Demographics of mental healthcare presentations in a northwest Ontario emergency department

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Abstract

Objectives Providing emergency mental health services for populations in remote rural areas of Canada is challenging. Program needs are distinct. We describe the emergency mental health workload and service needs at the Sioux Lookout Meno Ya Win Health Centre (SLMHC) in northwest Ontario.

Methods Emergency department (ED) data were collected for mental health, addiction and self-harm diagnoses (MHA) in 2018/2019. Comparisons were made to similar sized provincial hospitals and EDs. Mental health admissions data from Oct 1, 2018 to Dec 31, 2019 were manually collected from hospital medical charts for demographics, suicide attempts/ideation and frequency of applications for Form 1 psychiatric assessment.

Results The volume of MHA ED visits as a percentage of total ED visits was 4 times higher at SLMHC when compared to both the 67 other Ontario level C hospitals (< 100 beds) and the 15 level C hospital with a similar volume of ED visits (15,000–20,000), (15% vs 4%). Self-harm presentations were 308 at SLMHC versus an average of 42 ± 37 at the 15 level C hospitals with a similar ED volume. From Oct 1, 2019 to Dec 31, 2019, there were 49 patients requiring a Form 1, with an average wait time of 55 h before transfer to a schedule 1 facility.

Conclusion There is an increased level of mental health, addiction and self-harm presentations in this northern ED. Lack of alternative resources indicate the need for the development of an integrated model of mental health care service. Reliance on the ED for crisis management indicates the need for the development of more regionally relevant models of care.

Keywords Mental health · First Nations · Emergency services

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Résumé

Objectifs Fournir des services de santé mentale d'urgence aux populations des régions rurales éloignées du Canada est un défi. Les besoins du programme sont distincts. Nous décrivons la charge de travail d'urgence en santé mentale et les besoins en services au Sioux Lookout Meno Ya Win Health Centre (SLMHC) dans le nord-ouest de l'Ontario.

Méthodes Des données sur les urgences ont été recueillies pour les diagnostics de santé mentale, de toxicomanie et d'automutilation (MHA) en 2018/2019. Des comparaisons ont été faites avec des hôpitaux provinciaux et des services d'urgence de taille similaire. Les données sur les admissions en santé mentale du 1^{er} octobre 2018 au 31 décembre 2019 ont été collectées manuellement à partir des dossiers médicaux des hôpitaux pour les données démographiques, les tentatives/ idées de suicide et la fréquence des demandes d'évaluation psychiatrique du formulaire 1.

Résultats Le volume de visites aux urgences du MHA en pourcentage du total des visites aux urgences était 4 fois plus élevé au SLMHC par rapport aux 67 autres hôpitaux de niveau C de l'Ontario (< 100 lits) et aux 15 hôpitaux de niveau C avec un volume similaire de visites aux urgences (15 000–20 000), (15% contre 4%). Les présentations d'automutilation étaient de 308 au SLMHC contre une moyenne de 42 ± 37 dans les 15 hôpitaux de niveau C avec un volume d'urgence similaire. Du 1^{er} octobre 2019 au 31 décembre 2019, 49 patients ont nécessité un formulaire 1, avec un temps d'attente moyen de 55 heures avant le transfert vers un établissement de l'annexe 1.

Conclusion Le nombre de cas de santé mentale, de toxicomanie et d'automutilation est en augmentation dans cette urgence du nord. Le manque de ressources alternatives indique la nécessité de développer un modèle intégré de service de soins de santé mentale. Le recours aux services d'urgence pour la gestion des crises indique la nécessité d'élaborer des modèles de soins plus adaptés au niveau régional.

Clinician's capsule

What is known about the topic?

Utilization data on rural use of emergency mental health services is limited and requires careful interpretation of hospital data.

What did this study ask?

This study documents the mental health, addiction (MHA) and self-harm ED workload in NW Ontario for a 1-year period.

What did this study find?

The ED MHA workload is 4 times comparable provincial hospitals and self-harm is sixfold greater than at comparable hospitals.

Why does this study matter to clinicians?

Some EDs serve unique patient populations, service needs vary, and novel care models and research approaches may be necessary.

In 2015, the Sioux Lookout Meno Ya Win Health Centre (SLMHC) documented an increasing incidence of ED presentations for mental health and addiction [2]. The purpose of this study is to document the present ED mental health workload at SLMHC compared to similar Ontario hospitals to highlight the need for the further development of mental health care services.

Methods

Study design

This is an observational study of ED mental health presentations at SLMHC and comparable Ontario hospitals from April 1, 2018, to March 31, 2019 and an analysis of the demographics ED mental health patients requiring an application for an emergent assessment by a psychiatrist in an Ontario Schedule 1 facility. (a Form 1 psychiatric assessment application) between Oct 1, 2019 and Jan 1, 2020.

Setting and participants

SLMHC is a 60-bed general hospital whose 29,000-catchment population is geographically distributed over 385,000 sq. km., including 28 remote First Nations fly-in communities, the town and 3 other northern towns [8]. Remote community mental health services are supported by the Sioux Lookout First Nations Health Authority and individual Tribal Councils. Patients living remotely access the ED by complex air transportation services. Subsequent hospital assessment and mental health care occurs at the SLMHC ED, delivered by family physicians, with telephone

Introduction

The emergency department (ED) is often the first point of contact for patients experiencing a mental health crisis. Small rural hospitals serve a variety population demographics across Canada and these services are often provided in the absence of adequate resources and can vary [1, 2]. Mental health presentations in particular are population dependent: age, ethnicity and social conditions contribute [3–7].

emergency support from regional psychiatrists. Follow-up inpatient care is provided by family physicians and hospital mental health workers with no in-house psychiatry service.

Outcome measures

Data for ED mental health volume and diagnoses for SLMHC and other Ontario hospitals were accessed through the Canadian Institute for Health Information (CIHI), National Ambulatory Reporting System (NACRS) and the Discharge Abstract Database (DAD) [9, 10]. We created a novel clinical category of relevant ICD-10 codes for mental health and addiction, ‘MHA’ (Appendix 1) [11]. This categorization includes ICD-10 F-codes for mental health and specific R, T and Z codes to capture related ED mental health presentations such as overdoses, hanging attempts and self-harm. The volume of intentional self-harm presentations used standard ICD-10 codes (X60–84) [11]. Additionally, SLMHC-specific ED data for all mental health admissions were analyzed for a 3-month convenience sample, Oct 1, 2018–Dec 31, 2019. Data included age, gender, wait time, suicidal ideation/attempt, and frequency of a Form 1 application for psychiatric assessment at a Schedule 1 psychiatric facility. These data were manually collected from hospital ED records using a standardized data abstraction form by 2 authors (LK, JP) working as a team to ensure accuracy [12].

Data analysis

Data from these diagnostic groupings were compared to the other 67 Ontario hospitals classified as Group C (< 100 beds), and to the subset of 15 hospitals with an annual MD

ED volume similar to SLMHC (15,000–20,000 visits) [13] (Appendix 2). All visits to ED physicians were included. Three classes of data were excluded from estimated ED volume: non-MD visits, such as nursing dressing changes and intravenous antibiotics; dialysis and chemotherapy visits; and direct MD/scheduled follow-up (Appendix 3). A mean (SD) was used for the comparison group volume designation and mental health visits as a percent of total MD ED visits.

Records were recorded in a password protected anonymized datasheet in a medical records facility. The study was approved by the Sioux Lookout Meno Ya Win Health Centre Research Review and Ethics Committee.

Results

The number of ED visits in this analysis refers to visits managed by the ED physician, which on average constituted 87% (± 12.7) of total ED volume in level C hospitals in 2018. The MHA workload at SLMHC constituted 15.2% (2736/17,956) of ED visits compared to an average of 3.9% (451/13,405) among the 67 Ontario group C hospitals (Table 1). Since there is a wide range of the number of ED visits among these small Ontario hospitals (1000–50,000), we focused our comparison to the 15 other group C hospitals with an ED volume similar to SLMHC (15,000–20,000 MD visits). SLMHC again had a four-fold higher incidence of MHA presentations in 2018/2019 (15.2% vs 3.7% of ED visits) (Table 1). Three of the 15 comparator hospitals were also rural hospitals in northern Ontario (Appendix 2).

Table 1 Number of ED visits in 2018/2019 for mental health, addiction (MHA) and self-harm diagnoses at SLMHC and other Group C Hospitals

Hospital	Total MD Visits	MHA	Self-harm, (X60–84)
SLMHC <i>n</i> , (% of ED visits)	17,956	2736 (15.2%)	308 (1.7%)
GROUP C (<i>n</i> = 67), <i>av</i> $\pm$ SD	13,405 $\pm$ 8855	451 $\pm$ 334 (3.9%)	27 $\pm$ 28 (0.2%)
GROUP C (<i>n</i> = 15), ED volume 15,000–20,000 visits, <i>mean</i> $\pm$ SD	16,756 $\pm$ 1164	615 $\pm$ 405 (3.7%)	42 $\pm$ 37 (0.3%)

Table 2 Ten most common SLMHC Mental Health and Addiction ICD-10 coded ED presentations

(F100) Mental and behavioral disorders due to alcohol use, acute intoxication	507
(R458) Other symptoms and signs involving emotional state	334
(F103) Mental and behavioral disorders due to use of alcohol, withdrawal state	310
(F432) Adjustment disorders	246
(F419) Anxiety disorder, unspecified	197
(F329) Depressive episode, unspecified	151
(F102) Mental and behavioral disorders due to use of alcohol, dependence syndrome	101
(F112) Mental and behavioral disorders due to use of opioids, dependence syndrome	93
(X60) Intentional self-poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics	88
(F101) Mental and behavioral disorders due to use of alcohol, harmful use	61

Table 3 Five most common ICD-10 “intentional self-harm/poisoning” SLMHC presentations 2018–2019

(X60) Non-opioid analgesics, antipyretics, antirheumatics	90
(X64) Other and unspecified drugs, medications, and biological substances	64
(X78) Sharp object	54
(X70) Hanging, strangulation, suffocation	53
(X61) Antiepileptic, sedative-hypnotic, antiparkinsonism, and psychotropic drugs not elsewhere listed	22

Substance use was a common MHA presentation. Alcohol- and opioid-related visits constituted 36% (982/2736) and 8% (228/2736), respectively (Table 2).

Self-harm presentations were 6 times more common at SLMHC, constituting 1.7% of all ED visits compared to 0.3% in comparable institutions (Table 3). Overdoses of acetaminophen or other medication were the most common modality, followed by wrist slashing and hanging attempts (Table 3).

Form 1 psychiatric patients

Patients with a severe psychiatric crisis present a significant ED challenge. The SLMHC ED receives an inordinate number of patients with a mental health crisis who are deemed unsafe and require an application for a Form 1 emergency psychiatric assessment. On average one patient required a Form 1 every 2 days from Oct 1 to Dec 31, 2019, (49 patients in 92 days) Median age 17, IQR = 10. (Appendix 4) A suicide attempt had occurred in 23 of these patients and suicidal ideation was present in another 22. These Form 1 patients remain in the ED for observation pending transfer, even though they have technically been ‘admitted’. The age range for Form 1 patients was between 8 and 58 years and clustered between 12 and 20 years (30 of the 49 patients were in this age range) (Appendix 4). The average wait time between applying for a Form 1 and the patient’s departure from ED was 55 h (Range 2–151 h). Most patients (78%) waited over 24 h. The wait time was prolonged for both adults and children (Table 2).

Discussion

Interpretation of findings

The SLMHC ED encounters a large volume of patients with mental health, addiction, or self-harm diagnoses. This workload is unique in the province and occurs in a rural hospital without on-site psychiatry services. The disproportionate volume of MHA (fourfold) and self-harm (sixfold) presentations compared to similar Ontario hospitals is striking, as is the frequency of psychiatric patients in crisis requiring a Form 1 application.

Comparison to previous studies

SLMHC provides services to a primarily First Nations population. Despite the documentation of a higher prevalence of suicidality among First Nations in Canada, there is little population health data on the use of mental health services [14, 15]. A 2018 report estimated hospitalization rates for First Nations people living on reserve at double that of non-Indigenous people for mental health/behavioral disorders (740 vs 309/100,000) [16]. We note that sixty percent (30/49) of the Form 1 patients in the fall of 2019 at SLMHC were between 12 and 20 years. Canadian adolescents who present to an ED with self-harm are known to have increased repeat visits and mortality [17]. First Nations adolescents in particular are known to have high rates of suicide [18–20].

Geography and the remoteness of many of these communities add an additional challenge to providing regional mental health services [1, 19]. Many patients require the initiation and coordination of medical transportation from their remote community. A recent analysis of regional emergency air transportations (‘medevacs’) document that 54% of cases from the 26 fly-in First Nations communities in northwest Ontario were directed to SLMHC (mean annual number of transports 1146) [21]. Of these, 7.5% were for toxicologic emergencies and 11.3% were for accidental/nonaccidental trauma. The initiation and coordination of care and transportation of patients to a specialty psychiatric hospital constitutes a significant workload for SLMHC ED physicians. Community-based follow-up resources are also important. In 2015, patients in northwest Ontario had the lowest percentage of 1-week follow-up with a family physician or psychiatrist following an admission for a mental illness or addiction; 27% vs 46% in large Ontario urban areas [22].

Limitations

The combination of ICD-10 codes used to characterize the mental health, addictions and self-harm workload is novel and based clinical experience in the SLMHC ED. Some relevant diagnostic codes may have been missed. Comparisons to other hospitals by bed and ED visit volume is limited as it does not account for the various demographics and available resources in those communities where access to alternate mental services is more accessible. The 3-month period for calculating the volume of Form 1 patients in the ED was a

convenience sample undertaken when the study was performed and may not accurately portray annual incidence; the disposition and outcomes of Form 1 patients was beyond the scope of the study. Comparator hospitals used in this analysis were initially chosen by number of beds and refined to those with similar ED volumes. They ranged across all regions of the province and included 3 other rural northern hospitals that also serve a First Nations population. It is beyond the study's scope to discuss the services available at comparator hospitals, nor the population they serve. For political and ethical reasons, we did not look at the ethnicity of patients, other than pointing out the demographics of the ED catchment population. We also do not suggest specific systems solutions, as we have not been delegated to speak to a complex First Nations-led priority.

Clinical implications

The mental health workload reflects both a clinical need and limited regional resources [23]. The ED becomes the only safe option in the absence of regional and community programming. Efforts are underway to develop a broad network of services including SLMHC becoming a limited Schedule 1 facility and the development of inpatient, outpatient and in-community services. Regional psychiatric services need to expand to directly serve remote communities, including direct transfer to a Schedule 1 facility where indicated; patients are presently required to be 'medically cleared' at SLMHC resulting in unnecessary delay and air travel.

A program for remote mental health crisis management initially introduced by the Weeneebayko Health Authority (WAHA) in northeastern Ontario has been successfully trialed and adopted in the northwest. This allows access 24/7 telehealth to the Reginal Mental Health Assessment Team (RHMAT) who assess a patient through telehealth and triage them to appropriate care, including transfer to a Schedule 1 facility when needed. A Crisis Intervention Team physician completes a Form 1 if required during a telehealth encounter and the patient is directly transferred to an appropriate Schedule 1 facility. (personal communication R Hummelen Feb 2020) Unfortunately, this service is presently only available to regional hospital EDs and not to remote First Nations community nursing stations.

Beyond formal psychiatric care, culturally appropriate regional inpatient short- and long-term mental health and addiction healing programs are needed [24, 25]. A series of integrated outpatient mental health facilities including a detox program, a residential addiction treatment centre and supportive/transitional housing would decrease the reliance of the ED as the only clinical option for community members requiring urgent mental health support. Multi-agency collaborations are presently underway to address many of

these deficiencies and ideally would include integrated case management [26]. These efforts are consistent with recent recommendations. The 2017 Mental Health Commission of Canada's report on rural and remote mental health services suggested a 'place-specific' approach in recognition of diversity in community capacity, socio-economic and cultural landscape, and underlying inequities [27]. It is evident that the SLMHC ED workload is unique in its role as an exclusive hub for emergency care delivered to 26 regional First Nations communities. The health needs of these communities are affected by the destructive history of colonialism and cultural suppression and ongoing social determinants of health, including poverty and limited access to education and employment. In 2015, the Assembly of First Nations documented the need for a continuum of mental health services including early recognition, trauma-informed care and crisis response in the context of cultural support, community ownership and collaboration between governments [28].

Research implications

Researchers should be aware of the limitations of exclusive use of ICD-10 mental health 'F' coding ("mental, behavioral, and neurodevelopmental disorders") in characterizing true burden of mental illness encountered in the ED. An expanded diagnostic grouping may be more informative. For example, reliance on 'F' coding excludes the inclusion of 'intentional self-harm' suicide attempts by hanging and intentional acetaminophen overdoses (both of which are 'T and X' codes).

The second research implication is the varied proportion of non-MD visits included in ED volume calculations particularly in small rural hospitals where the ED provides a variety of non-emergent services.

Conclusion

The SLMHC encounters a disproportionate number of patients presenting to the ED with mental health, addiction and self-harm diagnoses. There is an urgent need to revisit the model in which acute mental health care is provided for patients from remote First Nations communities in northwest Ontario. Hospital-based mental health services are only one component of creating a safe environment. Improvement and integration of regional health care and community-driven solutions and responsiveness is essential.

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Declarations

Conflict of interest The authors declare that they have no conflicts of interest.

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