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Disparities in Emergency Department Pain Treatment for Toothache

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Abstract: *Racial disparities in how pain is treated in the emergency department (ED) for toothache have not been reported. Due to increasing reliance on EDs for dental care, the authors investigated whether race/ethnicity and insurance type are associated with treatment for toothache pain. The authors conducted a nationally representative cross-sectional study of ED toothache visits by adults (19 to 64 y old), using the 2008–2010 National Hospital Ambulatory Medical Care Survey. Multinomial regression models accounted for the complex survey design. Outcomes were pain medicines received: none, nonopioid only, or opioids. After adjusting for sociodemographic factors, black patients had 1.99 greater odds ($P < 0.005$) than white patients of receiving only a nonopioid pain medicine for toothache. Visits made by patients on Medicare, Medicaid, uninsured, or “other” insurance status had greater odds than the privately insured of receiving only a nonopioid pain medicine rather than an opioid (odds ratios, respectively: 4.8, $P < 0.001$; 2.1,*

$P \leq 0.001$; 2.3, $P < 0.01$; and 4.1, $P < 0.001$). Blacks are less likely than whites to receive opioids in the ED for a toothache, even with similar levels of pain. Nonprivately insured patients have lower odds than the privately insured to receive opioids for toothache pain. A better understanding of the etiology of these disparities could lead to directed interventions.

Knowledge Transfer Statement:

This study presents findings novel to the body of pain and oral health care literature. Because there is an increasing reliance on the emergency department to address dental pain, disparities in how toothache pain is treated will be of great interest to a growing number of Americans, clinicians, and policy makers.

Keywords: minority health, analgesia, health equity, physician practice patterns, health services accessibility, oral health

Introduction

Painful conditions account for the majority of chief complaints for

emergency department (ED) visits. Among the painful conditions cared for in the ED, toothache is increasingly common, particularly among individuals from low-income and minority groups (Lee et al. 2012), who more often lack access to professional dental care. From 2001 to 2008, ED dental visits increased among black patients by 86% and by 42% in uninsured populations (Lee et al. 2012). Most EDs are not staffed by dentists, who can provide definitive care for toothaches, which often limits ED management to palliation with antibiotics and analgesics and a recommendation for definitive care at a dentist's office (Lewis et al. 2003; Cohen et al. 2008; Cohen et al. 2011).

Treating pain in the ED is complicated by the increasing numbers of patients presenting for pain-related complaints and the practice patterns that result in the increasing numbers of pain prescriptions. ED opioid prescriptions in the United States increased from 1:5 visits in 1997 to 1:3 visits in 2009 (Jeffrey Kao et al. 2014). In prescribing opioid analgesics, clinicians balance the risks of opioid abuse and misuse against the need to

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provide appropriate treatment of acute severe pain. The subjective nature of reported pain is an ongoing challenge for clinicians. This is particularly true for ED physicians, who generally know their patients less well than do primary care providers. Pain management for dental problems may pose further difficulties for ED providers, who typically lack formal dental training. Differentiating between true dental pain and drug-seeking behavior then becomes a matter of trust between the provider and the patient and thus vulnerable to implicit biases within a health care system and/or individual providers. Furthermore, a toothache may represent an “emergency” for the patient experiencing it, but ED physicians may not consider a toothache to be a medical emergency if no acute intervention is required. Such a disconnect between clinicians’ and patients’ perceptions about whether toothaches require emergency care further increases the likelihood for systems or provider-level biases in treating dental pain for vulnerable populations, such as the uninsured, publically insured, or racial/ethnic minority groups.

Racial/ethnic disparities in ED pain management for medical problems (Todd 1996, 2001; Sobel and Todd 2002; Mills et al. 2011) and surgical problems (Goyal et al. 2015; Shah et al. 2015) have been described, yet no such differences in ED treatment for dental pain have been found (Okunseri et al. 2014). Given the rise in the ED toothache visit rates in populations who tend to have limited access to preventive dental care (racial/ethnic minorities, Medicaid patients, and uninsured patients; Lee et al. 2012), in conjunction with the limitations of treating dental problems in the ED, we assessed if there were differences in ED pain treatment for toothache among these various patient groups. We hypothesized that patient-level (race/ethnicity, insurance status) characteristics are risk factors for how toothache pain is treated in the ED.

Materials and Methods

This study is a cross-sectional analysis of data from the National Hospital Ambulatory Medical Care

Survey (NHAMCS) from 2008 to 2010. The NHAMCS is an annual national probability-sample survey of US hospital EDs conducted by the National Center for Health Statistics. The sample design is composed of 3 stages for the ED component: 1) geographic primary sampling units, 2) hospitals within primary sampling units, and 3) patient visits within emergency service areas. Sampled EDs are located in noninstitutional general and short-stay hospitals exclusive of federal, military, and Veterans Affairs hospitals in the 50 US states and District of Columbia. Within an ED, visits are systematically selected during a randomly assigned 4-wk reporting period. Field representatives of the US Census Bureau induct hospitals into the NHAMCS. Hospital staff or Census Bureau field representatives complete a patient record form for each sampled visit based on information obtained from the medical record. Sampled data are extrapolated to population-based estimates according to assigned patient visit weights, which account for probability of visit selection, nonresponse, and ratio of sampled hospitals to all hospitals in the United States (NHAMCS and National Ambulatory Medical Care Survey; Centers for Disease Control and Prevention [CDC] 2009). Up to 3 reason-for-visit codes and 3 discharge diagnoses are possible for each visit. Up to 8 medications delivered in the ED, prescribed, or both are listed. Diagnoses are coded through the *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM; CDC 2011)*. Details related to data collection and survey reports are published by the CDC (2012). For characterization of ED toothache visits in the recent past, we combined 3 y of NHAMCS data (2008 to 2010) to improve reliability of our estimates—a strategy recommended by the National Center for Health Statistics. Weighted estimates based on <30 unweighted records or with relative standard errors $\geq 30\%$ are annotated in the results.

Use of these de-identified data was exempt from review by the institutional review board of the University of Washington. The reporting of this study conforms to the STROBE (Strengthening

the Reporting of Observational Studies in Epidemiology) guidelines for observational studies (von Elm et al. 2008).

We selected adult (19 to 64 y) ED visits for toothache from 2008 to 2010 in the NHAMCS because prior work has demonstrated that ED visit rates for children and the elderly have remained constant in this period and, relative to other age groups, are quite low (Lee et al. 2012).

Visits were identified via the NHAMCS “reason for visit” variable for toothache (code 1500.1). We chose “reason for visit” codes over discharge diagnosis *ICD-9-CM* codes because we were particularly interested in the phenomenon of patients presenting to the ED for a perceived dental problem rather than visits precipitated by a nondental chief complaint that were associated with a dental *ICD-9-CM* code.

The outcomes reflected 3 potential options to manage pain during or after an ED visit: 1) no receipt or prescription of any pain medicine, 2) receipt or prescription of an opioid (reference group), or 3) receipt or prescription of only a nonopioid pain medicine (nonsteroidal anti-inflammatory agent or acetaminophen).

Our exposures of interest were race/ethnic group and insurance type. We used the NHAMCS race/ethnicity variables that were imputed to account for missing values: non-Hispanic white (“white”), non-Hispanic black (“black”), and Hispanic. Race and ethnicity were assessed as part of the hypothesis that underserved populations receive differential treatment in the ED for dental problems as compared with whites. Insurance status categories were created with the “PAYTYPE” variable. NHAMCS assigned the primary expected source of payment to the “PAYTYPE” variable per a hierarchical ranking (in decreasing order: Medicaid, Medicare, private insurance, worker’s compensation, self-payment, and no charge). Beginning in 2008, dually eligible Medicaid and Medicare patients have Medicare classified as their primary expected payment source. Using this hierarchy, we classified insurance

status as private insurance, Medicare, Medicaid, uninsured, and “other.” Our uninsured category combined “self-pay,” “no charge,” and “charity.” The “other” category included visits with insurance status left as a blank and unable to be determined; it also included worker’s compensation. The worker’s compensation insurance group included too few visits to be categorized as its own subcategory, and inclusion in the “other” category did not change the association with the outcomes.

Covariates evaluated for inclusion in our multivariable models were based on a priori identified factors (based on literature and clinical plausibility) that might influence ED treatment for a toothache and be associated with race/ethnicity and/or insurance status: age, receipt/prescription of antibiotics, sex, pain score, geographic region and metropolitan statistical area (MSA) of the hospital, the percentage of residents in the patient’s zip code who are living in poverty, procedure in the ED, and the urban-rural classification of the patient’s zip code. All variables studied were categorized as presented in Table 1.

This is the third in a series of studies that examine trends in ED care for a toothache. ED toothache visit patterns differ by age. We found that patients in the 18- to 44-y age group were disproportionately represented in ED toothache visits as compared with other age groups (Lee et al. 2012). Further analysis revealed that within the population of patients who visited the ED for a toothache, patients in the 20- to 29-y age category were distinct from all other age groups in terms of their utilization of the ED (Lewis et al. 2015). We therefore categorized age as follows: 19 to 29, 30 to 39, 40 to 49, and 50 to 64. We did not include adults >64 y old, because there were only 12 ED toothache visits in this age group. Pain scores were based on a pain scale (0 to 10) and categorized into mild (0 to 3), moderate (4 to 6), or severe (7 to 10), as established by prior work (Serlin et al. 1995). Pain scores that were not reported or that were recorded as unknown were categorized as “unknown.”

Receipt or prescription for an antibiotic was coded yes/no. Broadly, MSAs have a core, concentrated large population with neighboring communities that are highly socially and economically integrated with the core area. We categorized hospitals according to their location within an MSA or non-MSA. Patient-level economic indicators are not available through the NHAMCS; as a proxy, we relied on a variable that categorized the percentage of the population living in poverty within the patient’s zip code. The NHAMCS has categorized the percentage of the population living below the poverty line within a residential zip code as follows: <5%, 5% to 9.9%, 10% to 19.9%, and ≥20%. Based on raw numbers, the variable was recategorized as follows: <10%, 10% to 19.9%, and ≥20%. This recategorization did not alter findings when compared with analysis with the NHAMCS-categorized variable. The National Center for Health Statistics developed an urban-rural classification scheme to be used in studies of health disparities by residential zip code. Residential categories are population based and defined as follows: large central metropolitan (central counties of ≥1 million), large fringe metropolitan (fringe counties of ≥1 million), medium metropolitan (counties of 250,000 to 999,999), small metropolitan (counties of 50,000 to 249,999), and nonmetropolitan (counties within and not within micropolitan statistical areas). Because of small numbers of sampled visits, small metropolitan counties were combined with medium metropolitan counties. Receipt of a procedure in the ED was categorized per the clinical relevance to the management of a toothache (related, unrelated, none). Related procedures included intravenous fluids and/or incision and drainage. Unrelated procedures included all other listed procedures, such as cast, pelvic examination, cardiopulmonary resuscitation, and endotracheal intubation.

Descriptive statistics (counts and percentages) were calculated for all variables of interest stratified on toothache treatment (opioid, only

nonopioid, or no pain medicine). Unadjusted and adjusted multinomial logistic regression models were used to estimate odds ratios, 95% confidence intervals, and *P* values of associations between sociodemographic factors of interest and toothache pain treatment. We generated separate models for race/ethnicity and insurance status. We eliminated potential confounders that did not change estimates to a meaningful degree (generally <10%). Each potential confounder was assessed separately and in combination with other confounders. We then generated a single model that included both predictors and all confounders. Testing for interaction between race/ethnicity and insurance status resulted in the Stata output “convergence not achieved,” which may indicate an inadequate sample size in individual cells to conduct this analysis. To account for the complex sampling design, we used the survey capabilities within Stata, which factors in the clustered nature of the sample in generating population estimates and accurate relative standard errors. We assessed the extent to which variables had counts ≤30 or relative standard errors ≥30% and noted these estimates (McCaig and Burt 2012).

Results

Between 2008 and 2010, there were an estimated 389,676,926 ED visits (sampled visit, *n* = 104,012). There were an estimated 5.1 million ED toothache visits in this period, with 4.7 million visits (sampled visit, *n* = 1,211) among 19- to 64-y-olds. This averages to 1.6 million toothache visits to the ED per year (Table 1). The majority of ED toothache visits resulted in receipt/prescription of an opioid (59%). Among visits that did not result in any pain prescribed or dispensed medicine, 57% had a pain score ≥7 (severe pain), while 73% of visits that resulted in an opioid had pain scores in the severe range.

In adjusted analysis, black patients had nearly 2 times greater odds than white patients of receiving only nonopioid

pain medications rather than an opioid (Table 2). Furthermore, there was a statistically significant effect of insurance on the adjusted odds of receiving only a nonopioid for a toothache (Table 2). Relative to private insurance, visits by patients with another insurance status had greater odds of receiving only a nonopioid as follows: Medicare (odds ratio = 4.8), Medicaid (odds ratio = 2.1), uninsured (odds ratio = 2.3), and “other” (odds ratio = 4.1).

Discussion

Reliance on the ED to address dental pain is increasing (Lee et al. 2012). Disparities in ED pain management for toothache have implications for researchers, policy analysts, and a growing number of Americans. Racial disparities in ED pain management have been well described for acute medical and surgical problems (Todd 1996, 2001; Sobel and Todd 2002; Johnston and Bao 2011; Mills et al. 2011; Goyal et al. 2015; Shah et al. 2015), as have racial disparities in access to dental care (Okunseri et al. 2008). We are the first, however, to report a disparity by race/ethnicity and insurance type in the ED treatment for dental pain.

Our findings are in opposition to a recent study by Okunseri et al. (2014) that examined ED visits for nontraumatic dental condition. No differences were found in adjusted analysis for race/ethnicity or medical insurance type and the outcome of prescription of pain medications. The differences in findings between our study and Okunseri's (2014) may be due to several variations in methodology. First, we selected a more narrowly defined patient population. We selected ED visits by the variable for “reason for visit” rather than the *ICD-9-CM* codes charted in a patient's discharge diagnosis. In relying on the “reason for visit” variable, we selected ED visits made specifically to address a toothache, as declared by the patient. Okunseri's (2014) patient population included patients whose reason for visit included both dental and nondental reasons. Second, the variables included

Table 1.

Characteristics of Emergency Department Toothache Visits by Pain Medication Outcome.

Weighted Counts	Opioid (n = 3,000,000)	No Pain Medicine (n = 900,000)	Only Nonopioid (n = 760,000)
Age, y			
19 to 29	46	50	54
30 to 39	27	27	21
40 to 49	17	13	15
50 to 64	10	10	10
Sex			
Female	57	50	57
Male	43	50	43
Antibiotics			
Yes	80	26	68
No	20	74	32
Pain score			
Mild	4 ^a	6 ^a	4 ^{a,b}
Moderate	13	14	16
Severe	72	57	66
Unknown	11	23	14
Race/ethnicity			
Non-Hispanic white	68	69	55
Non-Hispanic black	24	21	39
Hispanic	8	10 ^a	6 ^{a,b}
Insurance			
Private	20	19	9 ^a
Medicare	5	6 ^{a,b}	10 ^a
Medicaid	27	31	30
Uninsured	37	29	34
Other	11	15	18
Geographic region			
Northeast	16	21	110
Midwest	28	23	32
South	39	36	43
West	17	19	7 ^a
Metropolitan statistical area			
Yes	79	81	78
No	21	19 ^b	22 ^b
Percentage living in poverty by zip code			
<10	37	38	24
10 to 19.9	40	42	45

(continued)

Table 1.
(continued)

Weighted Counts	Opioid (<i>n</i> = 3,000,000)	No Pain Medicine (<i>n</i> = 900,000)	Only Nonopioid (<i>n</i> = 760,000)
≥20	22	20	31
Urban-rural by zip code			
Large central metro	22	24	21
Large fringe metro	20	19	10 ^b
Medium and small metro	37	39	42
Procedure			
None	91	90	90
Related procedures ^c	4	1	7
Unrelated procedures	0	2	1
Other	5	7	2

Values are presented as percentages and based on national estimates.

^aRaw counts <30.

^bRelative standard error >30%.

^cIntravenous fluids, incision, and drainage.

in the multinomial logistic regression models by Okunseri (2014) differed from ours in terms of specific variables as well as the categorization of variables. For example, we included independent variables for the percentage of residents in the patient's zip code who are living in poverty and the urban-rural classification of the patient's zip code based on a priori identified factors that might influence ED treatment for a toothache and be associated with race/ethnicity and insurance status. Unlike Okunseri (2014), we included ED toothache visits made only by 19- to 64-y-olds because these accounted for the majority of such visits, thus allowing greater precision in our estimates. Third, time trends in our findings may reflect secular trends, such as the most recent economic recession. It is possible that increased unemployment rates in the period that we studied influenced the population presenting to the ED for dental care, relative to that studied by Okunseri (2014). Finally, our study was

able to utilize the NHAMCS-imputed race/ethnicity variable, which was not available for the entire period in the Okunseri study (2014), thus necessitating its own imputation analysis for missing race/ethnicity values.

We are the first to establish racial/ethnic disparities in treatment for dental pain. The literature on ED pain management for other conditions is conflicted regarding the role of race/ethnicity on opioid prescribing. Although earlier work documented racial/ethnic disparities in type of ED pain treatment (Todd 1996, 2001; Sobel and Todd 2002), more recent studies indicate that these differences have decreased for complaints such as headache and backache (Quazi et al. 2008), where diagnosis is more dependent on patient report, much like the diagnosis of toothache, rather than diagnostic tests. Back pain is similar to toothache in that its presentation in the ED is common (Friedman et al. 2010) and often perceived as nonurgent. Our findings,

however, indicate that racial/ethnic disparities in ED pain treatment may be ongoing despite reports of diminished disparities in pain treatment for other conditions. Specifically, we found that black patients were less likely than white patients to receive opioids for their pain.

Racial/ethnic disparities in pain management may in part result from implicit biases within providers or health care systems. Bias may be influenced by trust within a relationship. Mutual trust is an important aspect of clinicians' chronic pain management and prescription of opioid analgesics (Merrill et al. 2002). The phenomenon of provider-patient trust can be influenced by a patient's race/ethnicity (Moskowitz et al. 2011). Bias may also reflect personal attitudes. For example, providers' attitudes and perceptions of race and racism have been implicated as factors in disparities in pain management for sickle cell patients (Nelson and Hackman 2013). There may be bias in how different racial groups are perceived by clinicians to experience pain. For example, Trawalter et al. (2012) demonstrated that providers perceived black patients to have less pain than white patients. Furthermore, Trawalter et al. provided evidence that biases in pain perception may be more influenced by social rather than racial status. The latter findings are consistent with our results in which we document disparities not only by race but also by insurance status—an important proxy for socioeconomic status.

It is unclear if our findings that both race/ethnicity and insurance status are associated with disparities in ED toothache pain treatment are the manifestation of 2 different trends or perhaps reflective of the strong influence of a patient's socioeconomic status on health care outcomes, which could not be adequately distinguished from the category of race/ethnicity. Our analysis adjusted for race/ethnicity and insurance status in examining each effect on medication outcome. However, it is also possible that race/ethnicity and insurance status may be indirect markers for other uncontrolled socioeconomic

Table 2.

Multinomial Logistic Regression: Association of Race/Ethnicity or Insurance Type and Odds of Receipt/Prescription of an Analgesic Medication for Toothache in the Emergency Department.

	No Analgesics vs. Opioid	95% CI	Only Nonopioid vs. Opioid	95% CI
Predictor				
Race/ethnicity				
Non-Hispanic white	1.00 (ref)		1.00 (ref)	
Non-Hispanic black	1.1	0.63 to 1.90	1.99	1.25 to 3.17
Hispanic	1.03	0.48 to 2.19	1.08	0.56 to 2.09
Insurance type				
Private	1.00 (ref)		1.00 (ref)	
Medicare	1.31	0.42 to 4.13	4.81	2.07 to 11.17
Medicaid	1.01	0.54 to 1.91	2.12	1.25 to 3.62
Uninsured	1.18	0.70 to 1.99	2.33	1.29 to 4.21
Other	1.47	0.68 to 3.19	4.05	1.94 to 8.47
Confounders				
Receipt of antibiotic				
Yes	1.00 (ref)		1.00 (ref)	
No	0.09	0.06 to 0.13	0.47	0.32 to 0.70
Pain				
Mild	1.00 (ref)		1.00 (ref)	
Moderate	0.94	0.32 to 2.74	1.12	0.30 to 4.12
Severe	0.71	0.22 to 2.26	1.05	0.31 to 3.56
Missing	1.56	0.48 to 5.03	1.48	0.46 to 4.73
Receipt of procedures				
None	1.00 (ref)		1.00 (ref)	
Related procedures	0.19	0.03 to 1.50	2.25	0.81 to 6.25
Unrelated procedures	4.18	0.28 to 62.02	2.8	0.06 to 129.25
Other	2.02	0.52 to 2.08	0.77	0.89 to 3.36
Geographic region				
Northeast	1.00 (ref)		1.00 (ref)	
Midwest	0.52	0.25 to 1.06	0.81	0.41 to 1.60
South	0.67	0.34 to 1.33	0.73	0.37 to 1.46
West	0.66	0.33 to 1.35	0.2	0.09 to 0.47
Percentage living in poverty by zip code				
<10	1.00 (ref)		1.00 (ref)	
10 to 19.9	1.14	0.66 to 1.96	1.39	0.80 to 2.44
≥20	0.76	0.37 to 1.54	1.37	0.67 to 2.79
Urban-rural by zip code				
Large central metro	1.00 (ref)		1.00 (ref)	
Large fringe metro	0.94	0.51 to 1.74	0.7	0.34 to 1.43
Medium and small metro	1.27	0.72 to 2.23	1.56	0.89 to 2.74
Nonmetro	1.04	0.52 to 2.08	1.73	0.89 to 3.36

95% CI, 95% confidence interval; ref, reference.

factors that influence treatment of toothache. Our models adjusted for variables that indirectly define a patient's income status (percentage poverty by residential zip code) but may not fully account for how socioeconomic factors affect the relationship between race/ethnicity and insurance status on pain management.

To date, there are few studies that demonstrate differences in ED pain management by insurance status (Shah et al. 2015). However, other aspects of ED care differ by insurance type (waiting time to see a physician; Johnston and Bao 2011). There are several potential explanations for differences in pain management by insurance status—differences among payers in their coverage for pain medication, perceived differences in patient accountability (privately insured patients are more likely to return for outpatient follow-up care), or implicit biases based on socioeconomic status. Our finding of decreased odds of receiving nonopioids for toothaches in the western region of the United States complements previous findings on the geographic variation of opioid prescriptions. Specifically, opioid prescription rates are disproportionately high in western areas of the United States compared with the Northeast (McDonald et al. 2012). It is not clear whether our findings indicate that patients in western states are being overtreated for dental pain or if patients in other areas of the country are being undertreated. Factors that influence variation in pain management should be explored in future studies (e.g., fears of overprescribing, state medical board variation in regulating opioid prescriptions, programs to monitor ED opioid prescriptions).

Several study limitations are related to the available data in the NHAMCS. We were unable to account for several factors that may influence disparities in utilization and outcomes of care. For example, the NHAMCS does not contain data at the individual level regarding disease severity, such as medical and health services utilization

history. Individuals with a history of repeat ED visits or those perceived as drug seeking might be less likely to receive opioids. However, it is not clear if the racial/ethnic distribution of these “drug seeking” individuals would be disproportionately represented in one particular racial/ethnic or insurance-type category, and the impact of bias could be bidirectional. The publically available NHAMCS data do not identify visits by state; therefore, we cannot account for state-specific adult Medicaid dental policies, provider availability, or variation in opioid prescription patterns. However, regardless of whether there are state-, hospital-, or provider-level prescribing differences, blacks are less likely than whites to get opioids, and future investigations need to fully examine factors based on multilevel analysis. Moreover, our results are consistent with recent studies that also found racial/ethnic disparities in ED pain treatment utilizing NHAMCS data (Goyal et al. 2015; Shah et al. 2015). Future work might rely on qualitative methodologies to clarify the role of the aforementioned factors in disparities in ED pain management. Additionally, the NHAMCS data are constructed so that the unit of analysis is a visit rather than an individual identifiable patient. We are therefore unable to distinguish whether visits represent unique patients or a smaller number of patients who are repeat visitors to the ED. A large proportion of visits representing a small number of black or nonprivately insured individuals might result in a positive bias and an overestimated association between outcomes and race/ethnicity and/or insurance type. However, each ED contributes only 4 wk of consecutive data to the NHAMCS data, which limits the number of repeat visits. Our study does not explain why black or nonprivately insured patients were less likely to receive opioids, which is in part due to the limitations of available data. Future work in elucidating the role of social factors in disparities in care may rely on qualitative methodologies. Further studies may elucidate the degree

to which systemic racial/ethnic bias or other factors influence pain control for toothache.

This is the first work to show differences in ED pain management for a dental problem by race/ethnicity. We show that blacks as compared with whites and those who are not privately insured are more apt to receive nonopioids rather than opioids for toothache pain. This extends prior work indicating that ED toothache visits are significantly increasing among black, uninsured, and Medicaid patients (Lee et al. 2012). Future studies should investigate medical provider perspectives on dental pain management to identify factors that are driving this disparity.

Author Contributions

H.H. Lee, contributed to conception, design, data analysis, and interpretation, drafted and critically revised the manuscript; C. Lewis, contributed to conception, design, data acquisition, analysis, and interpretation, drafted and critically revised the manuscript; C. McKinney, contributed to design, data analysis, and interpretation, critically revised the manuscript. All authors gave final approval and agree to be accountable for all aspects of the work.

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