< 1% of population, as billings are not available through OHIP),[16] and those with less than 2 years of OHIP eligibility before their index visit (as we could not ascertain whether this was an incident emergency department visit).

Outcome
The main outcome measure was an emergency department visit without previous outpatient physician care for a mental health condition. In other words, among those who presented for the first time to the emergency department for a mental health condition, we identified individuals who had never (in the 2 years preceding their emergency department visit) visited a primary

care practitioner or a psychiatrist for a mental health concern. We defined outpatient physician care for mental health problems using a previously validated algorithm and modified it for a pediatric population using physician billings and mental health diagnostic codes from claims.[17] We identified emergency department visits attributed to mental health conditions using the ICD-10-CA diagnostic codes from the National Ambulatory Care Reporting System database. Mental health clinical categories and their corresponding diagnostic codes are based on the Canadian Institute for Health Information diagnostic grouping for the Mental Illness Hospitalization indicator and modified by the Mental Health and Addictions Scorecard Evaluation Framework research team at ICES.[18] These diagnostic codes are used across Canada by health services researchers for ascertaining mental health and addictions issues using administrative data.[1,19]

Predictors

The main predictor of interest was immigrant status (non-immigrant, non-refugee immigrant and refugee immigrant). Immigrant-specific predictors included the duration of residence (0–5 yr, 6–10 yr, > 10 yr) in Canada and the region and country of origin. Statistics Canada often uses 5 years as a cut-off in its descriptions of "recent" or "new" immigrant populations in Canada.[7] Moreover, permanent residents may apply for Canadian citizenship after a minimum of 5 years after obtaining permanent residency. Thus, we used 5-year cut-offs to define groups by duration of residence in Canada. Other predictors previously shown to be associated with emergency department use for mental health conditions included age, sex, neighbourhood income quintile and rurality.[13] High- and low-acuity visits to the emergency department have been used as a marker for greater comorbidities and health system needs[20] and poor access to primary health care.[21] We also included these as covariates. In Ontario, patients may be enrolled in one of several models of primary care delivery.[16] Most enrolment models provide incentive for after-hours or team-based care. The remainder are through either traditional fee-for-service family or general practitioner care, or through pediatricians. The usual provider of primary care was assigned as in previous work by our group.[6] Those enrolled in a primary care model were assigned to that provider. We used an algorithm that made use of all primary care billings for the preceding 2 years to assign the physician with the highest dollar value for primary care for each patient to assign nonrostered patients. We considered those without primary care billings to have no usual provider of care. We categorized mental health diagnosis from the emergency department record into 1 of 7 mental health conditions (Appendix 1, available at www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.180277/-/DC1.). We also characterized visits by their time of day and day of the week.

Statistical analysis

We summarized characteristics of the study cohort using descriptive statistics and compared between immigrant status groups using standardized differences.[22] We used modified Poisson models with robust standard errors and a priori selected variables to estimate adjusted rate ratios (RR) of predictors. One model was estimated using the entire cohort and was fully adjusted for all predictors described above, with the exception of mental health diagnosis, visit time and day, and immigrant-specific predictors. We did the remainder of the modelling only within immigrant groups, restricting to those living in an urban setting where 99% of the immigrant population lives, and additionally examining immigrant-specific predictors (i.e., duration of residence and region of origin). For the country-specific analyses, we produced a funnel plot to compare country-specific rates of no prior outpatient contact to the rate in the non-immigrant population (target rate). Country-specific rates in the funnel plot were fully risk adjusted for sociodemographic and visit factors by indirectly standardizing to the referent population of non-immigrants. We conducted analyses using SAS Enterprise Guide, version 6.1 (SAS Institute, Inc. Cary, NC).

Ethics approval

This study was approved by the Research Ethics Board at the Hospital for Sick Children.

Results

Our cohort consisted of 118 851 youth with an incident emergency department visit for a mental health problem. Refugees accounted for 1.8% (n = 2194) and non-refugee immigrants accounted for 5.6% (n = 6680) of the sample. The immigrant groups, particularly refugees, made up large proportions living in the lowest neighbourhood-income quintiles, and almost all lived in urban areas (Table 1). The non-immigrant and non-refugee immigrant groups had similar proportions of individuals who received primary care through an enrolment model (82.8% and 82.3%, respectively), whereas among refugees, this proportion was lower (77.6%). Of the refugee population, 14.4% received primary care through a traditional fee-for-service model, whereas 7.4% of non-immigrants received traditional fee-for-service primary care. About 56% of all immigrants had been in Canada for more than 10 years. Most non-refugee immigrants came from South and East Asia, whereas most refugees came from South Asia and Africa. Among all those with an incident emergency department visit, the most common reasons for the visit were substance-related disorders, followed by anxiety disorders.

Of non-immigrant youth, 51.3% had their first contact for mental health in the emergency department, versus 57.6% of non-refugee immigrants and 61.3% of refugee immigrants (Table 2). This represents a 10% absolute difference between refugees and the Canadian-born population. Youth aged 14 to 17 and 18 to 21 years across each exposure group (non-immigrant, non-refugee immigrant and refugees) had the highest proportions of their first contact for mental health in the emergency department. This proportion was 68.4% among 14- to 17-year-old refugees. In the adjusted model for the entire cohort, non-refugee and refugee immigrants had higher rates of first mental health contact in the emergency department compared with non-immigrants (adjusted rate ratio [aRR] 1.10, 95% confidence intervals [CI] 1.08 to 1.13, non-refugee immigrants; aRR 1.17, 95% CI 1.14–1.21, refugees) (Table 3). The middle age strata had the

Table 1: Characteristics of youth with an emergency department first contact visit, by immigration status (2010–2014)

Characteristic	Non-immigrants, n = 109 977 (92.5)		Non-refugee immigrants, n = 6680 (5.6)		Refugee immigrants, n = 2194 (1.8)		Total, n = 118 851 (100)	
	n	%	n	%	n	%	n	%
Age group, yr								
10–13	8994	8.2	253	3.8	69	3.1	9316	7.8
14–17	37 039	33.7	1602	24.0	472	21.5	39 113	32.9
18–21	41 632	37.9	2837	42.5	919	41.9	45 388	38.2
22–24	22 312	20.3	1988	29.8	734	33.5	25 034	21.1
Sex								
Female	58 765	53.4	3505	52.5	1138	51.9	63 408	53.4
Male	51 212	46.6	3175	47.5	1056	48.1	55 443	46.6
Income quintile								
1 (low)	25 369	23.1	1706	25.5	910	41.5	27 985	23.5
2	21 647	19.7	1369	20.5	528	24.1	23 544	19.8
3	20 873	19.0	1304	19.5	351	16.0	22 528	19.0
4	21 366	19.4	1320	19.8	253	11.5	22 939	19.3
5 (high)	20 722	18.8	981	14.7	152	6.9	21 855	18.4
Urban								
Yes	98 935	90.0	6602	98.8	2187	99.7	107 724	90.6
Usual provider of primary care								
Yes	104 297	94.8	6395	95.7	2090	95.3	112 782	94.9
Primary care model								
GP or FP enrolment program	91 106	82.8	5499	82.3	1702	77.6	98 307	82.7
GP or FP fee-for-service	8170	7.4	736	11.0	316	14.4	9222	7.8
Pediatrician	5021	4.6	160	2.4	72	3.3	5253	4.4
No UPC	5680	5.2	285	4.3	104	4.7	6069	5.1
Outpatient primary care visits in prior year (mean ± SD)	6.1 ± 6.9	–	6.8 ± 7.8	–	7.3 ± 14.9	–	6.1 ± 7.2	–
ED visits in prior 2 years (mean ± SD)	1.8 ± 2.9	–	1.0 ± 1.9	–	1.2 ± 2.2	–	1.8 ± 2.9	–
Low acuity ED visits in prior 2 years (mean ± SD)	0.9 ± 1.8	–	0.4 ± 0.9	–	0.5 ± 1.0	–	0.9 ± 1.7	–
Mental health diagnosis at ED visit								
Acute stress	16 079	14.6	816	12.2	243	11.1	17 138	14.4
Anxiety	22 423	20.4	1316	19.7	499	22.7	24 238	20.4
Mood or affective disorder	20 359	18.5	1026	15.4	258	11.8	21 643	18.2
Residual self-harm	10 620	9.7	740	11.1	298	13.6	11 658	9.8
Psychotic disorders	3115	2.8	414	6.2	144	6.6	3673	3.1
Substance-related disorders	28 966	26.3	2022	30.3	651	29.7	31 639	26.6
Other MHA disorders	8415	7.7	346	5.2	101	4.6	8862	7.5
Admitted to hospital								
Yes	15 164	13.8	1146	17.2	345	15.7	16 655	14.0
Service time ED visit								
Daytime	30 408	27.6	1531	22.9	478	21.8	32 417	27.3
Evening and after hours	40 712	37.0	2386	35.7	768	35.0	43 866	36.9
Night	38 857	35.3	2763	41.4	948	43.2	42 568	35.8
ED visit on weekend or stat holiday								
Yes	35 519	32.3	2364	35.4	810	36.9	38 693	32.6
Time since immigration, yr								
Recent (0 to ≤ 5)	–	–	871	13.0	342	15.6	1213	1.0
Intermediate (> 5 to ≤ 10)	–	–	1973	29.5	715	32.6	2688	2.3
Long-term (> 10)	–	–	3836	57.4	1137	51.8	4973	4.2
Region of origin								
Africa	–	–	435	6.5	419	19.1	854	0.7
Central America	–	–	752	11.3	130	5.9	882	0.7
East Asia and Pacific	–	–	1212	18.1	88	4.0	1300	1.1
Eastern Europe or Central Asia	–	–	949	14.2	276	12.6	1225	1.0
Middle East	–	–	793	11.9	306	13.9	1099	0.9
South America	–	–	434	6.5	192	8.8	626	0.5
South Asia	–	–	1166	17.5	607	27.7	1773	1.5
US/UK/Western Europe	–	–	939	14.0	176	8.0	1115	0.9

Note: ED = emergency department, GP = general practitioner, FP = family practitioner, MHA = mental health and addictions, SD = standard deviation, UPC = usual provider of care.

Table 2: Characteristics of youth with an incident ED visit stratified by immigration status and prior outpatient care for mental health–related concerns (2010–2014)

| Characteristic | Non-immigrants n = 109 977 | | Non-refugee immigrants n = 6680 | | Refugee immigrants n = 2194 | | SD† |
| | No previous outpatient visit | Previous outpatient visit | No previous outpatient visit | Previous outpatient visit | No previous outpatient visit | Previous outpatient visit | |
	n (row % within non-immigrants)		n (row % within non-refugee immigrants)		n (row % within refugee immigrants)*		
Overall	56 399 (51.3)	53 578 (48.7)	3845 (57.6)	2835 (42.4)	1344 (61.3)	850 (38.7)	–
Age group, yr							
10–13	4223 (47.0)	4771 (53.0)	141 (55.7)	112 (44.3)	39 (56.5)	30 (43.5)	0.10
14–17	18 894 (51.0)	18 145 (49.0)	970 (60.5)	632 (39.5)	323 (68.4)	149 (31.6)	0.01
18–21	22 305 (53.6)	19 327 (46.4)	1678 (59.1)	1159 (40.9)	586 (63.8)	333 (36.2)	0.07
22–24	10 977 (49.2)	11 335 (50.8)	1056 (53.1)	932 (46.9)	396 (54.0)	338 (46.0)	0.06
Sex							
Female	28 817 (49.0)	29 948 (51.0)	1949 (55.6)	1556 (44.4)	674 (59.2)	464 (40.8)	0.10
Male	27 582 (53.9)	23 630 (46.1)	1896 (59.7)	1279 (40.3)	670 (63.4)	386 (36.6)	
Income quintile							
1 (low)	13 576 (53.5)	11 793 (46.5)	1004 (58.9)	702 (41.1)	556 (61.1)	354 (38.9)	0.06
2	11 043 (51.0)	10 604 (49.0)	798 (58.3)	571 (41.7)	336 (63.6)	192 (36.4)	0.00
3	10 665 (51.1)	10 208 (48.9)	764 (58.6)	540 (41.4)	213 (60.7)	138 (39.3)	0.00
4	10 705 (50.1)	10 661 (49.9)	753 (57.0)	567 (43.0)	153 (60.5)	100 (39.5)	0.03
5 (high)	10 410 (50.2)	10 312 (49.8)	526 (53.6)	455 (46.4)	86 (56.6)	66 (43.4)	0.03
Rural							
No	49 753 (50.3)	49 182 (49.7)	3798 (57.5)	2804 (42.5)	NR	NR	0.19
Yes	6646 (60.2)	4396 (39.8)	47 (60.3)	31 (39.7)	NR	NR	–
Usual provider of care							
No	5351 (94.2)	329 (5.8)	269 (94.4)	16 (5.6)	102 (98.1)	NR	1.15
Yes	51 048 (48.9)	53 249 (51.1)	3576 (55.9)	2819 (44.1)	1242 (59.4)	NR	–
Primary care model							
GP or FP enrolment program	44 539 (48.9)	46 567 (51.1)	3053 (55.5)	2446 (44.5)	1001 (58.8)	NR	0.28
GP or FP fee-for-service	4470 (54.7)	3700 (45.3)	447 (60.7)	289 (39.3)	197 (62.3)	NR	0.08
Pediatrician	2039 (40.6)	2982 (59.4)	76 (47.5)	84 (52.5)	44 (61.1)	NR	0.23
No UPC	5351 (94.2)	329 (5.8)	269 (94.4)	16 (5.6)	102 (98.1)	NR	1.15
Mental health diagnosis at ED visit							
Acute stress	7632 (47.5)	8447 (52.5)	429 (52.6)	387 (47.4)	151 (62.1)	92 (37.9)	0.09
Anxiety	11 298 (50.4)	11 125 (49.6)	699 (53.1)	617 (46.9)	286 (57.3)	213 (42.7)	0.03
Mood or affective disorder	7731 (38.0)	12 628 (62.0)	388 (37.8)	638 (62.2)	100 (38.8)	158 (61.2)	0.34
Residual self-harm	5399 (50.8)	5221 (49.2)	459 (62.0)	281 (38.0)	208 (69.8)	90 (30.2)	0.00
Psychotic disorders	1268 (40.7)	1847 (59.3)	181 (43.7)	233 (56.3)	62 (43.1)	82 (56.9)	0.22
Substance-related disorders	19 358 (66.8)	9608 (33.2)	1526 (75.5)	496 (24.5)	485 (74.5)	166 (25.5)	0.44
Other	3713 (44.1)	4702 (55.9)	163 (47.1)	183 (52.9)	52 (51.5)	49 (48.5)	0.16
Admitted to hospital							
No	50 527 (53.3)	44 286 (46.7)	3338 (60.3)	2196 (39.7)	1161 (62.8)	688 (37.2)	0.30
Yes	5872 (38.7)	9292 (61.3)	507 (44.2)	639 (55.8)	183 (53.0)	162 (47.0)	–
Service time ED visit							
Daytime	13 778 (45.3)	16 630 (54.7)	726 (47.4)	805 (52.6)	256 (53.6)	222 (46.4)	0.25
Evening and after hours	19 547 (48.0)	21 165 (52.0)	1271 (53.3)	1115 (46.7)	481 (62.6)	287 (37.4)	0.09
Night	23 074 (59.4)	15 783 (40.6)	1848 (66.9)	915 (33.1)	607 (64.0)	341 (36.0)	0.27
Time since immigration, yr							
Recent (0 to ≤ 5)	–	–	558 (64.1)	313 (35.9)	222 (64.9)	120 (35.1)	0.14
Intermediate (> 5 to ≤ 10)	–	–	1167 (59.1)	806 (40.9)	461 (64.5)	254 (35.5)	0.06
Long-term (> 10)	–	–	2120 (55.3)	1716 (44.9)	661 (58.1)	476 (41.9)	0.12
Region of origin							
Africa	–	–	266 (61.1)	169 (38.9)	274 (65.4)	145 (34.6)	0.11
Central America	–	–	457 (60.8)	295 (39.2)	84 (64.6)	46 (35.4)	0.06
East Asia and Pacific	–	–	748 (61.7)	464 (38.3)	55 (62.5)	33 (37.5)	0.08
Eastern Europe/Central Asia	–	–	500 (52.7)	449 (47.3)	158 (57.2)	118 (42.8)	0.11
Middle East	–	–	434 (54.7)	359 (45.3)	177 (57.8)	129 (42.2)	0.07
South America	–	–	249 (57.4)	185 (42.6)	119 (62.0)	73 (38.0)	0.01
South Asia	–	–	710 (60.9)	456 (39.1)	376 (61.9)	231 (38.1)	0.07
US/UK/Western Europe	–	–	480 (51.2)	457 (48.8)	101 (57.7)	74 (42.3)	0.14

Note: ED = emergency department, FP = family practitioner, GP = general practitioner, NR = not reported, SD = standardized difference, UPC = usual provider of care.
*Some rates for subgroups not reported (NR) owing to small cell sizes. Institutional policy requires suppression of cell sizes < 6.
†Standardized differences for categorical variables compare percentage of "no prior outpatient visits" between given level of the covariate versus all other levels of the covariate.

highest rates of first contact in the emergency department compared with 22- to 24-year-olds (aRR 1.09; 95% CI 1.08–1.11, both groups). Low income, rural residence and fee-for-service primary care models were all associated with higher rates of first contact for mental health in the emergency department. Presentation to the emergency department overnight compared with daytime was associated with high rates of first contact for mental health (aRR 1.30; 95% CI 1.28–1.32). Of those admitted to hospital, refugees had the highest proportion of first contact in the emergency department (53.0%) and non-immigrants had the lowest proportion (38.7%). Among all immigrants, those most recently arrived had the highest proportion (64.3%) of first contact in the

emergency department, as did non-refugee immigrants from East Asia (61.7) and Africa (61.1%) and refugee immigrants from Africa (65.4%), Central America (64.6%) and East Asia (62.5%).

In the immigrant-only model, after we adjusted for age, sex, neighbourhood income quintile, primary care specialty and low- and high-acuity emergency department visits, compared with non-refugee immigrants, refugees had a 6% higher (aRR 1.06, 95% CI 1.02–1.11) risk of not having had previous outpatient care before visiting the emergency department (Table 4). Compared with long-term immigrants, recent immigrants had a 10% higher risk of first contact for mental health in the emergency department (aRR 1.10; 95% CI 1.05–1.16). There was wide variability in first-contact

Table 3: Rate ratios from modified Poisson models for first contact emergency department mental health visits, full cohort, 2010–2014 (n = 118 851)

Covariate	Rate ratio (95% CI)	Adjusted rate ratio* (95% CI)
Immigration category (ref = non-immigrant)		
Non-refugee immigrant	1.12 (1.10–1.15)	1.10 (1.08–1.13)
Refugee immigrant	1.19 (1.15–1.24)	1.17 (1.13–1.21)
Age, yr (ref = 22–24 yr)		
10–13	0.95 (0.93–0.98)	1.04 (1.01–1.07)
14–17	1.04 (1.02–1.06)	1.09 (1.08–1.11)
18–21	1.09 (1.07–1.11)	1.09 (1.08–1.11)
Sex (ref = female)		
Male	1.10 (1.08–1.11)	1.05 (1.04–1.06)
Rural residence (ref = urban)		
Rural	1.18 (1.16–1.20)	1.17 (1.15–1.19)
Income quintile (ref = 5, high)		
1 (low)	1.07 (1.05–1.09)	1.06 (1.04–1.08)
2	1.03 (1.01–1.04)	1.02 (1.01–1.04)
3	1.02 (1.01–1.04)	1.03 (1.01–1.05)
4	1.00 (0.99–1.02)	1.01 (0.99–1.03)
Specialty of UPC (reference = GP or FP model)		
GP or FP fee-for-service	1.12 (1.10–1.14)	1.12 (1.09–1.14)
Pediatrician	0.83 (0.80–0.86)	0.84 (0.81–0.87)
None	1.91 (1.89–1.92)	1.80 (1.79–1.82)
High-acuity ED visits in prior 2 years, visits (reference = none [0 visits])		
High (≥ 3)	0.73 (0.71–0.74)	0.76 (0.74–0.78)
Moderate (2)	0.81 (0.79–0.83)	0.84 (0.82–0.86)
Low (1)	0.87 (0.86–0.88)	0.89 (0.87–0.90)
Low-acuity ED visits in prior 2 years, visits (reference = none [0 visits])		
High (≥ 3)	0.91 (0.89–0.93)	0.98 (0.96–1.00)
Moderate (2)	0.94 (0.92–0.96)	0.99 (0.97–1.01)
Low (1)	0.95 (0.94–0.96)	0.98 (0.97–0.99)
Visit time (reference = day: weekdays 8:01–16:00)		
Evening or after hours (16:01–24:00 weekdays, 08:01–16:00 weekends)	1.07 (1.05–1.08)	1.06 (1.05–1.08)
Night (00:01–8:00 weekdays, 16:01–8:00 weekends)	1.32 (1.30–1.34)	1.30 (1.28–1.32)

Note: CI = confidence interval, ED = emergency department, FP = family practitioner, GP = general practitioner, UPC = usual provider of care.
*Adjusted for all predictors of interest except mental health diagnosis and immigrant-specific predictors.

emergency department visits by region of origin. Specifically, immigrants (both refugee and non-refugee immigrants combined) from Africa, Central America and South and East Asia were most likely to have their first contact for mental health in the emergency department, whereas those from other regions had lower rates that were more similar to immigrants from Western regions (Table 4).

Country-specific risk-adjusted rates are shown in Appendix 2 (Supplemental Figure 1, available at www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.180277/-/DC1). Only those with at least 50 individuals (combined for both non-refugee and refugee immigrants) are named, whereas the funnel plot contains individuals from all countries. Pakistan, India, the Philippines,

Table 4: Rate ratios from modified Poisson models for first contact emergency department mental health visits, urban immigrants only, 2010–2014 (*n* = 8874)

Covariate	Rate ratio (95% CI)	Adjusted rate ratio* (95% CI)
Immigration category (ref = non-refugee immigrant)		
Refugee immigrant	1.06 (1.02–1.11)	1.06 (1.02–1.10)
Age, yr (ref = 22–24 yr)		
10–13	1.05 (0.94–1.16)	1.11 (1.00–1.24)
14–17	1.17 (1.12–1.23)	1.21 (1.15–1.27)
18–21	1.13 (1.08–1.18)	1.12 (1.07–1.16)
Sex (ref = female)		
Male	1.08 (1.04–1.11)	1.05 (1.01–1.09)
Income quintile (ref = 5, high)		
1 (low)	1.11 (1.04–1.18)	1.07 (1.00–1.14)
2	1.10 (1.03–1.18)	1.07 (1.01–1.14)
3	1.10 (1.03–1.18)	1.08 (1.01–1.16)
4	1.07 (1.00–1.14)	1.06 (0.99–1.13)
Specialty of UPC (reference = GP or FP model)		
GP or FP fee-for-service	1.09 (1.03–1.15)	1.08 (1.03–1.14)
Pediatrician	0.92 (0.81–1.05)	0.91 (0.80–1.03)
None	1.69 (1.64–1.75)	1.57 (1.52–1.63)
High-acuity ED visits in prior 2 years, visits (reference = none [0 visits])		
High (≥ 3)	0.66 (0.60–0.73)	0.73 (0.66–0.80)
Moderate (2)	0.79 (0.73–0.86)	0.84 (0.78–0.91)
Low (1)	0.83 (0.79–0.87)	0.87 (0.82–0.91)
Low-acuity ED visits in prior 2 years, visits (reference = none [0 visits])		
High (≥ 3)	0.78 (0.69–0.89)	0.92 (0.81–1.04)
Moderate (2)	0.82 (0.74–0.90)	0.92 (0.84–1.01)
Low (1 visit)	0.91 (0.87–0.96)	0.97 (0.92–1.01)
Visit time (reference = day: weekdays 8:01–16:00)		
Evening/after hours (16:01–24:00 weekdays, 08:01–16:00 weekends)	1.14 (1.08–1.21)	1.14 (1.08–1.21)
Night (00:01–8:00 weekdays, 16:01–8:00 weekends)	1.36 (1.29–1.43)	1.36 (1.29–1.43)
Duration of residence (reference = long-term, > 10 yr)		
Recent (0 to ≤ 5)	1.15 (1.10–1.21)	1.10 (1.05–1.16)
Intermediate (> 5 to ≤ 10)	1.08 (1.04–1.13)	1.05 (1.01–1.10)
Region of origin (ref = US, UK or Western Europe)		
Africa	1.21 (1.12–1.31)	1.15 (1.06–1.24)
Central America	1.18 (1.09–1.27)	1.17 (1.08–1.26)
East Asia and Pacific	1.19 (1.11–1.28)	1.12 (1.05–1.20)
Eastern Europe or Central Asia	1.03 (0.95–1.11)	1.01 (0.94–1.09)
Middle East	1.07 (0.99–1.16)	1.03 (0.96–1.11)
South America	1.13 (1.03–1.23)	1.10 (1.01–1.20)
South Asia	1.18 (1.10–1.26)	1.12 (1.05–1.20)

Note: CI = confidence interval, ED = emergency department, FP = family practitioner, GP = general practitioner, UPC = usual provider of care.
*Adjusted for all predictors of interest.

Jamaica and Sri Lanka had the highest volume of patients with first contact for mental health in the emergency department. Countries with at least 50 individuals in the cohort with the highest risk-adjusted rates of first contact in the emergency department included Democratic Republic of the Congo (71.6%) and Nigeria (72.7%).

Interpretation

We showed that rates of first contact for mental health in the emergency department for Ontario's youth were highest among refugees and recent immigrants, with large and clinically important absolute differences between groups. We report on an in-depth examination of immigrant youth who presented for their first mental health contact in the emergency department and show substantial variability by region and country of origin. Our results corroborate previous studies in adults, showing that immigrants, refugees and newcomers may not have the same access to or use of mental health care as non-immigrants.[8–10,23] This suggests that interventions to improve access to the mental health system on an outpatient basis among immigrant youth should consider the needs of specific immigrant populations. The important differences in outpatient delivery of mental health services between immigrants and non-immigrants may reflect differences in culture,[11,24,25] language proficiency,[26] health system navigation[9,27] and referral biases by health care providers.[24,28,29] Stigma and acceptance of mental illness influence care-seeking behaviours[30,31] and may largely be shaped by culture and ethnicity. Familial and social support networks for addressing mental illness may differ between ethnic groups, including high rates of care-seeking from faith-based organizations for psychosis among black and Asian people.[25] This may contribute to variation in pathways for mental health support and suggests a need for education and training for early identification of mental illness among nonphysician support networks. Difficulty navigating the health system by refugees and new immigrants may explain the current findings. Organizational factors within primary care, including the larger proportion of refugees who receive care through fee-for-service models, may also have contributed. An explanation for the regional patterns, including the relatively high rates of outpatient mental health care among Western immigrants, could be that immigrants from Western regions, where health systems are more like Ontario's, navigate the health system better.

An important finding of this study is the country-specific variability in rates of emergency department first contact for mental health. We have identified subpopulations in need of better access to outpatient mental health services, including youth from the Philippines, Pakistan, India, Sri Lanka and Jamaica. Others have identified immigrants from some of these countries who face barriers to accessing mental health services.[32] Immigrants from Iran,[33] China[34] and Korea[26] have reported dissatisfaction with health care services resulting from lack of knowledge of the system, fear of disclosure, discrimination, mistrust of primary care and stigma. Here, we did not find differences between non-immigrant youth and immigrants from these countries. This may reflect differences between objective measures of health system use and subjective measures of perception of the health system.

Strengths of this study include the large population, with almost complete coverage in a province where funding for physician and hospital services are universal; the inclusion of a high proportion of immigrants from all regions of the globe, with detailed immigration data that allowed for contextualization of contributing factors to immigration; and measures of mental health system use that were objective, and complementary to studies based on self-report. Results are generalizable to other regions (e.g., United Kingdom, Australia) with similarly large and heterogeneous immigrant populations.

Limitations

Limitations inherent in using administrative data include incorrect coding and inability to include non-physician community mental health services. Immigration-related data available to us were limited to permanent residents and did not include temporary (e.g., temporary foreign students or workers) or undocumented immigrants; parental education level or employment status; data on secondary migration (i.e., first migrating to a foreign country and then to Canada); and real or perceived community and social supports, including informal support networks, which may be more important among immigrant populations.

Conclusion

Rates of first contact in the emergency department for youth mental health conditions in Ontario were highest among refugees and recent immigrants to Canada. This reflects poor access to timely mental health care that may be delivered in outpatient settings. Our findings suggest that immigrants face barriers using mental health services from a physician on an outpatient basis, but there is variability within immigrant groups. Better understanding of the barriers and enabling factors that contribute to use of mental health services and access to care are needed, including focusing efforts to reduce stigma and identify mental health problems early, before crises, in particular among refugee and newcomer youth and immigrants from Africa and Central America.

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