Published in final edited form as:

Subst Abus. 2016 ; 37(1): 9–14. doi:10.1080/08897077.2015.1127870.

Dental opioid prescribing practices and risk mitigation strategy implementation: Identification of potential targets for provider-level intervention

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Abstract

Background—Given the regular use of immediate release opioids for dental pain management, as well as documented opioid misuse among dental patients, the dental visit may provide a viable point of intervention to screen, identify, and educate patients regarding the risks associated with prescription opioid misuse and diversion. The aims of this statewide survey of dental practitioners were to assess: (a) awareness of the scope of prescription opioid misuse and diversion; (b) current opioid prescribing practices; (c) use of and opinions regarding risk mitigation strategies; and, (d) use and perceived utility of drug monitoring programs.

Methods—This cross-sectional study surveyed dentists (N=87) participating in statewide professional and alumni organizations. Dentists were invited via email and listserv announcement to participate in a one-time, online, 59-item, self-administered survey.

Results—A majority of respondents reported prescribing opioids (n=66; 75.8%). A minority of respondents (n=38; 44%) reported regularly screening for current prescription drug abuse. Dentists reported low rates of requesting prior medical records (n=5; 5.8%). Only 38% (n=33) of respondents had ever accessed a prescription drug-monitoring program (PDMP), and only 4 (4.7%) consistently used a PDMP. Dentists reporting prior training in drug diversion were significantly more likely to have accessed their PDMP, $p<0.01$. Interest in continuing education

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AUTHOR CONTRIBUTIONS

All co-authors made significant contributions to the submitted manuscript. Drs. McCauley, Leite, Melvin, Fillingim, and Brady participated in the research conception and design. Drs. McCauley, Leite, Melvin, and Brady participated in the development of the survey instrument and collection of data. Dr. McCauley was responsible for the analysis and interpretation of results. Drs. McCauley, Leite, Melvin, Fillingim, and Brady all made significant contributions to the writing and editing of the manuscript.

The authors declare that they have no conflicts of interest.

regarding assessment of prescription drug abuse/diversion and use of drug monitoring programs was high.

Conclusions—Although most dentists received training related to prescribing opioids, findings identified a gap in existing dental training in the assessment/identification of prescription opioid misuse and diversion. Findings also identified gaps in the implementation of recommended risk mitigation strategies, including screening for prescription drug abuse, consistent provision of patient education, and use of a PDMP prior to prescribing opioids.

Keywords

Prescription opioids; Dentists; Prescription drug monitoring program

INTRODUCTION

Prescription opioid abuse, diversion, and overdose continue be significant and challenging public health problems in the U.S.[1,2] Recent epidemiologic data suggest a plateau in rates of diversion and abuse,[3,4] and credit multifaceted and ongoing policy, educational, and best practice initiatives intended to balance appropriate access to opioids with risk mitigation strategies.[5] Many of these initiatives have identified intervention with prescribers as critical in addressing the prescription opioid misuse epidemic.[6–9]

Dentists prescribe approximately one of every ten immediate release opioids dispensed, and opioid prescriptions account for a notably high proportion of all dental prescriptions filled.[10,11] The limited literature suggests that: (a) dental patients may be particularly vulnerable to personal abuse and misuse; (b) dental patients regularly have leftover opioids that source a significant minority of non-medical use; and, (c) community-level access to dental care is associated with higher rates of opioid abuse via increased availability of prescription opioids.[12–14] Despite regularly encountering patients with addiction, dentists report limited exposure to addictions training and generally lack access to systems that aid in screening, intervention, and referral to addictions treatment.[15,16] Further, limited available reports suggest that dentists do not regularly implement risk mitigation strategies - such as accessing a prescription drug monitoring program (PDMP) - when prescribing opioids.[17] PDMPs collect data from pharmacies on dispensed controlled substances and make it available to authorized prescribers and pharmacists to assist in identifying patients with at risk for diversion, abuse, or overdose.[18–20]

Initial efforts have been made to develop and implement opioid prescribing risk mitigation strategies in primary care practices.[6,21] however, extension of these efforts to dental practitioners has been limited.[22] The aims of this statewide survey of dental practitioners were to assess: (a) awareness of the scope of prescription opioid misuse and diversion, (b) current opioid prescribing practices, (c) use of and opinions regarding risk mitigation strategies, and (d) use and perceived utility of drug monitoring programs.

METHODS

Recruitment and Participants

An invitation to participate in the study was disseminated via listserv email to the members of the statewide dental association (1,638 emails sent, 632 viewed, 164 linked to survey) and via email to the membership of the state's dental college alumni association (728 emails sent). Dentists were invited to participate in a brief, one-time, anonymous, online survey regarding their views and experiences prescribing opioids in their practice. Participation was voluntary and respondents could exit the survey at any time. Participants were offered compensation of $20 for their time. The Institutional Review Board approved all methods and procedures. A total of 87 dentists consented to the survey, and 86 completed the survey.

Survey Instrument

The Dental Prescriber Survey was developed specifically for this project. The survey was modeled after previous provider surveys regarding opioid analgesic prescribing practices and opinions.[23] All survey items and response options were evaluated by a focus group (n=9) of dental practitioners and suggested edits were made to enhance clarity and relevance. The final survey instrument consisted of a total of 59 possible items. Skip logic was used to ensure that dentists only responded to relevant items. For example, dentists indicating having never prescribed opioids were not queried regarding their opioid prescribing practices. A copy of the survey instrument is available upon request. Data were collected and managed in November, 2014 using the Research Electronic Data Capture (REDCap) tool.[24]

Data Analysis

Descriptive analyses—including means, standard deviations, and frequencies, where appropriate, were conducted using SPSS v. 22.

RESULTS

Participant Demographics

The majority of participants were male (n=56; 64%), endorsed being white/non-Hispanic (n=82; 94%), were a mean average of 51 (+/− 12.3) years, and reported working in a general dentistry practice (n=69; 79%). See Table 1 for additional participant characteristics.

Opioid Prescribing Practices

A total of 66 dentists reported prescribing opioids for pain management. Dentists reported frequently recommending nonsteroidal anti-inflammatory drugs (NSAIDs; M = 47% of instances, +/−30%) and/or prescribing an opioid combination product (M = 50% of instances, +/− 29%) for the management of acute pain. Dentists reported recommending acetaminophen (M = 20% of instances, +/−23%) and/or prescribing a non-combination opioid analgesic (M = 21% of instances, +/−29%) somewhat less frequently. Each dentist identified the three procedures most likely to elicit an opioid prescription in his/her practice. The procedures for which dentists most commonly endorsed prescribing opioids were: tooth extraction (n=61 (92% of) dentists); root canal (n=36 (55% of) dentists); implant placement (n=16 (24% of) dentists); periodontal surgery (n=15 (23% of) dentists); bone graft (n=7

(11% of) dentists); biopsy (n=4 (6% of) dentists); pre-prosthetic surgery (n=3 (5% of) dentists); restoration (n=3 (5% of) dentists); sinus lift (n=2 (3% of) dentists); soft tissue graft (n=2 (3% of) dentists); orthognathic surgery (n=1 (2% of) dentists); and, other oral surgery (n=28 (42% of) dentists). Opioids most frequently prescribed for these procedures included: Lortab (Hydrocodone/acetaminophen; 38%), Hydrocodone (33%), Vicodin (Hydrocodone/acetaminophen; 10%), Tylenol 3 (Codeine/acetaminophen; 7%), and Percocet (Oxycodone/acetaminophen; 5%).

Awareness and Training

Whereas a majority of dentists reported that their medical history collection included screening for current tobacco use (n=80; 93%), current alcohol use (n=56; 65%), and current illicit drug use (n=50; 58%), a minority (n=38; 44%) included screening for current prescription drug abuse. Most dentists (n=73; 84%) perceived diversion to be either not much or not at all a problem in their practice. Perception of the scope of diversion was not significantly associated with specialty (General v. Specialist; $F(1,84) = .10$) or having ever prescribed opioids ($F(1,84) = .06$). A minority of dentists (n=24) reported participating in training regarding identification of drug diversion in dental school (n=7), residency (n=7), or continuing education (n=17). The majority of these training experiences were brief - a few hours or less (50%) or more than a few hours, but less than a full course (33%). Most dentists reported interest in receiving (additional) training in opioid prescribing (n=49), identification of drug abuse and addiction (n=58), identification of prescription drug diversion (n=59), and use of a PDMP (n=61).

Risk Mitigation Strategies

Frequencies of dental risk mitigation implementation are displayed in Table 2. Reasons for inconsistent patient education regarding risks associated with opioid misuse included believing: patients already knew the information (n=33; 50%); it was not necessary for short-term prescriptions (n=29; 44%); patients would not pay attention (n=28; 42%); the pharmacists would provide education (n=22; 33%); there was not enough time (n=18; 27%); they would feel uncomfortable having the conversation with patients (n=9; 14%), and patients would not understand the information (n=9; 14%).

Prescription Drug Monitoring Program (PDMP)

Information regarding dentists' use of the PDMP is provided in Table 3. A minority of dentists (n=33) reported ever having accessed PDMP data when prescribing. Among non-users (n=53), the most cited reasons for never using included: being unaware of its existence (n=38; 72%); not knowing how to access or use the PDMP (n=16; 30%); not needing the information (n=3; 6%); believing the information would not have an impact on prescribing (n=3; 6%); and, not having enough time (n=2; 4%). Dentists reporting prior training in identification of drug diversion were significantly more likely than dentists without such training to have accessed the PDMP, χ^2 (1, N=86) = 8.20, p<.01.

DISCUSSION

The Office of National Drug Control Policy, U.S. Department of Health and Human Services, and the National Institute on Drug Abuse have identified prescribers as critical points of intervention in curbing the prescription drug abuse epidemic.[25–27] Training prescribers in the implementation of risk mitigation strategies, including PDMP use and patient education, is a key component of the national strategy to prevent opioid abuse and diversion.[25] The current study is the first (to the authors' knowledge) to present targeted information regarding knowledge, training experiences, and implementation of opioid prescribing risk mitigation strategies among an often overlooked group of opioid prescribers - dentists.

A significant proportion of dentists reported prescribing opioids for management of acute pain related to dental procedures, such as tooth extraction, root canal, or implant placement. Consistent with the limited previous research, most dental opioid prescriptions were for immediate release formulations, specifically hydrocodone products.[28] Hydrocodone and oxycodone combination products have been identified as the most prevalent drugs of choice among prescription opioid abusers and diverters.[29] In response, the Drug Enforcement Agency (DEA) recently rescheduled hydrocodone products as a Schedule II controlled substance.[30] This survey was conducted less than one month after the schedule change and results likely represent dental prescribing practices prior to this schedule change. However, the current findings do suggest that dentists may be particularly impacted by the increased regulation and prescribing requirements associated with the reschedule of hydrocodone,[31] and may be particularly sensitive to considering alternatives for post-procedural pain management.[32]

A universal precautions approach in which education is provided to every patient prescribed an opioid has been recommended and initial efforts to develop and evaluate patient-education tools has shown some promise.[33,34] One-in-three dentists reported consistently reviewing potential opioid side effects with patients; however, far fewer reported consistently engaging patients in discussion of the appropriate use, secure storage, and safe disposal of their medication. Inconsistent patient education has been identified across various prescriber groups.[35,36] However, in contrast to other prescriber groups, structural and organizational factors were not leading reasons for the inconsistent risk mitigation implementation among dentists.[37] Dentists reported inconsistent patient education resulting from perceptions that patients already knew (or would not pay attention to) information and that education was not needed for short-term opioid prescriptions. These perceptions may combine with low perceived risk of abuse and diversion among their patients to impede consistent patient education. The vast majority of dentists viewed abuse and diversion as being "not much" or "not at all" a problem among the patients in their practice, despite a similar majority reporting that they had refrained from prescribing opioids in the past year due to suspected diversion.

In light of evidence suggesting that prescribers often have inaccurate perceptions of patients' risk for abuse or diversion,[38] consistent use of PDMP data to inform prescribing decisions has been recommended.[7,39–41]. Unfortunately, only 38% of respondents had ever accessed a

PDMP. Multiple barriers to consistent prescriber PDMP use have been identified for other prescriber groups, including: lack of awareness, accessibility, quality and interpretability of data, uncertainty regarding how to respond in instances of suspected diversion or abuse, fear of legal retribution, and privacy/data security concerns.[42–45] Whereas some states have enacted legislating mandating the use of a PDMP prior to prescribing,[41] PDMP use was not mandated for dentists in the current study. The overwhelming majority of dentists reported never using their PDMP because were not aware it existed or did not know how to access it. The vast majority of dentists reporting PDMP use found it at least somewhat helpful and PDMP use generally contributed to prescribing fewer opioid doses.

This study has several notable limitations. All data were derived from an online survey of dentists. Data were self-reported and retrospective in nature. Responses were anonymous to promote honest and accurate completion of the survey. Additional information regarding prescriber and practice characteristics would assist in targeting intervention and educational efforts. No behavioral or objective prescribing data were collected. Recruitment was limited by use of email and listserv announcement sent to one state's dental association membership. As a result, the sample size was small and self-selected, thus limiting the potential generalizability of findings. Future efforts should enhance representativeness by extending recruitment nationally. The necessary brevity and closed-ended response options limited the amount and depth of information collected. Additional work is also warranted to clarify and/or expound on survey responses, particularly with respect to the recency and helpfulness of dentists' training experiences, as well as common barriers and facilitators of dentists' PDMP use and provision of patient education.

The current study yields important insights that should guide future efforts to extend continuing education regarding opioid prescribing risk mitigation strategies to dental practitioners. Dentists represent an oft-neglected segment of opioid prescribers who may be particularly vulnerable to patient attempts to divert medication. Though training in identification of drug diversion was significantly associated with dentists' use of their PDMP prior to prescribing, and an overwhelming majority of respondents reported interest continuing education opportunities, most dentists in the current study had not received training regarding strategies to identify and prevent opioid diversion in their practice. Best practice recommendations consider NSAIDs to be the first-choice drug in most situations.[46,47] This recommendation is consistent with research on management of acute, post-procedural dental pain management demonstrating that optimal doses of NSAIDs are superior to single-entity opioids, and at least as effective as optimal doses of peripheral/opioid combination drugs (e.g., Percocet).[46] It is recommended that opioid analgesics be reserved for a minority of situations in which optimal doses of NSAIDs and/or acetaminophen/aspirin provide insufficient pain management.[46,47]

Education and awareness campaigns are needed to address common misperceptions among dentists regarding these best practice prescribing recommendations, as well as the relative risk for abuse and diversion among their patients and highlight the relevance of universal risk mitigation implementation to their practice. Accessible and actionable continuing education opportunities should be combined with continued policy and outreach efforts to encourage dentists to: (1) consider non-opioid alternatives for pain management: (2)

consistently use PDMP resources to inform prescribing decisions; and, (3) standardly educate patients regarding safe use, storage, and disposal (of unused) medications.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

The authors would like to thank the South Carolina Dental Association for assistance with recruitment and participating dentists for sharing their valuable perspectives.

FUNDING

This research was supported by the National Institute on Drug Abuse grants K12-DA031794 and K23-DA036566 and by the South Carolina Clinical & Translation Research (SCTR) Institute, with an academic home at the Medical University of South Carolina, through NIH Grant Number UL1-TR000062.

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Table 1

Characteristics of dentists and their dental practices (n=87).

Variable	N	%
Age		
Under 30	3	3.4
30 to 39	16	18.4
40 to 49	13	14.9
50 to 59	25	28.7
60 to 69	23	26.4
70 or older	1	1.1
Race		
White, Non-Hispanic	82	94.3
Asian/Pacific Islander	2	2.3
Other	1	1.1
African American/Black	0	---
Hispanic/Latino	0	---
Native American	0	---
Multiracial	0	---
Specialty		
General Dentistry	69	79.3
Oral & Maxillofacial Surgery	8	9.2
Periodontics	5	5.7
Pediatric Dentistry	2	2.3
Endodontics	1	1.1
Other	1	1.1
% Time Providing Direct Patient Care		
81% to 100%	60	69.0
61% to 80%	18	20.7
41% to 60%	5	5.7
21% to 40%	3	3.4
Up to 20%	0	---
Practice Type *		
Solo, Private Practice	46	52.9
Two Dentists, Private Practice	22	25.3
Group, Private Practice	15	17.2
Academic Training Center	6	6.9
Other	2	2.3
Military/Veterans Affairs	0	---
Hospital	0	---
Practice Location		
Small Town	30	34.5
Urban	26	29.9

Variable	N	%
Suburban	24	27.6
Rural	6	6.9
Payment Forms Accepted by Practice *		
Self-Pay/Uninsured	85	97.7
Private Insurance	83	95.4
Medicaid	44	50.6
Medicare	12	13.8
Other	6	6.9

Note.

* Respondents could select all options that applied to their practice. Not all variables sum to 100% due to missing or skipped items.

Table 2

Opioid prescribing dentists' reported implementation of strategies intended to mitigate the risk of opioid misuse and diversion among patients (n=66).

Question Stem, Response Options	N	%
Obtain records and medication history prior to prescribing?		
Almost Always	5	7.6
Most of the Time	4	6.1
Sometimes	7	10.6
Few of the Times	20	30.3
Almost Never	30	45.5
Explain risks associated with taking opioids as prescribed?		
Always	7	10.6
Almost Always	9	13.6
Most of the Time	11	16.7
Sometimes	15	22.7
Few of the Times	5	7.6
Almost Never	13	19.7
Never	6	9.1
Review potential side effects of opioids?		
Always	21	31.8
Almost Always	13	19.7
Most of the Time	9	13.6
Sometimes	13	19.7
Few of the Times	3	4.5
Almost Never	4	6.1
Never	3	4.5
Discuss importance of secure storage to prevent diversion?		
Always	13	19.7
Almost Always	4	6.1
Most of the Time	2	3.0
Sometimes	13	19.7
Few of the Times	4	6.1
Almost Never	18	27.3
Never	12	18.2
Discuss appropriate disposal of unused medication?		
Always	10	15.2
Almost Always	4	6.1
Most of the Time	3	4.5
Sometimes	5	7.6
Few of the Times	3	4.5
Almost Never	21	31.8
Never	19	28.8

Question Stem, Response Options	N	%
Discuss risks associated with non-medical opioid use?		
Always	13	19.7
Almost Always	8	12.1
Most of the Time	8	12.1
Sometimes	15	22.7
Few of the Times	5	7.6
Almost Never	8	12.1
Never	9	13.6
Likelihood of refilling prescription for acute pain management? *		
Very Likely	4	8.5
Somewhat Likely	10	21.3
Not Likely	15	31.9
Do not provide refills without follow-up	18	38.3
Refrained from prescribing due to suspected abuse or diversion (past year)?		
Yes	51	77.3
No	15	22.7

Note.

* Question only asked of dentists endorsed patients had requested refills (n=47).

Table 3

Dentists' reported use of a prescription drug monitoring program (PDMP; n=33)

Question Stem, Response Options	N	%
Use PDMP prior to initial prescribing of an opioid for pain management?		
Always	4	12.1
Almost Always	0	---
Most of the Time	1	3.0
Sometimes	7	21.2
Few of the Times	4	12.1
Almost Never	9	24.2
Never	8	24.2
Use PDMP prior to initial prescribing for "high-risk" patients?		
Always	10	30.3
Almost Always	3	9.1
Most of the Time	4	12.1
Sometimes	1	3.0
Few of the Times	4	12.1
Almost Never	4	12.1
Never	7	21.2
Use PDMP prior to prescribing to a "new" patient?		
Always	5	15.2
Almost Always	0	---
Most of the Time	2	6.1
Sometimes	7	21.2
Few of the Times	1	3.0
Almost Never	4	12.1
Never	7	21.2
Use PDMP prior to issuing refill prescriptions?		
Always	5	15.2
Almost Always	2	6.1
Most of the Time	3	9.1
Sometimes	9	27.3
Few of the Times	1	3.0
Almost Never	6	18.2
Never	6	18.2
Helpfulness of information accessed in the PDMP?		
Very Helpful	16	48.5
Somewhat Helpful	13	39.4
Not Very Helpful	3	9.1
Not Helpful At All	0	---
How did PDMP information alter opioid prescribing for that patient?		
Often/sometimes led to prescribing more	0	---

Question Stem, Response Options	N	%
Often/Sometimes led to prescribed less	11	33.3
Often/Sometimes led to not prescribing	13	39.4
Did not ever change prescribing decision(s)	7	21.2
Verified existing suspicion	1	3.0

Note. Percentages may not sum to 100% due to missing data.