

The 1% of emergency room visits for non-traumatic dental conditions in British Columbia: Misconceptions about the numbers

Mario Brondani, DDS, MSc, MPH, PhD,¹ Syed H. Ahmad, DDS, MSc²

ABSTRACT

In Canada, about 1% of all emergency room (ER) visits in a given year are made by patients with a primary diagnosis of a non-traumatic, non-urgent and yet preventable condition, such as tooth decay. This percentage is typically dismissed as irrelevant. Using 2013–2014 British Columbia data on ER use from the Canadian Institute for Health Information, however, we argue that the 1% figure (and its associated cost) has to be considered beyond its percentage value. In 2013–2014 alone, 12 357 non-traumatic dental visits were made to ERs in BC representing 1% of the total number of ER visits at a cost of \$154.8 million to the taxpayers (across Canada, all visits to ER cost \$1.8 billion/year). But the vast majority of these dental visits are discharged while the oral problem likely persists, hence taxpayer dollars are wasted. The belief that these dental-related ER visits are insignificant within the total cost for the health care system is misleading: treatment is not given, the problem is not resolved, and yet there is a high cost to taxpayers and to the society at large. Public health resources should be reallocated.

KEY WORDS: Emergency room; dental emergencies; cost; public health; policy

La traduction du résumé se trouve à la fin de l'article.

Can J Public Health 2017;108(3):e279–e281
doi: 10.17269/CJPH.108.5915

Dentistry remains mostly privately financed, administered and delivered for the majority of Canadians.¹ In fact, only approximately 6% of the nearly \$14 billion spent in 2015 on oral care was publicly funded; these \$14 billion expenditures made up 7% of the total health expenditures in Canada for that same year.² Lack of dental insurance and being from a low socio-economic status are the main barriers to oral care.^{3–5} Low-income Canadians remain at greater risk for oral diseases and may rely on emergency rooms (ERs) to seek pain relief, placing an extra burden on the already over-stretched Canadian health care system.⁶ Despite representing about 1% of the 16 million visits* made to ERs across Canada every year and not more than 1% of the \$1.8 billion that these visits cost to Canadians,⁷ we argue that these percentages are an underestimation of the actual impact for the health care expenditures as a whole.

USE OF CIHI DATA RELATED TO BRITISH COLUMBIA ER VISITS

For the purpose of our study, we take British Columbia (BC) as an example. We use supporting data from the Canadian Institute for Health Information (CIHI) on non-traumatic dental visits⁸ in BC for the fiscal year of 2013–2014. This specific year was chosen because it was the year in which the largest number of BC emergency departments (29 of 74) reported to CIHI.⁸ The information received from CIHI contained data on the current complaint and discharge diagnosis coded with the

* Please note that only about half of all emergency visits are reported to CIHI; and until recently in British Columbia, for example, ERs were not required to fully report on all levels of intervention. As a result, the percentages discussed herein must be taken with caution.

International Classification of Diseases and Health Related Problems (ICD-10-CA)[†] K00 to K14.⁹ Given the scope of this commentary, full data analysis can be found elsewhere.⁷

From the CIHI data, the number of non-traumatic dental visits to ERs in BC was calculated and represented 1% of the total number of visits in 2013–2014, which is similar to other provinces, including Ontario and Alberta, for the same year (Table 1), and similar to findings from the United States.¹⁰ In BC, 12 357 non-traumatic dental visits were made to ERs in 2013–2014 (268/100 000 people), with patients between the ages of 1 and 113 years somewhat evenly distributed in terms of gender, including multiple visits by the same patient over that same fiscal year.⁷

The majority of the ER visits (70%) in BC for non-traumatic dental conditions consisted of working-age adults between the ages of 20 and 64 years with a common complaint related to

[†] The International Classification of Diseases and Related Health Problems 10th Revision (ICD-10) is an international standard for reporting clinical diagnoses, developed by the World Health Organization.

Author Affiliations

1. Associate Professor, Faculty of Dentistry, University of British Columbia, Vancouver, BC
2. Faculty of Dentistry, University of British Columbia, Vancouver, BC

Correspondence: Mario Brondani, PhD, Faculty of Dentistry, University of British Columbia, 2199 Wesbrook Mall, Vancouver, BC V6T 1Z3, Tel: 604-822-6562, E-mail: brondani@dentistry.ubc.ca

Acknowledgements: This manuscript originated as part of the second author's (SHA) requirements for the completion of a Masters of Craniofacial Sciences, successfully concluded in August 2016 at The University of British Columbia's Faculty of Dentistry. We thank Dr. Shimae Soheilipour for her input on data analysis. A special thank you to Mr. Glenn R. Knowles for his editorial work. This manuscript was based on the second author's oral presentation during the 2016 conference of the Canadian Association of Public Health Dentistry in October in Edmonton, Canada.

Conflict of Interest: None to declare.

Table 1. Percentage of non-traumatic dental visits (NTDV) within all the emergency room departments in Ontario, Alberta and British Columbia in 2013–2014

Provinces	2013–2014		NTDV/100 000
Ontario	All ER visits 5 857 622	NTDV 68 087 (1.16%)	529
Alberta	All ER visits 2 321 894	NTDV 35 284 (1.51%)	876
British Columbia*	All ER visits 1 248 403	NTDV 12 357 (0.98%)	268

* In BC, only 29 of 74 emergency rooms reported to CIHI in 2013, which may explain the low NTDV/100 000.

non-urgent[‡] and preventable diseases, including dental and periapical abscesses (22.7%), toothache (18.1%) and dental caries (8.8%),⁷ as found by Quiñonez and colleagues⁶ and others¹¹; 70% of these visits were identified as non-urgent. The majority (98%) of these non-urgent dental patients were seen and discharged within a two-hour average time frame (e.g., the amount of time it takes between entering the ER for registration and being discharged or admitted to a hospital bed). Of the non-traumatic dental ER visits, 1.5% (185 patients) had to be admitted due to the seriousness of their conditions, and waited much longer.⁷

COSTS TO BC TAXPAYERS AND THE HEALTH CARE SYSTEM

The 1% of non-traumatic dental visits to the 29 ERs had an estimated cost to BC taxpayers of \$1.53[§] million in 2013–2014, or about 1% of the total cost of all the reported ER visits from 29 facilities for that province.⁷ These costs are the *direct costs* only (e.g., the cost of the ER visit per se as billed to the government) and are estimated to be at \$124 per visit according to CIHI.⁸ However, there is some variation with regard to the actual cost of each ER visit, which can be as high as \$245.51 according to Ahmad.⁷ We used \$124 as a very conservative estimate for this commentary. None of these average costs include costs for those 185 patients who were admitted to the hospitals at a much higher cost and were excluded as outliers.

The majority of the 70% of patients between the ages of 20 and 64 years who were discharged given the non-urgent nature of their dental conditions received no treatments, and remained with the etiology of their clinical conditions improperly treated. The non-urgent ER visits shed light on the possible care-seeking patterns of individuals with limited access to dental care, given that medical services are covered by the Canadian publicly funded health care system, but oral care is not. Bedos and co-workers noted that the pathway of welfare recipients to dental care in Quebec indeed favours ER and medical settings given the difficulties in finding dentists who welcome low-income patients and/or those with government insurance.¹² Nonetheless, ER physicians are not adequately trained to manage oral conditions, nor is an emergency

[‡] According to CIHI, a visit to an ER is triaged as non-urgent when it includes conditions that may be acute but non-urgent, as well as conditions that may be part of a chronic problem, with or without evidence of deterioration.⁸

[§] \$1.53 million came from multiplying the number of non-traumatic dental-related ER visits ($n = 12\,353$) by \$124. By doing the same calculation to the total number of ER visits, the total cost is \$154,801,972. In turn, \$1.53 million is roughly 1% of \$154 million.

room equipped with dental materials and instruments. As a result, patients are offered pharmacotherapeutic prescriptions that augment the growing public health concern of over-prescription of pain relief and antibiotic therapy given their potential for overdose and systemic complications, drug dependency, and antimicrobial resistance.^{13,14} Moreover, by only taking into consideration the two-hour time frame at ER, in 2013–2014 almost 24 318 hours were lost at 29 emergency rooms so that 12 159 patients could be seen, yet not treated for their oral conditions. Consequently, an average of 838.5 hours were lost at each ER in BC, or one year's worth of an ER physician's working hours that could have been used to address more serious and life-threatening conditions of other patients.

We argue that the 1% cost of non-traumatic dental-related ER visits is an underestimation for the health care expenditures as a whole. At an individual cost of between \$185.15 and \$245.51 per visit,⁷ the expenses associated with these visits might have cost BC taxpayers between \$1.5 million and \$3 million, and this includes costs for only the 29 reporting ER departments in 2013–2014. This cost probably would have doubled if all the BC emergency rooms had reported to CIHI. Hence, \$1.5 million (or \$3 million, depending on the dollar amount used as reference) was spent, and yet the vast majority of non-traumatic ER dental visits were discharged without any dental treatment to actually address the problem that led to the visit in the first place.¹⁵ A few other issues also need to be considered:

1. When visits to emergency rooms require hospital admission, there is a substantial increased cost to the health care system, a contribution to ER overcrowding, and a negative impact on patients' quality of life.¹⁶
2. When hospital admission is necessary, the cost jumps to about \$7,367 per patient.⁷ Given that 1.5% of the BC visits to the ER (185 patients, according to our data) required hospital admission, this added \$1.36 million to the millions in total health care costs already spent for the same year. If all 74 emergency rooms in BC were included in the data, the cost for hospital admission alone could escalate to almost \$3.5 million per year on top of the cost of the ER visits. Despite its low frequency yet higher costs, hospitalization is among the most life-threatening consequences of untreated oral problems.
3. The use of ERs to address non-traumatic dental conditions remains ineffective and inappropriate because ER physicians are not adequately trained to manage oral conditions, nor do they have the proper tools and equipment to do so. Consequently, patients – particularly from vulnerable populations – are leaving the ER with their care still unmet, and with the etiology of their clinical oral conditions knowingly left untreated and likely worsening over time.

Nonetheless, it is worth considering the following scenario: according to the Canadian Health Measures Survey, 96% of adult Canadians between the ages of 20 and 79 years have at least one tooth with dental caries that requires a filling. Given that this age group can be a frequent user of ERs,⁴ the cost of a conservative dental procedure to treat each tooth would be around \$231 using amalgam silver filling (as per the British Columbia Dental Association 2014 fee guide, including an examination, an X-ray,

and an amalgam filling on two tooth surfaces; this estimation does not include follow-up appointments or root canal therapy). Given that in 2013–2014, the total number of non-traumatic dental visits was 12 357 in BC, and assuming that each patient had at least one tooth that was aching or with decay involving two tooth surfaces, the cost of providing actual dental treatment in a community clinic to all these patients would have been approximately \$2.85 million. This amount is equivalent to the \$2.99 million that likely was spent to have these patients seen at the ER without actual dental treatment,⁷ but is double the \$1.5 million if using the CIHI cost estimate.⁸ Either way, taxpayer dollars are being misused, as we did not even consider the fact that the non-traumatic dental visits also occur in walk-in clinics, which are much more numerous than emergency departments. Hence, although there are other more expensive dental treatments including resin composites (e.g., white fillings), and that the costs of expanding primary dental care to all low-income individuals in BC far exceeds the values discussed herein, the actual implication of the 1% of ER visits for non-traumatic dental conditions remains misleading. The 1% of costs associated with these visits dramatically escalates when there is a need for hospital admission. Such use of taxpayers' dollars is not only ineffective, it is fiscally irresponsible. Moreover, it is also an underestimation given that proper treatment is not actually given, the problem is not resolved, the patient suffers, and there is an unnecessary burden placed on the already overloaded Canadian health care system.

CONCLUSION

Collectively perhaps we should discuss the fact that primary dental care is a necessity, much like a right, for every Canadian, but especially for the most vulnerable and underserved. Perhaps it is also time to consider reallocating some of the expenses related to ER use for non-traumatic dental conditions and expand access to oral health within the Canada Health Act. In so doing, Canadians in need, regardless of their ability to pay, would be able to see a dental professional in a properly equipped setting away from a costly ER environment. Government-subsidized community health clinics, for example, employing public health-minded dental professionals¹⁷ and offering a variety of oral care services, may be a good place to start the conversation.

REFERENCES

- Dental Working Group. *Access to Care*. 2016. Available at: <http://www.fptdwg.ca/access.htm> (Accessed June 26, 2016).
- Canadian Dental Association. *The State of Oral Health in Canada*. Ottawa, ON: CDA, 2017. Available at: http://www.cda-adc.ca/stateoforalhealth/_files/TheStateofOralHealthinCanada.pdf (Accessed February 28, 2017).
- Locker D, Maggiri J, Quiñonez C. Income, dental insurance coverage, and financial barriers to dental care among Canadian adults. *J Public Health Dent* 2011;71(4):327–34. doi: 10.1111/j.1752-7325.2011.00277.x.
- Ramraj CC, Quiñonez CR. Emergency room visits for dental problems among working poor Canadians. *J Public Health Dent* 2013;73(3):210–16. PMID: 23560729. doi: 10.1111/jphd.12015.
- Pedersen AF, Vedsted P. Understanding the inverse care law: A register and survey-based study of patient deprivation and burnout in general practice. *Int J Equity Health* 2014;13:121. PMID: 25495229. doi: 10.1186/s12939-014-0121-3.
- Quiñonez C, Gibson D, Jokovic A, Locker D. Emergency department visits for dental care of nontraumatic origin. *Community Dent Oral Epidemiol* 2009; 37(4):366–71. PMID: 19486348. doi: 10.1111/j.1600-0528.2009.00476.x.
- Ahmad SH. *The Direct and Indirect Costs of Non-Traumatic Dental Emergency Room Visits in British Columbia*. 2016. Available at: <https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0314237> (Accessed September 21, 2016).
- Canadian Institute for Health Information. *National Ambulatory Care Reporting System (NACRS) Metadata*. Ottawa: CIHI, 2016. Available at: <https://www.cihi.ca/en/types-of-care/hospital-care/emergency-and-ambulatory-care/nacrs-metadata> (Accessed June 27, 2016).
- Canadian Institute for Health Information. *ICD-10-CA*. Ottawa: CIHI, 2015. Available at: <https://www.cihi.ca/en/data-and-standards/standards/classification-and-coding/icd-10-ca> (Accessed June 27, 2016).
- Allareddy V, Rampa S, Lee MK, Allareddy V, Nalliah RP. Hospital-based emergency department visits involving dental conditions – Profile and predictors of poor outcomes and resource utilization. *J Am Dent Assoc* 2014; 145(7):698–99. PMID: 24686965. doi: 10.14219/jada.2014.7.
- Seu K, Hall K, Moy E. *Statistical Brief #143: Emergency Department Visits for Dental-Related Conditions, 2009*. Rockville, MD: Agency for Healthcare Research and Quality, 2012. Available at: <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb143.pdf> (Accessed August 10, 2016).
- Bedos C, Brodeur J-M, Boucheron L, Richard L, Benigeri M, Olivier M, et al. The dental care pathway of welfare recipients in Quebec. *Soc Sci Med* 2003; 57(11):2089–99. PMID: 14512240.
- Vogel J, Heard KJ, Carlson C, Lange C, Mitchell G. Dental pain as a risk factor for accidental acetaminophen overdose: A case-control study. *Am J Emerg Med* 2011;29(9):1125–29. PMID: 20951526. doi: 10.1016/j.ajem.2010.08.006.
- Brondani M. Health technology assessment fireside: Antibiotic prophylaxis and dental treatment in Canada. *J Pharm (Cairo)* 2013;2013:1–9. PMID: 26555974. doi: 10.1155/2013/365635.
- Cohen LA, Manski RJ, Magder LS, Mullins CD. Dental visits to hospital emergency departments by adults receiving Medicaid: Assessing their use. *J Am Dent Assoc* 1939;133(6):715–24; quiz 768. PMID: 12083647.
- Brondani M, Pattanaporn K, Aleksejunienė J. How can dental public health competencies be addressed at the undergraduate level? *J Public Health Dent* 2015;75:49–57. PMID: 25234583. doi: 10.1111/jphd.12070.
- Magdelijns FJ, Gulikers D, Pijpers E. Registering complications at admission via the emergency department: An opportunity for improvement. *Neth J Med* 2013;71:44–49. PMID: 23412826.

Received: October 19, 2016

Accepted: March 11, 2017

RÉSUMÉ

Au Canada, environ 1 % des visites aux services d'urgence (SU) chaque année sont faites par des patients dont le diagnostic primaire concerne un problème évitable non traumatique et non urgent, comme la carie dentaire. Ce pourcentage est généralement tenu pour négligeable. D'après les données de 2013–2014 de l'Institut canadien d'information sur la santé sur l'utilisation des SU en Colombie-Britannique, nous faisons valoir que le chiffre de 1 % (et ses coûts associés) doit être considéré au-delà de sa valeur de pourcentage. En 2013–2014 seulement, il y a eu 12 357 visites aux SU pour faire traiter des problèmes dentaires non traumatiques en Colombie-Britannique, ce qui représente 1 % du nombre total de visites aux SU et a coûté 1 548 millions de dollars aux contribuables (à l'échelle du Canada, les visites aux SU coûtent 1,8 milliard de dollars par année). Mais la très grande majorité des personnes qui se présentent aux urgences pour des problèmes dentaires reçoivent leur congé malgré la persistance probable de leurs problèmes, ce qui constitue un gaspillage de fonds publics. Il est illusoire de croire que les visites aux SU pour faire traiter des problèmes dentaires ne représentent qu'une part négligeable des coûts totaux du système de soins de santé : aucun traitement n'est donné, les problèmes ne sont pas résolus, et pourtant cela coûte cher aux contribuables et à la société. Il y aurait lieu de réaffecter des ressources de santé publique.

MOTS CLÉS : services d'urgence; urgence dentaire; coût; santé publique; politique (principe)