

Marquette University
e-Publications@Marquette

School of Dentistry Faculty Research and
Publications

Dentistry, School of

3-1-2015

There are More Than 1.3 Million Emergency Department Visits and Charges of \$1 Billion Annually due to Nontraumatic Dental Conditions in the United States

Christopher Okunseri

Marquette University, christopher.okunseri@marquette.edu

Accepted version. *Journal of Evidence-Based Dental Practice*, Vol 15, No. 1 (2015, March): pg. 33-34.

DOI. © 2015 Elsevier. Used with permission.

NOTICE: this is the author's version of a work that was accepted for publication in *Journal of Evidence-Based Dental Practice*. Changes resulting from the publishing process, such as peer review, editing, corrections, structural formatting, and other quality control mechanisms may not be reflected in this document. Changes may have been made to this work since it was submitted for publication. A definitive version was subsequently published in *Journal of Evidence-Based Dental Practice*, Vol 15, No. 1 (2015, March): pg. 33-34. DOI.

There are More Than 1.3 Million Emergency Department Visits and Charges of \$1 Billion Annually due to Nontraumatic Dental Conditions in the United States

Christopher Okunseri
*School of Dentistry, Marquette University
Milwaukee, WI*

Article Title and Bibliographic Information

Hospital-based emergency department visits involving dental conditions: profile and predictors of poor outcomes and resource utilization.

Allareddy V, Rampa S, Lee MK, Allareddy V, Nalliah RP. *J Am Dent Assoc* 2014;145(4):331-7.

Reviewer

Christopher Okunseri, BDS, MSc, DDPHRCSE, FFDRCSI

Purpose/Question

The primary aim was to examine hospital emergency department (ED) charges for dental care-related visits and the effect of patient-related factors, including co-morbid conditions. The secondary aim was to examine the profiles of patients with dental care-related problems who are likely to experience an extreme adverse event such as death in an ED setting.

Source of Funding

Information not available

Type of Study/Design

Cross-sectional design

Level of Evidence

Level 3

Strength of Recommendation Grade

Not applicable

Summary

Subjects

The sample was 4,049,361 dental care-n-related visits to hospital EDs (approximately 1% of all ED visits) during 2008–2010. The data source was the Nationwide Emergency Department Sample (NEDS) database for 2008–2010. Male to female distribution was approximately 49%:51% in each year of the study period.

Key Exposure/Study Factors

The primary study factor was ED use for dental care. The conditions selected for the study were diagnosis of dental caries, pulpal or periapical lesions, gingival conditions, periodontal conditions, and mouth cellulitis or abscess. Dental care-n-related visits were identified based on International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes.

Main Outcome Measure

The primary outcome measure was hospital ED charges adjusted for inflation to dollar values for 2010.

Main Results

The mean hospital ED charge per visit for dental conditions was \$760 (adjusted to 2010 dollars), totaling \$2.7 billion over the 3-year study period. Dental care-n-related visits to EDs were associated with higher than mean charges for mouth cellulitis and periodontal conditions. Although dental caries was the most prevalent condition diagnosed (57%), dental care-n-related conditions with mouth cellulitis or abscess cost approximately \$518 more in ED charges than those without the diagnosis ($p < 0.001$). Cases with periodontal conditions cost \$135.80 more in ED charges than those without the condition ($p < 0.001$).

Conclusions

A significant amount of hospital resources are utilized for dental care-n-related visits in EDs. Dental care-related visits with mouth cellulitis, periodontal conditions, and comorbidities were associated with higher ED charges.

Commentary and Analysis

This article examines trends in ED charges for dental care-n-related visits as well as patient characteristics. It contributes to the existing literature on nontraumatic dental condition (NTDC)-n-related visits to EDs in the United States and gives some insight as to the population groups most likely to make dental care-n-related visits to

EDs. The study is a retrospective secondary data analysis, cross-sectional in nature and based on a nationally representative sample of the United States population. The research question is of national interest given the inherent policy and cost implications. The article includes a brief summary of methods and statistical analysis, including how error terms were addressed. However, it does not include how missing data were managed. As indicated by the authors, findings from this study should be interpreted with caution based on certain limitations. The following are some other comments and observations regarding the article.

First, the hypothesis posed by authors is unclear and the secondary aim is somewhat ambiguous, because dental condition-n-related visits that result in death will most likely be very rare events, based on what is documented in the literature. According to authors, only about 8% of NTDC-related visits included comorbid conditions based on the Charlson comorbidity severity index. In general, dental conditions not related to trauma are considered non-life-threatening even when managed in EDs and not dental offices, which are the recommended treatment sites for such conditions. However, when they progress to systemic infections such as Ludwig's angina, they could be well managed by maxillofacial surgeons in EDs. According to the study, over the 2-year study period, about 94% of ED visits for dental-related conditions resulted in routine discharges, and in 6%, other forms of care were required. A total of 101 patient deaths were attributed to dental conditions. This number appears to be rather high, given what is known about these nontraumatic dental conditions, and one wonders whether the authors included dental visits related to trauma in their analysis.

Second, the introduction did not discuss prior relevant studies that have attempted to quantify ED charges related to NTDCs based on retrospective secondary data analyses. Elangovan et al in 2010¹ documented that close to \$33.3 million was charged by hospitals for the treatment of periodontal conditions. The 2008 Okunseri et al study² based on Wisconsin Medicaid data stated that a reduction of 1% in all dental claims for ED users for dental condition could lead to a savings of \$6.1 million based on an average expense per ED user of \$637 per visit for NTDCs. These prior studies create some context and

provide an opportunity to address some of the limitations enumerated in them.

Third, it is unclear how authors defined dental care-n-related conditions given the number and variety of ICD-9-codes included in this study. For example, in Kim et al's 2012 article:³ "Factors associated with length of stay and hospital charges for patients hospitalized with mouth cellulitis," the main ICD-9-code used was 528.3. This same code is included by the Allareddy article from the same database. The charges related to this ICD-9-code clearly reflect charges that are potentially not for dental care-n-related visits by nature of the condition. This is because the patients were hospitalized based on physicians' determination that their presenting complaints required hospitalization.

Another key point to note is that it is unclear whether the charges in this study include provider, hospital, and facility charges. This information is critical to understanding the extent and impact of resources expended in the EDs for providing temporary care for dental conditions. Overall, this article attempts to evaluate an outcome within the dental care delivery system and the effective use of resources. However, the conclusion of the manuscript is somewhat overstated, especially with comorbid conditions tied into dental condition-n-related visits.

References

- ¹S. Elangovan, R. Nalliah, V. Allareddy, Y.K. Nadeem, V. Allareddy. Outcomes in patients visiting hospital emergency departments in the United States because of periodontal conditions. *J Periodontol*, 82 (6) (2011), pp. 809–819
- ²C. Okunseri, N.M. Pajewski, D.C. Brousseau, S. Tomany-Korman, A. Snyder, G. Flores. Racial and ethnic disparities in nontraumatic dental-condition visits to emergency departments and physician offices: a study of the Wisconsin Medicaid program. *J Am Dent Assoc*, 139 (12) (2008), pp. 1657–1666
- ³M.K. Kim, V. Allareddy, R.P. Nalliah, J.E. Kim, V. Allareddy. Burden of facial cellulitis: estimates from the Nationwide Emergency Department Sample. *Oral Surg Oral Med Oral Pathol Oral Radiol*, 114 (3) (2012), pp. 312–317 <http://dx.doi.org/10.1016/j.tripleo.2011.07.043> Epub 2012 Jan 27