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Gender and Race/ethnic Disparities in Opioid Prescriptions for Dental Diagnoses among Patients with Medicaid

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Abstract

Background—The objective of this study was to identify specific factors (gender, race, provider type) that were significantly associated with patient receipt of an opioid prescription following a dental diagnosis.

Methods—Medicaid claims for thirteen US states (Truven Health MarketScan© database) dated between 2013–2015 were used in this study. Dental and oral health-related conditions were identified using ICD-9-CM diagnosis codes 520.0 through 529.9.

Results—More than 890,000 Medicaid patients had a primary dental diagnosis with 23% receiving an opioid within 14 days of a dental diagnosis. Women were 50% more likely to receive an opioid for pain management of a dental condition than men (OR=1.53; 95% CI:1.52–1.55); Non-Hispanic whites and African-Americans were around twice more likely to receive opioids than Hispanics (OR=2.11; 95% CI:2.05–2.17 and OR=1.92; 95% CI:1.86–1.98) respectively. Patients receiving care in an emergency department were nearly five times more likely to receive an opioid prescription than patients treated by a dentist (OR=4.66; 95% CI:4.59–4.74). Patients diagnosed with a dental condition were 2.5 times as likely to receive an opioid from a nurse practitioner than from a dentist (OR=2.64; 95% CI:2.57–2.70). Opioid use was substantially higher among African-American women (OR=3.29; 95% CI:3.18–3.40) and Non-Hispanic white women (OR=3.24; 95% CI:3.14–3.35) as opposed to Hispanic women.

Conclusions—Opioid prescribing patterns differ depending on patient race/ethnicity, gender, and provider source in patients with a dental diagnosis in the US.

Keywords

Opioid; Medicaid; Oral Diagnosis; Drug Prescriptions

INTRODUCTION

Over the last ten years, the United States (US) has experienced increasing rates of opioid use, abuse, and overdose deaths. This concern culminated in a presidential declaration in 2017 that the opioid crisis was a national public health emergency¹. The burden of the opioid epidemic impacts all aspects of the health care delivery system: patients, providers, and insurers. An estimated 1 in 5 patients with non-cancer, pain-related diagnoses are prescribed opioids in office-based settings². Among all non-cancer providers, dentists provide the second fewest opioid prescriptions, after general practitioners, family medicine, primary care and internists³. Opioid prescribing by dentists is estimated to be 12% of the overall annual opioid prescription total^{2, 4}; and 1,500 deaths annually may be attributable to unused opioids originally prescribed by dentists for therapeutic purposes⁵. The overall

burden is likely higher for management of acute dental pain as emergency department (ED) providers also prescribe opioid analgesics for nontraumatic dental conditions (NTDCs)^{6–10}.

Oral pain can be acute, often occurring abruptly and intensely¹¹. Consequently, relief of oral pain is often sought at emergency and urgent care facilities, leaving emergency providers to prescribe treatment that is only palliative and non-definitive¹². Consideration on how to treat oral and dental pain with an opioid includes a number of factors, such as provider experience, professional guidelines, the patient's own pain perception, communication regarding the pain experience between patient and the treatment team, and an individual pain assessment¹³.

Non-white race/ethnic groups are less likely to receive an opioid prescription for any condition¹³. This is frequently due to incorrect provider perception that when minorities present to the ED for pain, they are more likely to be drug-seeking rather than suffering from actual pain, relative to a Non-Hispanic white patient with a similar, pain-related complaint^{14, 15}. Biological differences in pain perception by racial minorities may lead to further under treatment for pain¹⁶. Hispanics are half as likely as Non-Hispanic whites to receive no analgesic medication during an ED visit even after controlling for patient characteristics within both groups¹⁷. Non-Hispanic whites are 60% more likely to receive opioid analgesics than African-Americans¹⁸.

Generally, women are more likely to be prescribed an opioid for dental pain than men during an emergency visit¹⁸. The Centers for Disease Control and Prevention (CDC) reports that opioid prescribing rates for any diagnosis, regardless of cause, is higher in women than men¹⁹. There may be a physiologic explanation for this difference as women consistently show a greater sensitivity to pain when compared to men²⁰. Differences observed in receipt of opioid prescriptions are not always accounted for when controlling for demographic factors. While previous research has correlated gender differences in pain intensity, these differences are not always seen in opioid prescriptions provided to patients; sometimes females are provided more, especially stratified by race/ethnicity, and sometimes males receive more prescriptions. Differences in drug-prescribing patterns could be caused by an unconscious bias among health providers²¹. Nevertheless, the evidence suggests that attributing opioid prescription disparities due to providers' personal beliefs, type of provider, and patient demographics is inconclusive, at best²².

Information on the opioid prescribing practices of emergency health care providers for dental pain is sparse²³. Moreover, there is no information that has assessed patient gender, race/ethnicity or provider differences for opioid prescriptions for any dental diagnosis among low-income patients, such as Medicaid recipients. The main aim of this study is to investigate differences in opioid receipt for dental diagnoses by key demographic factors based on outpatient claims data for Medicaid-enrolled children and adults; and to determine if these differences are influenced by the type of provider or dental diagnosis.

METHODS

Data Source and Sample Selection

This retrospective study uses de-identified medical and pharmacy Medicaid claims data for calendar years 2013 through 2015 from the Truven MarketScan Database Multi-state Medicaid core data set (<https://truvenhealth.com/markets/life-sciences/products/data-tools/marketscan-databases>). This database contains individual claims information from 2.8 million individuals from 13 US states. To protect individual confidentiality, this dataset does not contain geographic identifiers or personally-identifiable information. Access to this database was made possible through a research collaboration with the DentaQuest Institute, who obtained the data access license.

The data included person-level information (e.g., age, gender and enrollment period) and claim-level data (e.g., outpatient pharmacy prescription claims) for all claims between January 1, 2013 to September 30, 2015 (due to the change from ICD-9-CM to ICD-10-CM on October 1, 2015). Outpatient pharmacy claims were searched for opioid-containing medications using the therapeutic class “opioid analgesics group”. This group of drugs includes drugs derived from opium, including morphine, as well as semi-synthetic and synthetic drugs such as hydrocodone, oxycodone and fentanyl.

We generated a record of all patients who presented to an outpatient facility for any dental/oral related care using Streamline’s Clinical Looking Glass (<https://www.streamlinehealth.net/patient-care/clinical-analytics/>). This analytical tool is designed to help organize and generate healthcare claims data and it allows create and comparison of, two separate cohorts using data from the Truven Multi-state Medicaid database. The first cohort contained patients who had dental diagnosis. Consistent with prior research, dental diagnoses were identified as those claims with an ICD-9-CM code between 520.0 and 529.9¹². Demographic variables included age in years, gender, race/ethnicity, and provider type. The second cohort was built using on prescription claims records who received a prescription for any opioid analgesic with 14 days of the primary dental diagnosis. Patients were restricted to only those enrollees with continuous enrollment of 0–14 days in a Medicaid plan that included prescription drug coverage. Both cohorts were matched using the unique patient identifier based on the index date of the event of interest and duplicates were removed to form the analytical dataset.

Analytical Variables

Prescription opioids was the primary outcome variable and was categorized dichotomously (received an opioid within 14 days of primary dental diagnosis, yes or no). The primary dental diagnosis was generally based on four categories: diseases of pulp and periapical tissues, disease of soft tissues of the oral cavity, diseases of gingival periodontal tissues, and diseases of hard tissue/jaw. The provider source was categorized into Emergency Departments (EDs), Dentist, Medical Specialist, Nurse Practitioner, and Other, which refers to any other provider source identified in the data set. Additional independent variables included age group, gender, and race/ethnicity. Race/ethnicity was categorized as Hispanics, Non-Hispanic whites, African Americans, and Other race/ethnicities.

Data Analysis

Frequencies and proportions of patients with an opioid prescription were calculated from the total cohort of dental diagnoses identified. These were stratified by age group, gender, race/ethnicity, provider type and dental diagnosis type. The proportions were adjusted to the total cohort within the Medicaid database. Logistic regression models were produced to ascertain the association of the independent variables (provider type, gender and race/ethnicity) with the dependent variable, receipt of an opioid. Interactions were investigated and subsequent models were produced by stratifying on gender and care/ethnicity. Additional analyses were conducted to explore possible influence of provider source and diagnosis types on the differential effects observed by gender and race/ethnicity. We did investigate potential effects that specific dental diagnoses may have on receipt of an opioid prescription, and we found that to be non-significant; thus, dental diagnosis type was not included in our final multivariable models. Analyses were performed using SAS 9.4 (SAS Institute Inc.).

RESULTS

From total of 28,151,790 Medicaid beneficiaries with relevant claims information between January 1, 2013 and September 30, 2015, we identified 891,720 individuals who had a primary diagnosis of a dental or oral-related condition. Among these persons, 209,296 (23.4%) filled an opioid prescription within 14 days of their dental diagnosis (Table 1). In this group of Medicaid patients with a dental diagnosis, slightly more than half were under 18 years (56.3%) old and Non-Hispanic white (53.9%). Among all patients with a primary dental diagnosis, approximately 24% had a Medicaid claim from a dentist and 23% had a claim from an emergency department. Among patients receiving an opioid within 14 days of a dental diagnosis, the larger proportions were 19–29-year-olds (30.3%), women (65.8%), Non-Hispanic whites (57.8%), and those receiving care from ED providers (36.8%).

Only 3% of adults age 65 and older received an opioid following a dental diagnosis, whereas 48.4% of patients age 30–39 received an opioid. There was no observed difference between African-American and Non-Hispanic white patients with a filled opioid prescription for a dental diagnosis (25%), whereas only 10% of Hispanics received an opioid prescription. About 38% of patients with a dental diagnosis provided by an emergency department provide received an opioid within 14 days of a diagnosis, whereas only about 11% of patients with a dental diagnosis provided by a dentist received an opioid. About a quarter of patients with a dental diagnosis provided by a nurse practitioner received an opioid prescription (26.2%) and 20% of patients seen by a medical specialist received an opioid following a dental diagnosis. Although 72% of all opioid prescriptions for a dental diagnosis was provided for diseases of hard tissue and teeth, only one in four receiving this diagnosis were prescribed an opioid, whereas 44% of all pulp and periapical diagnoses received an opioid.

Women were more likely (OR=1.53, 95% CI, 1.52–1.55) to fill an opioid prescription for any dental diagnosis than men after controlling for age, race/ethnicity, and provider source (Table 2). Non-Hispanic whites and African-American were two times more likely to receive an opioid than Hispanics (OR=2.11, 95% CI, 2.05–2.17 and OR=1.88, 95% CI, 1.83–1.93) respectively. Emergency departments prescribed opioid medications almost 5 times more

often (OR=4.66, 95% CI, 4.59–4.74) than a dentist and nurse practitioners prescribed them nearly three times as often (OR=2.64, 95% CI, 2.57–2.70) compared to a dentist. When stratifying by race/ethnicity and gender (Table 3), receipt of opioids for any dental diagnosis was higher among African-American women (OR=3.29, 95% CI, 3.18–3.40) and Non-Hispanic white women (OR=3.24, 95% CI, 3.14–3.35) than for Hispanic women. African American men were less likely to receive an opioid compared to Non-Hispanic white men (OR=0.88, 95% CI, 0.86–0.90).

Following stratification by provider source (Table 4), African Americans and whites were more likely to receive an opioid when diagnosed at an emergency department compared to Hispanic patients (OR=1.69, 95% CI, 1.59–1.81 and OR=2.03, 95% CI, 1.91–2.16) respectively. African American patients were 50% more likely to receive an opioid following a dental diagnosis by a dentist compared to Non-Hispanic white patients (OR=1.53, 95% CI, 1.47–1.58) and were nearly three times more likely to receive an opioid by a dentist compared to Hispanic patients (OR=2.81, 95% CI 2.68–2.96). Figure 1 and 2 shows the percentage of opioid receipts following select dental diagnoses by gender and race/ethnicity stratified by ED providers and dentists. Overall, there was no differences observed by gender and race/ethnic differences in receipt of opioid prescriptions by the two provider types, but there were differences between the two providers. For example, ED providers are less likely to prescribe an opioid for diseases of the hard tissue, teeth, and jaws and more for pulp and periapical conditions compared to dentists regardless of the gender or race/ethnicity of the patient.

DISCUSSION

One of the more difficult challenges for healthcare providers is pain management. Dental pain is intense and localized¹¹ which makes it difficult to manage in ways that are unlike other non-cancer pains experienced by patients. Care is sought for most dental complaints due to sensitivity or pain in the teeth or soft tissues in the oral cavity. Assessing patients and proposing effective and comprehensive pain management that minimizes opioid dependence risk while optimizing pain symptom relief is incumbent on providers, especially those who offer specialized professional care like dentists or those who are unable to provide a definitive diagnosis and treat the etiology of pain such as ED providers or nurse practitioners. Almost a quarter of opioid prescriptions (23.4%) were provided for an outpatient dental diagnosis in the Medicaid population evaluated between 2013 and 2015. Earlier studies assessing prescribing rates for opioid medications for NTDCs have shown steadily increasing rates, from 38% in 1997–2000, to 45% in 2003–2007²⁴, to 50.3% between 2007 and 2010¹⁸. According to NAMCS data, half (49.7%) of opioid prescriptions were related to dental/jaw pain of ED discharges from 2006–10. Our study findings are somewhat lower (38.4% for EDs) and this may be attributed to differences in study design and data source. Our study cohort is derived from all ages and only outpatient dental claims.

We found that women were 50% more likely to fill an opioid prescription for any dental diagnosis than men. This may be attributable to a higher nociception and lower pain tolerance threshold among women when compared to men²⁰. Findings from an earlier study suggested that women might be 10% more likely to receive an opioid for dental pain

management in an ED, but this was found to be non-significant²³. Our findings are consistent with other studies that report, regardless of the diagnosis, women (38.8%) were more likely to be prescribed an opioid than men (33.9%)¹⁹. The magnitude of race and ethnic disparities were similar to those found by gender. Opioid prescriptions rates for any dental diagnosis were nearly three times higher for African-American and Whites than for Hispanic females. White males filled slightly more opioid medications than African-American males (12%) in our study.

The racial disparities found in this study can be compared to results from two additional studies that assessed dental related conditions. A study utilizing NAMACS data²⁵ that evaluated emergency department visits for tooth pain showed that African-Americans were nearly two times less likely to get an opioid prescription in the ED. It must be noted that the study population included Medicare, Medicaid, privately insurance and uninsured patients, and so the disparity noted was slightly higher than our Medicaid-only study findings. Another study that examined emergency department utilization for NTDCs found no observable difference for opioid prescriptions when stratified by race¹⁸. The disparities, and the associated variation noted between them, are due both to a different study population and a different reason for the initial emergency department visit.

Racial disparities in emergency department pain management for various types of postoperative, nonmalignant, chronic and malignant pain have been well described for acute medical and surgical issues^{17, 26–30}. Our findings reiterate racial and gender disparities in prescription provision that are echoed in medical diagnoses. In medicine, these differences have been attributed to various factors, including the suggestion that provider's own unconscious biases and cultural differences between provider and patient have an influence¹⁴. In a study³¹ that controlled for several factors while investigating the effects of patient race and gender on provider prescribing patterns, male physicians provide more pain relief to white patients and female physicians provided more pain relief to African-American patients. Another study reported that African-Americans are less likely to receive an opioid prescription compared to white patients by medical providers for noncancer pain³². In our study, African Americans were less likely to receive an opioid following a dental diagnosis compared to Non-Hispanic whites when the provider source was a medical specialist or the ED. However, when the opioid was prescribed following a dental diagnosis from a dentist or nurse practitioner, African Americans were more likely to receive an opioid. Additionally, African American and Non-Hispanic white patients were more likely to receive an opioid following a dental diagnosis compared to Hispanics regardless of provider source.

It appears that pain management for dental conditions is not consistent across various health care providers for some patient groups and these treatment differences may be an indication of the many complexities involved in pain perception, presentation, diagnosis, and treatment. Findings from our study indicate that nurse practitioners prescribed an opioid following a dental diagnosis for about 1 in every 4 Medicaid patients. In a 2006 NAMCS study, nurse practitioners were prescribing opioids two times more often than dentists, but at lower rate than ED providers³⁶. Interestingly, this suggests that nurse practitioners follow similar prescribing patterns as dentists when stratifying by various race/ethnicity characteristics of patients.

Our study shows that ED providers prescribe more opioid prescriptions than any other provider type. With multiple provider sources, differing levels of patient complaint severity and varied levels of care offered, dentists are still prescribing fewer opioid medications than other provider sources. It has been reported that upwards of half of opioid prescriptions are provided for NTDC³³, but these rates have not been compared to other providers sources or treatment modalities. One study analyzing only pharmacy data reported that dentists, unlike their primary care physician (28.8%), internist (14.6%) and orthopedic (7.7%) colleagues, only prescribed opioid medication 8% of the time³⁴. This is consistent with the results of our study that showed 10.8% patients received an opioid following a dental diagnosis by a dentist. This observed rate is also consistent with the overall national rate where approximately 12% of opioids are prescribed by dentists^{4, 35}. In fact, the contribution by dentists to the overall national rate of opioid prescriptions in the US is the lowest when compared to other provider sources in our study. Dentistry was third in opioid prescription rates among commercial claims in North Carolina³².

A promising intervention demonstrated that changing prescribing guidelines for ED providers was associated with a reduction in both the rate of opioid prescriptions provided and the total number of visits to the ED for patients who presented with dental pain³⁷. However, it was not clear whether these guidelines addressed the underlying racial or ethnic disparities observed in other studies. One area that can benefit from additional research is the evaluation of pre-doctoral educational curriculum and professional continuing educational efforts that focus on improving pain management while reducing disparities in receipt pain medications (e.g., opioids) among underserved groups.

Although we found differences in receipt of opioids for dental diagnoses by gender and race/ethnicity overall, this difference is not affected by the type of dental diagnosis received (see Figure1 & 2). Interestingly, differences between ED providers and dentists in the proportion of opioid prescriptions provided based on dental diagnoses was significant. This suggests that ED providers and Dentists may record dental diagnoses (ICD -9 CM codes) differently. For example, ED providers may rely more on the symptoms and visual presentation of the dental condition rather than the actual etiology of the dental event. This raises important considerations for future health services research, especially as medical and dental health records become more integrated.

Because our study was limited to a Medicaid cohort, our findings are not generalizable to the US population. Thus, additional work should be done in to identify similar race/ethnic differences in a commercially insured population. The Truven database does not contain patient-level pharmacy drug dosage data, so we were unable to definitively quantify the amount of opioids prescribed for each individual and express those amounts in morphine milligram equivalents. Finally, we had many unknown provider sources, which may contribute non-systematic error to our analyses. Although there are some limitations to our study, strength of our study is the large number of contemporaneous claims from a population that typically underutilizes the dental health care system. Finally, our study reports on differences observed among race/ethnic and provider sources in receipt of opioid prescriptions for dental diagnoses among the Medicaid population.

Conclusion

There are significant differences in receipt of an opioid following a dental diagnosis based on patients' race/ethnicity and gender in the Medicaid population. There are also differences in the prescribing patterns of dentists and ED providers as well. Non-Hispanic white and African-American women are more likely to receive an opioid following a dental diagnosis than any other group. The contribution by dentists to the overall opioid prescriptions provided is 10.8% and is the least among all provider sources examined. Although race/ethnic or gender differences for receipt of an opioid are not influenced by the type of dental diagnoses, there were differences by dental diagnostic types and receipt of opioids between ED providers and dentists.

Implications for Dental Practice

Overall, dentists are substantially providing less opioid prescriptions compared to their medical colleagues for pain treatment following a dental diagnosis in the Medicaid population we examined. When considering pain management for dental and oral health related conditions, dentists should continue to implement conservative prescribing practices as recommended.

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Abbreviations

MMEs	Morphine Milligram Equivalents
NIH	National Institutes of Health, ICD-9-CM
CI	Confidence intervals
ED	Emergency Department
NAMCS	National Ambulatory Medical Care Survey
NTDCs	nontraumatic dental conditions
ICD-10 CM	International Classification of Disease Tenth edition Clinical Modification
ICD-9 CM	International Classification of Disease Ninth edition Clinical Modification

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Figure 1.
Percent of opioid prescriptions following select dental diagnosis by gender and stratified by provider source.

Figure 2.
Percent of opioid prescriptions following select dental diagnosis by race and stratified by provider source.

Table 1

Distribution of Medicaid patients receiving opioids within 14 days of a dental Diagnosis By selected characteristics.

	Patients with Dental Diagnosis		Patients with Opioid Prescriptions		
	n	%	n	%*	%#
Total	891,720	100.0	209,296	100.0	23.4
Age group in years					
<18			50,008	23.9	10.2
19–29	132,770	14.9	63,436	30.3	47.8
30–39	101,929	11.4	49,349	23.6	48.4
40–49	60,914	6.8	24,702	11.8	40.6
50–64	65,387	7.3	20,567	9.8	31.5
65+			1,234	<1.0	3.0
Gender					
Males	380,286	42.7	71,509	34.2	18.8
Females	511,434	57.4	137,787	65.8	26.9
Race/ethnicity					
Whites	480,208	53.9	120,903	57.8	25.2
African-American	218,453	24.5	54,025	25.8	24.7
Hispanics	76,809	8.6	7,486	3.6	9.8
Other Ethnicities	116,250	13.0	26,882	12.8	23.1
Provider source					
Emergency Department					
Dentist					
Medical Specialist					
Nurse Practitioner					
Other Sources					
Unknown					
Dental Diagnoses					
Diseases of hard tissues: tooth	634,416	71.1			23.8

	Patients with Dental Diagnosis		Patients with Opioid Prescriptions		
	n	%	n	% [*]	% [#]
Pulp and Periapical diseases	78,619	8.8			43.8
Diseases of soft tissues of oral cavity	27,828	3.1			21.3
Gingival and periodontal diseases	150,857	16.9			12.1

Notes:

- * percent of opioid prescriptions within a cohort characteristic (i.e., column percent);
- # percent of opioid prescriptions for a specific category within cohort characteristic (i.e., row percent)

Table 2

Multivariable regression results for Medicaid patients receiving opioids within 14 days of a dental diagnosis.

		Reference	OR [*]	95% CI [#]	
Provider source	Emergency Department	Dentist	4.66	4.59	4.74
	Medical Specialist	Dentist	1.98	1.94	2.01
	Nurse Practitioner	Dentist	2.64	2.57	2.70
	Other Sources	Dentist	1.57	1.53	1.60
Gender	Female	Male	1.53	1.52	1.55
	White	Hispanic	2.11	2.05	2.17
Race/ethnicity	African-American	Hispanic	1.88	1.83	1.93
	Others	Hispanic	1.92	1.86	1.98

Dependent variable is receipt of an Opioid and adjusted for gender, race/ethnicity, and provider source;

* OR= Odds Ratio;

Confidence Interval

Table 3

Multivariable regression results for Medicaid patients receiving opioids by race/ethnicity stratified by gender.

	Reference	Gender	OR [*]	95% CI [#]	
Race/ethnicity	African-American	Female	3.29	3.18	3.40
	African-American	Female	1.23	1.21	1.26
	African-American	Female	1.01	1.00	1.03
	Others	Female	2.67	2.58	2.77
	White	Female	3.24	3.14	3.35
	Others	Female	0.82	0.81	0.84
	African-American	Male	2.47	2.37	2.57
	African-American	Male	0.83	0.81	0.86
	African-American	Male	0.88	0.86	0.90
	Others	Male	2.96	2.84	3.09
	White	Male	2.80	2.70	2.92
	Others	Male	1.06	1.03	1.08

Dependent variable is receipt of an Opioid and adjusted for, gender, race/ethnicity, and provider source;

* OR= Odds Ratio;

Confidence Interval

Table 4

Multivariable regression results for Medicaid patients receiving opioids by race/ethnicity stratified by provider source.

	Reference	Provider source	OR *	95% CI#
Race/ethnicity	African-American	Emergency Department	0.91	0.89 0.94
	African-American	Emergency Department	0.84	0.82 0.85
	African-American	Emergency Department	1.69	1.59 1.81
	Others	Emergency Department	0.91	0.89 0.94
	Others	Emergency Department	1.85	1.74 1.98
	White	Emergency Department	2.03	1.91 2.16
	African-American	Medical Specialist	1.05	1.02 1.09
	African-American	Medical Specialist	0.93	0.91 0.96
	African-American	Medical Specialist	1.95	1.85 2.06
	Others	Medical Specialist	0.89	0.86 0.92
	Others	Medical Specialist	1.85	1.75 1.97
	White	Medical Specialist	2.09	1.98 2.20
	African-American	Nurse Practitioner	1.09	1.01 1.17
	African-American	Nurse Practitioner	1.14	1.09 1.20
	African-American	Nurse Practitioner	2.16	1.91 2.44
	Others	Nurse Practitioner	1.05	0.98 1.13
	Others	Nurse Practitioner	1.98	1.74 2.26
	White	Nurse Practitioner	1.89	1.67 2.13
	African-American	Other Sources	0.82	0.77 0.86
	African-American	Other Sources	0.56	0.54 0.58
	African-American	Other Sources	2.45	2.18 2.75
	Others	Other Sources	0.69	0.66 0.73
	Others	Other Sources	3.00	2.66 3.40
	White	Other Sources	4.36	3.89 4.89
	African-American	Dentist	1.71	1.63 1.81
	African-American	Dentist	1.53	1.47 1.58

		Reference	Provider source	OR [*]	95% CI [#]
	African-American	Hispanic	Dentist	2.81	2.68 2.96
	Others	White	Dentist	0.89	0.85 0.93
	Others	Hispanic	Dentist	1.64	1.55 1.74
	White	Hispanic	Dentist	1.85	1.77 1.93

Dependent variable is receipt of an Opioid and adjusted for, gender, race/ethnicity, and provider source;

^{*} OR= Odds Ratio;

[#] Confidence Interval