

# Emergency Health Care Use among Sociodemographic Groups of Children Presenting to Emergency Departments for Self-Harm in Alberta

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## ABSTRACT

**Objective:** To examine sociodemographic variations among children <18 years in (1) rates of self-harm visits to emergency departments (EDs) and (2) physician follow-up after the self-harm visit in Alberta.

**Methods:** A retrospective, population-based cohort (2002–2011) of ED visits for self-harm by individuals <18 years was conducted using administrative databases from Alberta, Canada. Individuals were grouped by First Nations status or type of health care premium subsidy (family receipt of government subsidy, human services program subsidy, no subsidy received). Visits from 104 EDs were summarized by crude and directly standardized visit rates (DSVRs) per 100,000 individuals. Kaplan-Meier estimates for median estimated time to physician follow-up were calculated with 95% confidence intervals (CIs).

**Results:** During the study period, visit rates decreased with the exception of children from families receiving government-sponsored program subsidy (DSVRs 163/100,000 to 250/100,000;  $p = 0.032$ ). First Nations children had disproportionately fewer follow-up visits compared to other children. The median time to follow-up for First Nations children was 39 days (95% CI: 32, 48) compared to 16 days for children from families receiving no subsidy (95% CI: 14, 19), who had the shortest follow-up time after an ED visit.

**Conclusions:** Sociodemographic differences were evident in ED visit rates as well as the number of and time to physician follow-up visit. The disparities experienced by First Nations children in the follow-up period highlight an opportunity for culturally-grounded risk and needs assessment in the ED to determine and facilitate timely and appropriate follow-up care.

## RÉSUMÉ

**Objectifs:** L'étude visait à examiner les écarts sociodémographiques chez les enfants <18 ans, qui s'étaient infligés de l'automutilation, en ce qui concerne: 1) les taux de consultation aux services des urgences (SU); 2) les taux de suivi médical après ces consultations, en Alberta.

**Méthode:** Il s'agit d'une étude rétrospective, de cohortes fondées sur la population (2002–2011) et menée chez des jeunes <18 ans, traités dans des SU pour de l'automutilation, à l'aide de bases de données administratives, en Alberta, au Canada. Les jeunes ont été divisés selon le statut de membre des Premières Nations ou selon le type de subvention versée pour des soins de santé (subvention publique aux familles, subvention de services à la personne, aucune subvention). Les consultations faites dans 104 SU sont exprimées en taux bruts et en taux directement normalisés de consultations (TDNC) pour 100 000 personnes. L'estimation du temps d'attente médian avant les consultations médicales de suivi a été calculée selon la méthode de Kaplan-Meier, à l'aide d'intervalles de confiance (IC) à 95 %.

**Résultats:** Durant la période à l'étude, les taux de consultation ont diminué, à l'exception de celles faites chez les enfants de familles bénéficiaires de subventions publiques (TDNC: 163/100 000 à 250/100 000;  $p = 0,032$ ). Les taux de suivi chez les enfants des Premières Nations étaient particulièrement bas, hors de proportion avec ceux enregistrés chez les autres enfants. Ainsi, le temps d'attente médian avant les consultations de suivi chez les enfants des Premières Nations était de 39 jours (IC à 95 %: 32–48) contre 16 jours chez les enfants de familles non bénéficiaires de subvention (IC à 95 %: 14–19); ces derniers avaient d'ailleurs les délais d'attente les plus courts pour un suivi après une consultation dans un SU.

**Conclusions:** Il ressort de l'étude des écarts sociodémographiques très nets en ce qui concerne les taux de consultation au SU ainsi que le nombre de consultations médicales de suivi et le temps d'attente avant celles-ci. Les disparités que connaissent les enfants des Premières Nations quant à la période de suivi offrent une belle occasion de procéder, au SU, à une évaluation, fondée sur la culture, des risques et des besoins, en vue de la détermination des soins de suivi appropriés et de leur prestation rapide.

**Keywords:** self-harm, children, emergency department, follow-up, visit rates

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## INTRODUCTION

Self-harm refers to non-fatal self-poisoning or self-injury irrespective of suicidal intent,<sup>1</sup> and is a major risk factor for death by suicide in young people.<sup>2</sup> In Canada, death by suicide is the second highest cause of mortality in young people aged 15 to 24. From 2005 to 2009, it accounted for 21.0% of deaths.<sup>3</sup> Although suicidal intent is considered low for children and adolescents<sup>4</sup> and the long-term risk of death by suicide after a self-harm event is similarly low (approximately 1% at 10 years),<sup>4,5</sup> visits to the emergency department (ED) for self-harm may be more strongly associated with the intent to die.<sup>5-7</sup>

A recently published Canadian study found that only 1 in 3 adolescents in Ontario who presented to the ED for self-harm were admitted to hospital.<sup>8</sup> While discharge can be considered for children and adolescents who are not actively suicidal, do not have access to lethal means, and have a responsible adult to ensure their safety, post-ED visit mental health care follow-up should be in place.<sup>9</sup> The greatest risk of death by suicide occurs in the first six months following an index self-harm event.<sup>10</sup> Several studies have demonstrated, however, that receipt of follow-up services does not occur for the majority of young people,<sup>11,12</sup> and that certain sociodemographics—lower income neighbourhoods, gender/sex, age, ethnicity—are reflected in higher ED visit rates and lower rates of post-ED follow-up after emergency care for self-harm.<sup>8,11-13</sup> Whether these sociodemographic trends for self-harm are reflected among Canadian children and youth is not well understood.

In Ontario, higher ED visit rates for self-harm have been reported for girls and are noted to increase with age.<sup>8,13</sup> Disparities in ED visit rates for mental health care and post-ED physician contact across Alberta have been reported for First Nations children and children from families receiving social assistance; however, data specific to self-harm were not reported.<sup>14</sup> A better understanding of any disparities amongst Canadian young people who deliberately self-harm could be helpful in a number of ways. It may identify those with crisis-oriented patterns of help-seeking (i.e., children with high ED visit rates) and those with a potentially higher risk of poor outcomes (i.e., children with longer times to or fewer physician follow-up rates). It may help to inform ED referral approaches with an aim to reduce emergency health care patterns and connect children with appropriate follow-up care.

We conducted a retrospective cohort study using administrative health care data from 104 EDs across Alberta from 2002 to 2011 to examine whether socio-demographic variations exist by First Nations status or type of health care premium subsidy (family receipt of government subsidy, human services program subsidy, or no subsidy received) in (1) the rates of self-harm visits to EDs and (2) the use of physician follow-up after the self-harm visit in Alberta. Based on reported trends in the literature, we hypothesized that higher rates of ED use, lower rates of physician visits after the initial ED visit, and a longer time to physician follow-up would be observed for children from families receiving government social assistance and First Nations children.

## METHODS

### *Study design and population*

This was a retrospective cohort study approved by the University of Alberta's Research Ethics Board (Edmonton, Alberta). A 9-year population-based cohort was identified using the Ambulatory Care Classification System (ACCS) administrative database established in 1997 by Alberta's provincial government as a flexible and integrated system for tracking the use of ambulatory care visits within government-funded hospital facilities in the province.<sup>15</sup> All Alberta hospitals are required to report ED visit information to the ACCS. Several processes are in place, including participation in Canadian Institute for Health Information (CIHI) re-abstraction studies, to ensure data integrity and quality.<sup>15,16</sup> ED encounters are entered into computerized abstracts that constitute the majority of records within the ACCS. Using a uniform protocol, the ACCS provides information on mental health diagnoses coded by nosologists using ICD-10-CA (International Classification of Disease).<sup>17,18</sup>

The ACCS links with other provincial data sources to provide a comprehensive account of ED visits. Demographic data were obtained by linking the children/adolescents in the ACCS to the annual cumulative registry file. This file includes children/youth that may have been in the province for only part of the year. Linkage to a Physician Claim File provided physician claims for reimbursement to Alberta Health (nearly 100% of physicians) for health care visits following ED care (i.e., follow-up visits for any care in the post-crisis period).

### **Study cohort**

All children and adolescents (<18 years) who presented to an Alberta ED (104 EDs; between April 1, 2002 to March 31, 2011) for intentional self-harm (suicide-related behaviour) using the International Statistical Classification of Diseases and Related Health Problems Canadian Version codes (ICD-10-CA: T71, X60–X69, X70–X84)<sup>16</sup> were included in the study.

### **Study variables**

#### *Sociodemographic variables*

Demographic data (age at each ED presentation and gender) in the ACCS were abstracted, and when linked with provincial population health care insurance data, a sociodemographic proxy was formed. The linkage identified First Nation Treaty Status for children with Treaty Status through registration with Health Canada. Some families self-identifying as First Nations would be non-status First Nations and would not be identified by this method. Membership in the three independent health care premium subsidy groups was also identified by record linkage: children from families receiving human services program subsidy (social services and income support), children from families receiving other forms of government-sponsored program subsidy (outside of social services and income support) due to low income, and children from families receiving no subsidy support. These three groups reflect the level of government subsidy provided for provincial health care premiums, which provided revenue for provincial coordination of publicly funded health care in Alberta during the majority of the study period (2002 to 2009). The annual pediatric population (<18 years) by age at fiscal year end, gender, and socioeconomic proxy were also obtained for analysis.

#### *ED visit variables*

Abstracted ED visit data included the date and time of the visit, and triage level, which represents the urgency of ED care required and has been a mandatory reportable field by urban EDs since April 1, 2006. Triage date and time, and date and time of initial physician visit were also abstracted and available after April 1, 2006.

#### *Physician follow-up visit variables*

Data for follow-up visits to physicians in non-ED settings were obtained by linking the individuals in ACCS

to the Physician Claims database. The follow-up data included service date, three ICD-9 diagnosis fields, physician specialty codes, and facility types. The follow-up visits within 180 days of an ED visit end date, or up to March 31, 2011, were extracted and classified as mental health related. For this study, four physician specialty codes (general practitioner, pediatrician, psychiatrist, or other) and four facility types (active treatment hospital, mental health services, practitioner's office, and other) were used.

### **Statistical analyses**

Data were analyzed using S-Plus software (S-Plus 8.0 for Windows, TIBCO Software Inc., Palo Alto, CA, 2007);  $p < 0.05$  was considered statistically significant.

#### *Emergency department (index) visits*

Two types of rates were calculated: crude ED visit rates per 100,000 Alberta population (<18 years) and gender/age group directly standardized visit rates (DSVRs)<sup>19</sup> with associated 95% confidence intervals (CIs) for each fiscal year. The 2002/2003 Alberta pediatric population, stratified by age group (0-4, 5-9, 10-14, 15-17 years) and gender, was used as the reference population in the DSVR calculations.

#### *Physician follow-up visits*

A discharged data subset of index ED visits was created with one record per discharged child from April 1, 2002 to September 30, 2010, to ensure capture of physician follow-up visit information after a visit for self-harm as physicians have up to six months to submit their claims (end date of study period, March 31, 2011 less six months). If a child had more than one ED visit that concluded in discharge during this timeframe, one ED visit was randomly selected to be the ED visit included in the discharged subset, which allowed a focus on time to physician follow-up visits after a specific ED visit and removed any requirement to adjust for subject-specific correlation in the analyses. Characteristics of physician follow-up visits after the index ED visit are summarized at 7-, 14-, and 30-day time intervals. The time from the ED visit to the first physician follow-up visit is displayed with Kaplan-Meier curves. Estimated median times are reported with 95% CIs and log-rank tests compare groups.

**RESULTS**

**Emergency department visits**

During the nine-year study period, visits for mental health emergencies totalled 41,159 to 104 EDs in Alberta, with 5,939 of these visits for self-harm. From 2002 to 2011, the annual number of mental health ED visits increased from 4,278 to 4,849 while the annual number of self-harm ED visits decreased from 830 to 609 (Table 1). The overall (crude) visit rate for self-harm decreased accordingly during the study period from 101 visits for self-harm per 100,000 Alberta children in 2002 to 67 visits for self-harm per 100,000 Alberta children in 2011.

Of all ED visits for self-harm during the study period, 59.4% were made by children receiving no form of government subsidy (Table 2). The mean age of children at the index ED visit was comparable across the sociodemographic groups (15 years), as was representation by girls (range, 71.5% to 74.8%) and adolescents aged 15 to 17 years (range, 70.8% to 75.9%) who made the majority of ED visits for self-harm. Self-poisoning was the most common form of self-harm for children (59.3%), followed by self-harm by sharp object (32.0%) (Table 2).

On average, from 2002 to 2011, First Nations children represented 6.0% of the Alberta pediatric population, children from families receiving human services subsidy represented 3.0%, and children from families receiving subsidy from other government-sponsored programs represented 11.1%. Children in these groups, however, had disproportionately more ED visits: 16.4% (973/5,939 visits) among First Nations children, 7.2%

(428/5,939 visits) among children from families receiving human services subsidy, and 17.0% (1,011/5,939 visits) among children from families receiving subsidy from other government-sponsored programs (Table 2).

From 2002/2003 to 2010/2011, when standardized by gender and age group, the overall DSVRs across all sociodemographic groups declined from 101.2 per 100,000 children to 70.8 per 100,000 children (Table 3); this change was statistically significant ( $p < 0.001$ ). DSVRs decreased for all groups except children from families receiving government-sponsored program subsidy, where rates increased significantly (163.1/100,000 to 250.1/100,000;  $p = 0.032$ ). First Nations children had the largest decrease in DSVRs from 2002/2003 to 2010/2011 (243.5/100,000 to 201.5/100,000;  $p = 0.213$ ) (Table 3) although the 2010/2011 DSVR was still higher than the overall rate (201.5/100,000 versus 70.8/100,000). Children from families receiving no subsidy had the most statistically significant rate decrease from 2002/2003 to 2010/2011 (80.2/100,000 to 51.3/100,000;  $p < 0.001$ ).

**Physician follow-up visits**

Between April 1, 2002 to September 29, 2010, a total of 3,133 children were discharged from the ED; this group formed the discharged subset used to summarize follow-up visits made to a physician in a non-ED setting. Visits to a physician increased steadily after the index ED visit (Table 4; Figure 1). Seven days after an index visit, 33.9% (1,062/3,133) of children had a follow-up with a physician. Among these children, most visits were for mental health concerns (70.4%), made to psychiatrists (42.1%), and conducted in active treatment hospitals (56.6%) (Table 4).

**Table 1. ED visits for self-harm by children (<18 years) in Alberta, Canada between April 1, 2002 and March 31, 2011**

Fiscal Year	Total number of mental health ED visits by children	Number of ED visits for deliberate self-harm (% of total ED visits)	Number of children with ED visits for self-harm	Alberta pediatric population	Crude visit rate per 100,000 children for self-harm
2002–2003	4,278	830 (19.4%)	736	820,551	101
2003–2004	4,258	732 (17.2%)	646	820,336	89
2004–2005	4,472	686 (15.3%)	629	821,643	83
2005–2006	4,629	611 (13.2%)	530	829,528	74
2006–2007	4,661	644 (13.8%)	565	849,493	76
2007–2008	4,584	577 (12.6%)	505	862,884	67
2008–2009	4,849	635 (13.1%)	578	879,601	72
2009–2010	4,579	615 (13.4%)	530	894,837	69
2010–2011	4,849	609 (12.6%)	540	909,719	67

**Table 2. Characteristics of index ED visits in Alberta by children for deliberate self-harm, 2002 to 2011 (n with column % unless otherwise stated)**

	Children from families receiving no subsidy	Children with First Nations Treaty Status	Children from families receiving government sponsored program subsidy	Children from families receiving human services program subsidy	All children combined
All, n (row %)	3,527 (59.4%)	973 (16.4%)	1,011 (17.0%)	428 (7.2%)	5,939
Age group, years					
<10	73 (2.1%)	19 (2.0%)	18 (1.8%)	9 (2.1%)	119 (2.0%)
10–14	778 (22.1%)	225 (23.1%)	240 (23.7%)	116 (27.1%)	1,359 (22.9%)
15–17	2,676 (75.9%)	729 (74.9%)	753 (74.5%)	303 (70.8%)	4,461 (75.1%)
Age, mean (SD)	15.31 (2.16)	15.23 (2.22)	15.23 (2.04)	15.03 (2.00)	15.26 (2.14)
Gender					
Female	2,571 (72.9%)	713 (73.3%)	756 (74.8%)	306 (71.5%)	4,346 (73.2%)
Male	956 (27.1%)	260 (26.7%)	255 (25.2%)	122 (28.5%)	1,593 (26.8%)
Self-harm diagnosis*					
Self-poisoning (ICD X60-X69)	2,317 (65.7%)	458 (47.1%)	501 (49.6%)	248 (57.9%)	3,524 (59.3%)
Sharp objects (X78-X79)	960 (27.2%)	385 (39.6%)	415 (41.0%)	139 (32.5%)	1,899 (32.0%)
Asphyxiation (ICD T71, X70)	117 (3.3%)	86 (8.8%)	36 (3.6%)	29 (6.8%)	268 (4.5%)
Other means (X71-X77, X80-X84)	199 (5.6%)	62 (6.4%)	72 (7.1%)	24 (5.6%)	357 (6.0%)
Triage level†					
1 (Resuscitation)	54 (1.5%)	28 (2.9%)	12 (1.2%)	15 (3.5%)	109 (1.8%)
2 (Emergent)	1,099 (31.2%)	223 (22.9%)	238 (23.5%)	134 (31.3%)	1,694 (28.5%)
3 (Urgent)	1,238 (35.1%)	301 (30.9%)	379 (37.5%)	152 (35.5%)	2,070 (34.9%)
4 (Semi-urgent)	494 (14.0%)	194 (19.9%)	189 (18.7%)	67 (15.7%)	944 (15.9%)
5 (Non-urgent)	98 (2.8%)	33 (3.4%)	31 (3.1%)	10 (2.3%)	172 (2.9%)
Unknown	544 (15.4%)	194 (19.9%)	162 (16.0%)	50 (11.7%)	950 (16.0%)
Disposition					
Admitted	946 (26.8%)	230 (23.6%)	195 (19.3%)	102 (23.8%)	1,473 (24.8%)
Discharged	2,266 (64.2%)	633 (65.1%)	719 (71.1%)	267 (62.4%)	3,885 (65.4%)
Died	–	–	–	–	29 (0.5%)
Left Before Completion of Care	57 (1.6%)	24 (2.5%)	27 (2.7%)	13 (3.0%)	121 (2.0%)
Transferred	246 (7.0%)	77 (7.9%)	65 (6.4%)	43 (10.0%)	431 (7.3%)

IQR = interquartile range; SD = standard deviation.

\*Results may be &gt;100% as all self-harm diagnoses for each ED visit included.

†Triage level using CTAS was a mandatory reportable field for EDs by April 1, 2006. – Not reported due to small cell size. Reporting this small number could potentially identify a child/event when you take into account the other data presented in the paper.

Of the children in the discharged subset, 519 (16.6%) were First Nations, 515 (16.4%) were from families receiving subsidy from government-sponsored programs, 203 (6.5%) were from families receiving human services subsidy, and 1,896 (60.5%) were from families without subsidy. Children from families without subsidy made the majority of physician follow-up visits (Table 4). First Nations children had disproportionately fewer follow-up visits; while they represented 16.6% of the discharged subset, by 30 days after the index ED visit only 11.6% had made a follow-up visit with a physician. The median time to physician follow-up for First Nations children was 39 days (95% CI: 32, 48), compared to 23 days for children receiving human services subsidy (95% CI: 16, 33), 17 days for children

from families receiving subsidy from other government-sponsored programs (95% CI: 13, 21), and 16 days for children from families receiving no subsidy (95% CI: 14, 19) (Figure 1).

## DISCUSSION

Canada is currently without nationally endorsed clinical practice guidelines for ED-based care and discharge planning, unlike other countries such as the United Kingdom.<sup>20</sup> The recent creation of Bill C-300 to stimulate a federal framework for suicide prevention,<sup>21</sup> however, provides an opportunity to nationally frame when, where and how to intervene to reduce suicide risk amongst Canadian young people who visit

**Table 3. Gender/age group directly standardized visit rates per 100,000 children in Alberta, Canada by fiscal year and First Nations and subsidy status**

Fiscal Year	All children combined	Children with First Nations Treaty Status	Children from families receiving government sponsored program subsidy	Children from families receiving human services program subsidy	Children from families receiving no subsidy
2002–2003					
DSVR(SE)	101.2 (4.1)	243.5 (24.8)	163.1 (18.6)	220.2 (36.5)	80.2 (3.9)
95% CI	93.2, 109.1	194.8, 292.1	126.7, 199.6	148.6, 291.8	72.6, 87.7
2003–2004					
DSVR(SE)	88.7 (4.0)	183.6 (23.4)	158.5 (21.3)	204.0 (34.8)	68.9 (3.5)
95% CI	80.9, 96.5	137.7, 229.4	116.8, 200.2	135.8, 272.1	62.0, 75.7
2004–2005					
DSVR(SE)	82.4 (3.5)	252.4 (25.0)	109.7 (11.8)	158.7 (26.4)	63.9 (3.5)
95% CI	75.5, 89.2	203.3, 301.5	86.5, 132.8	107.0, 210.5	57.0, 70.7
2005–2006					
DSVR(SE)	72.6 (3.6)	213.3 (23.1)	123.9 (17.9)	140.5 (28.9)	53.1 (3.1)
95% CI	65.6, 79.7	168.2, 258.5	88.9, 158.9	84.0, 197.1	47.0, 59.2
2006–2007					
DSVR(SE)	75.2 (3.5)	245.6 (26.7)	119.8 (13.4)	218.7 (37.7)	49.9 (3.0)
95% CI	68.4, 82.0	193.3, 298.0	93.6, 146.1	144.8, 292.6	44.1, 55.8
2007–2008					
DSVR(SE)	66.9 (3.2)	213.6 (23.3)	111.6 (11.4)	139.3 (29.5)	46.4 (3.1)
95% CI	67.4, 80.0	167.9, 259.4	89.3, 134.0	81.5, 197.0	40.4, 52.4
2008–2009					
DSVR(SE)	73.7 (3.2)	270.9 (25.3)	88.4 (10.7)	208.7 (32.9)	52.2 (3.0)
95% CI	67.4, 80.0	221.3, 320.6	67.5, 109.3	144.2, 273.2	46.3, 58.1
2009–2010					
DSVR(SE)	71.3 (3.6)	272.2 (27.8)	243.4 (53.1)	176.4 (32.7)	47.5 (2.7)
95% CI	64.3, 78.2	217.6, 326.8	139.3, 347.5	112.2, 240.6	42.2, 52.9
2010–2011					
DSVR(SE)	70.8 (3.3)	201.5 (22.9)	250.1 (36.1)	180.5 (28.7)	51.3 (2.9)
95% CI	64.4, 77.2	156.5, 246.4	179.4, 320.8	124.2, 236.8	45.6, 56.9

the ED for self-harm but are without immediate follow-up care.

Two vulnerable groups of children were identified in our study: First Nations children and children from families receiving government-sponsored program subsidy for health care. While ED visit rates decreased over time for First Nations children, the 2010/2011 rate was still one of the highest rates (second only to rates by children from families receiving government sponsored-program subsidy). During the study period, First Nations children also had disproportionately less follow-up care with a physician after an ED visit and had longer times to follow-up care compared to other Alberta children.

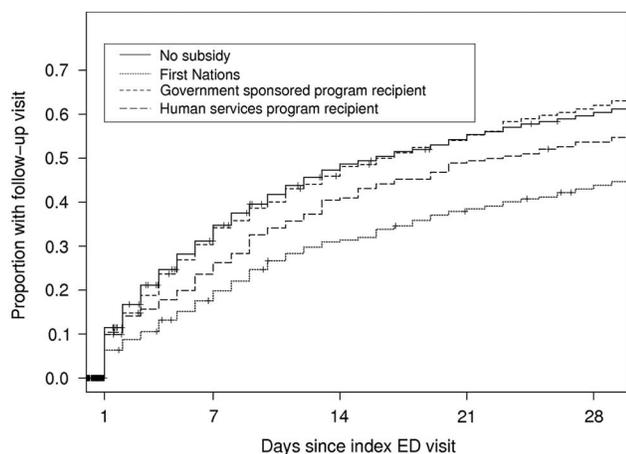
Social determinants are hypothesized to be at the root of health differences faced by Aboriginal children compared to their non-Aboriginal peers.<sup>22</sup> Household

income,<sup>23</sup> housing and community conditions,<sup>24,25</sup> and the built environment<sup>26,27</sup> are among the factors that have been associated with health for Aboriginal children living both on and off reserve. Self-harm in First Nations children has recently been associated with substance use, abuse or fear of abuse, and depressive symptoms.<sup>28</sup> For First Nations children, the risk factors associated with self-harm should also be viewed and treated in the context of the broader sociodemographic factors that underline their health status.

That First Nations children who sought ED-based care for self-harm had reduced rates and longer times to physician follow-up care after the acute period is a critical finding in our study. Our follow-up care findings may contribute to understanding why death by suicide (mortality) rates are disproportionately higher in Aboriginal boys and girls compared to the general

**Table 4. Post-ED follow-up visits by children to physicians**

	Days since index ED visit					
	7		14		30	
n (follow-up visits)	2,539		4,571		8,215	
Age group, years						
<10	19	(0.7%)	40	(0.9%)	61	(0.7%)
10–14	651	(25.6%)	1,120	(24.5%)	2,070	(25.2%)
15–17	1,869	(73.6%)	3,411	(74.6%)	6,084	(74.1%)
Gender						
Female	1,823	(71.8%)	3,366	(73.6%)	6,129	(74.6%)
Male	716	(28.2%)	1,205	(26.4%)	2,086	(25.4%)
First Nations/Subsidy status						
First Nations	309	(12.2%)	566	(12.4%)	951	(11.6%)
Children from families receiving no subsidy	1,653	(65.1%)	2,989	(65.4%)	5,367	(65.3%)
Children from families receiving human services program subsidy	163	(6.4%)	293	(6.4%)	507	(6.2%)
Children from families receiving government-sponsored program subsidy	414	(16.3%)	723	(15.8%)	1,390	(16.9%)
Reason for visit						
Mental health	1,787	(70.4%)	3,189	(69.8%)	5,779	(70.3%)
Non-mental health	698	(27.5%)	1,265	(27.7%)	2,241	(27.3%)
Missing	54	(2.1%)	117	(2.6%)	195	(2.4%)
Physician type						
General Practitioner	991	(39%)	1,642	(35.9%)	2,824	(34.4%)
Pediatrician	140	(5.5%)	238	(5.2%)	379	(4.6%)
Psychiatrist	1,069	(42.1%)	2,119	(46.4%)	4,106	(50.0%)
Other	339	(13.4%)	572	(12.5%)	906	(11.0%)
Facility type						
Active treatment hospital	1,437	(56.6%)	2,523	(55.2%)	4,391	(53.5%)
Mental health services	80	(3.2%)	132	(2.9%)	295	(3.6%)
Practitioner's office	959	(37.8%)	1,791	(39.2%)	3,320	(40.4%)
Other	63	(2.5%)	125	(2.7%)	209	(2.5%)

**Figure 1.** Time to physician follow-up visit after ED discharge, by First Nations and subsidy status.

population.<sup>29,30</sup> Care provided by ED physicians and ED-based consultants (i.e., child psychiatry, social work) must be tailored and explore the broad range of cultural

factors associated with health status and self-harm for First Nations children.

Consistent with the National Institute for Health and Care Excellence (NICE) guidelines for ED care,<sup>20</sup> and in a cultural context, assessing the mental health and social needs of First Nations children should include an evaluation of the social, psychological, and motivational factors specific to the self-harm event and act, as well as assessing future risk of self-harm by assessing current suicidal intent and feelings, including depressed mood and hopelessness. This needs and risk assessment should be documented in the ED medical record, and as recommended by NICE, to encourage joint clinical decision-making, all ED-based health care providers involved in assessment and care should review the documentation and note agreement in the medical record with what was written, or in the case of significant disagreement, the health care provider should document the disagreement.<sup>20</sup> This complete

needs and risk assessment should be provided to the child's community-based health care provider (i.e., GP, psychiatrist) as part of discharge planning. Decision regarding referral for further treatment should be based on the ED assessment and need not be determined solely on the basis of the child having self-harmed.<sup>20</sup>

Protective factors have not been explored as extensively amongst First Nations peoples, but perceived community caring has been identified as protective against suicide<sup>28</sup> and should be taken into account during discharge planning. Given the role community plays for First Nations children, it is possible that children in our study sought post-crisis care outside of physician visits, such as through community-based resources, which would not be captured in our data set. Further exploration of services desired and sought in a post-crisis period by First Nations children and their families is needed. Our results suggest that resources that are currently available as preventative efforts may not be sufficient for this group of children, as ED rates were highest among these young people. Strengthening culturally- and community-based interventions<sup>31</sup> may foster the use of mental health resources and reduce the amount of self-harm visits to EDs.

That ED visit rates for self-harm increased only for children from families receiving government subsidy is the second important finding of this study. While beyond the scope of our work, a close examination of the Alberta government-sponsored program subsidy may reveal broader health and social services policy gaps that could be applied across multiple settings to increase mental health services availability for and utilization by families in need. If there are no mental health care services for families to access,<sup>32,33</sup> delays for care exist,<sup>34</sup> and/or geographic barriers to receiving appropriate care are insurmountable,<sup>35,36</sup> subsidies to support families and/or government bills such as Bill C-300 may not be enough to reduce self-harm in young people.

### **LIMITATIONS**

This study has several limitations. Children who engage in self-harm may seek alternatives to ED care. Hence, our data do not capture all contacts with the health care system and may under-estimate the prevalence of this issue. Second, from the available databases, we could not determine the incidence of pre-crisis mental health care or contact with non-physician resources in the

post-crisis period. Higher rates of visits to EDs may be the result of a disproportionately high use of emergency services over other medical services or a preference for emergency care. Times to physician follow-up in our study may be influenced by access to other mental health services in the child's community (private clinics, community-based programs designed for specific sociodemographic groups). A prospectively designed study could build on these limitations and accurately capture health care utilization and decision-making in the post-crisis period. Times to follow-up may have also been influenced by specialist consultations provided at the index ED visit. ACCS documentation of ED care is largely incomplete for self-harm,<sup>37</sup> making exploration of this potential confounder unreliable. Third, the databases used do not identify all Aboriginal children; non-Treaty Status, Inuit, and Métis children were not included. Future studies should aim to investigate trends for these Aboriginal children, as recent papers suggest self-harm is a significant problem.<sup>38,39</sup> Further, distinctions should be made between First Nations, Inuit, and Métis children, as they differ in cultural background, region of residence, and health care access.<sup>40</sup> Fourth, the provincial government has not actively captured information on First Nations status in the ACCS database since 2009/2010, when health care premiums were eliminated, and thus our results likely under-represent those children with First Nations status.

### **CONCLUSION**

Two vulnerable groups of children presenting to the ED for self-harm were identified in our study: First Nations children and children from families receiving government-sponsored program subsidy for health care. ED-based risk and needs assessments should explore the broad range of cultural factors associated with health status and self-harm for First Nations children, and be forwarded to the child's community-based care providers. Broader prevention efforts under Bill C-300 for these young people, understood in the context of sociodemographic risks and protective factors particular to First Nations peoples, may also have downstream effects on ED use and post-crisis health care utilization. Additional efforts are also needed to better understand the role of Alberta's government-sponsored program subsidy in facilitating mental health care and access.

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