

Shared Decision-Making for Pain Management After Third Molar Extractions in Adolescents: A Qualitative Study

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Abstract

Background: Understanding how adolescent patients and their parents make decisions about pain management after complex dental procedures could help reduce the use of opioid medications in this population. This study explored how adolescent patients and their parents make decisions about pain management after third molar extractions.

Methods: Participants were identified from administrative databases based on age (15-17 years) and a dental extraction performed in the last 8 days. Structured interviews were conducted by phone, with interview guides tailored separately to patients and parents. De-identified interview transcripts were analyzed using qualitative analysis software using a directed content analysis approach.

Results: A total of 15 patient/parent dyads were interviewed. There was high concordance in terms of shared decision-making and pain management views in this dyadic sample. In addition to conversations with their dentist, most patients and their parents discussed pain management plans that included non-medication options, over-the-counter medications, and opioid medications to be taken as needed. All participants reported that the adolescent received an opioid prescription for post-extraction pain management but most only took it the day of the extraction and up to 2 days following, usually based on the patient's reported pain levels and perceptions of over-the-counter medication adequacy. Participants said they did not receive guidance from their provider concerning disposal of unused opioid medications.

Conclusions: Shared decision-making concerning pain management was common for adolescents and their parents following third molar extractions. Providers may have an opportunity to reduce the number of opioids prescribed, since respondents reported little to no use of opioids that they were prescribed. Providers should educate patients and their parents about safe disposal of opioids to mitigate the potential for diversion.

Trial registration: not applicable

Background

Opioids are currently the most commonly prescribed class of medications for the treatment of acute as well as chronic pain in the United States. According to the Centers for Disease Control and Prevention, these medications make a significant contribution to our nation's epidemic of fatal and non-fatal overdoses. (1–4) Exposure to an opioid before completing high school graduation is independently associated with future opioid misuse among low-risk children.(5)

Such findings are particularly relevant to dentistry, in that an estimated 5 million people undergo third-molar extractions in the United States each year.(6) The majority of dental practitioners report prescribing opioid medications, predominately hydrocodone, following third molar extractions.(7) Because third molar surgery is more difficult as patients age, the American Association of Oral and Maxillofacial Surgery recommends removing third molars associated with disease, or at high risk of developing

disease, by a patient's mid-twenties.(8) Dentist-prescribed opioids account for nearly one-third of the opioid prescriptions for 11–19 year olds,(9) making dentists the highest opioid prescriber by specialty for this age group.(10) While the overall rate of dentist-prescribed opioids has decreased across all age groups,(11) from 2010–2015, the number of dentist-prescribed opioids for 11–18 year olds increased. (12)

Clinical practice guidelines for all patients, including adolescents, aim to reduce opioid prescribing while adequately and appropriately managing perioperative pain after third molar extractions. While such guidelines have been effective in reducing overall opioid prescribing by dentists,(10, 11) they focus on shifting providers' knowledge and behavior. This approach may overlook a key contributor to opioid use: patients. Little is known about how patients' knowledge, attitudes, and beliefs shape decision-making about opioid use following third molar extractions. Unlike adult patients who share decision-making with their provider alone, adolescent patients often make healthcare decisions in conjunction with their parent or guardian. In the interplay between patients, their parents or guardians, and dentists, each may impact knowledge, attitudes and beliefs shaping opioid use following third molar extraction.

Improving shared decision-making about perioperative pain management associated with third molar extraction may reduce opioid use in favor of safer, lower-risk management options. Self-management skills, such as patient education, decision-making tools, and patient-provider partnership have long been associated with chronic disease management(13), but may be applicable components for acute pain management, too. Shared decision-making is considered the preferential method to discuss treatment or care decisions when no clear treatment option is optimal(14) and has distinct advantages with respect to medication adherence.(15) Shared decision-making may increase acceptance of non-opioid medications. (16)

Given the higher risk for substance use among adolescents and the opportunity for shared decision-making about acute pain management, this qualitative study explores how teens manage pain and their experience with opioid and non-opioid analgesics after permanent tooth extractions, including the duration of opioid use when taken. Better understanding about patients' and their families' experience with perioperative pain associated with third molar extractions may improve how dentists communicate family-centered strategies to reduce opioid prescribing, use, and potential diversion.

Methods

This study was approved by HealthPartners Institute Institutional Review Board. The procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation. Informed consent was obtained from all adult participants and informed assent was obtained from all participants under the age of 18.

Recruitment and consent data were collected and managed using REDCap electronic data capture tools hosted at HealthPartners Institute. REDCap (Research Electronic Data Capture) is a secure, web-based

software platform designed to support data capture.(17) For this project, it provided an intuitive interface for validated data capture across multiple roles and users.

Eligibility

Potential participants were identified based on age (years of age 15-17) and recent (<8 days) permanent tooth extraction procedure using a data query of the HealthPartners electronic health record. Any patient who opted out of research participation or did not have a phone number on record was not considered eligible.

Recruitment

A notification letter was sent to the parent/guardian of the patient, inviting them to participate in the research. The letter described the study, offered the opportunity to opt-out, and informed the household that they would receive a call from the study team. Calls were made a week following the letter at different times of day, and days of the week, in order to maximize the potential of reaching eligible participants within the interview window (up to 30 days post-extraction). A voicemail was left on the first and last call attempt. When reached, the study was further described to the parent. If the parent was interested, they were consented over the phone. After an adult consented, the study team member would discuss the study with the adolescent and, if interested, administer verbal assent. The study team member scheduled the interview or transferred the call to the interviewer directly. After interview completion, each respondent received a \$50 gift card to thank them for their time.

Data collection

A total of 30 participants were interviewed (15 adolescent patients and a caregiver/parent for each patient) between May and August 2019. A trained qualitative interviewer conducted all interviews telephonically, with interviews averaging approximately 12 minutes in length. When possible, the interviews were performed separately, so that respondents felt free to respond differently than their pair. One of two (patient or parent) semi-structured interview guides developed specifically for this study was consulted throughout each interview to ensure consistency. Thematic content areas included: knowledge, attitudes, and expectations concerning the dental procedure; pain management decision-making; and pain management behaviors post-extraction. All interviews were audio-recorded, with express permission from the participants, and transcribed for accuracy.

Data analysis

De-identified transcripts were loaded into Atlas.ti 8,(18) a computer assistive qualitative analysis software, where a directed content analysis was applied.(19) Using a constant comparative approach,

(20) three independent coders reviewed emergent themes and repeatedly revisited the data to detect outliers and exceptions. During the initial phase, they performed open coding where they segmented the data into similar groupings and formed preliminary categories regarding the phenomenon of interest, largely surrounding the interview guide questions. During the second phase, they performed axial coding, where they began to assemble categories, building logical connections or relationships among codes to develop more detailed thematic construction. During the final phase, they performed selective coding where they clarified categories and themes and organized the themes to articulate a theory regarding the phenomenon of interest. The coders communicated regularly about the codes and their applications. Through an iterative process, any discrepancies were discussed and reconciled until consensus was reached.

Results

Thirty-eight households were mailed a notification letter, of which one had an inaccurate mailing address. Thirty-seven households entered phone follow-up. Of these, ten were unreachable and four guardians declined participating, five were ineligible (e.g., patient turned 18 years old, parent was dental care provider at HealthPartners). Eighteen guardians consented, but in three instances, the patient was unavailable or unreachable within the maximum number of call attempts or within 30-days post extraction. Fifteen dyads completed an interview. The patient demographics are summarized in Table 1. Adolescents and their parents described experiences in terms of those surrounding the extraction experience itself, which were largely procedural, and behaviors post-extraction, centered on recovery from the procedure, including pain management.

Sources of Information

Adolescents identified parents and other family members, their dental providers, and their peers as sources of information for what to expect during and after the dental procedure, with parents providing similar perspectives. Adolescents who received information from peers described it as more general information regarding the procedure and recovery (e.g., “their cheeks kind of swollen after the extraction”, “be careful and cautious about eating”). Parents and other family members, including older siblings, were identified as sources providing more detailed information, sometimes with a cautionary tale. As was the case with peers, this information was usually based on a parent’s/older siblings’ own experiences, having gone through the same procedure or another surgery-related experience requiring sedation. Dentists and oral surgeons provided information on both the procedure and what to do post-extraction to aid in recovery, and they shared this information with parents and adolescents both before the procedure and again right after the procedure, verbally and through handouts and post-operative information sheets. While the information shared by peers was taken as a way to minimize or generalize the dental extraction experiences, caregivers often warned the adolescents of negative outcomes, such as difficulty with anesthesia, high levels of pain, etc. Information shared by dental providers was highly tactical and was not described as conveying the emotional resonance of the caregivers’ information.

Pain Management Behaviors by Adolescents and their Caregivers

Adolescents and parents alike largely described shared decision-making, where patients and parents discussed pain management options together and a plan was reached that was agreeable to both. Parents largely assisted with organizing the placement and the timing of taking the medications or reminding the child to “stay ahead” of the pain after a plan had been decided upon. In one extreme example a parent (with a health care background) encouraged their child to take an opioid medication, instructing the child to set an alarm to self-medicate in the middle of the night rather than waking up in pain and losing the rest necessary to recuperate. This parent provided a high degree of guidance and control over the pain management process; whereas, the other parents largely gave reminders and support but let their child decide when or if they needed more pain medication and what kind to take.

Two-thirds of the adolescents (n=10) administered their own non-opioid medication. Adolescents and parents explained that this was largely the result of logistical issues (e.g., the parent or adolescent being at work and unable to rely on one another) and the adolescent being responsible enough to handle the dosing. Parents often provided reminders and other structure in the days following the extraction, such as putting the medications on their bedside. Eighty percent of parents (n=12) reported keeping the opioid prescription secured. By doing this, they were able to control when and how it was administered. Input from the adolescent about pain intensity was the most common driver for when opioid medications were given.

The main reason for allowing adolescents to self-medicate was that only they could determine how bad the pain was and whether they needed another dose of pain medication. The following quotes (from unmatched parent and child interviews) illustrate this point.

“Interviewer: How would you say you felt about how much input your child had regarding managing their pain? Parent: I think she had enough input. She was really the driver of it. I mean, whatever she needed, we supported her on what she needed for it.”

“Interviewer: And did you remember discussing with your parents whether or not to take those [opioid] medications? Adolescent: Yeah. Interviewer: What went on there? In that conversation? Adolescent: That if I needed them [opioid medications], if I needed to take it because of the pain, I could take them. But I never really went through that much pain, so I just never took them.”

Parents largely deferred to their child when it came to pain management behaviors and, despite not wanting them to be unnecessarily in pain, parents left it up to their adolescents’ discretion.

The Use of Medications

All participants reported receiving guidance from their dental provider regarding the use of medications for pain management, in addition to receiving antibiotics to assist with the post-operative recovery process. Recommended medications included both over-the-counter products (e.g., ibuprofen, acetaminophen) and prescription opioids (e.g., Vicodin, Tylenol with codeine), but few participants could specifically name the opioid they were given. As one adolescent recalled, "And there was one, but it was for in case I had major pain. It was an opioid. Yeah, I forgot what it was called, but it was in case I had some major pain going on." Either the parent, adolescent, or both from each dyad reported being given an opioid for pain management from their dental provider. While no one reported not filling their opioid prescription, many reported not taking them at all or only taking a couple pills in the first few days following the extraction. Since the prescriptions were to take the medication "as needed" they were taken as prescribed. One parent described the instructions as follows:

"Interviewer: And do you remember how the dentist or oral surgeon sort of advised you about how to manage the pain after surgery? Parent: Yeah, just like Ibuprofen ... you know ice, and [they] gave him a couple of ... again I don't know if it Percocet, Vicodin- Hydrocodone. [They] gave him four. I think of the four he only ended up taking two. One each night, for two nights, just so he could sleep. Interviewer: Mm-hmm (affirmative). Parent: But otherwise, he managed the pain without anything else and within- within a week, well, maybe five days, not even, he was feeling pretty good."

Another parent described both the medications and timing similarly:

"Interviewer: How did the dentist or oral surgeon advise you or your child about managing the pain after the surgery? Parent: Well, [they] just said just use Tylenol, especially the first few days or whatever because her [inaudible], and then [they] also gave out some heavier dose of pain medicine, and [they] says, 'Well, you might want to save these until a few days later when the gas wears off and stuff and actually she's feeling the pain,' which she didn't need to use at all, so that was a good thing, but yeah, they explained both medications to me."

Despite all participants indicating they had been given opioids to take for pain management as needed, not all participants were aware of being given clear instructions about disposal of unused medications. Some participants were given guidance by pharmacists upon filling the prescription, while others were not. Some participants asked about disposal on their own. No participants reported receiving direction on disposal of unused medications from their dentist or oral surgeon.

Discussion

This qualitative examination of pain management decision-making and practices following third molar extractions for adolescents included the perspectives of both the adolescents and their parents – and in doing so demonstrated a consistent and compatible narrative to help guide the practice field. Interviews were conducted within a short time following the extraction, often just 2-3 weeks post-extraction, improving recall of the experience.

While adolescents receive information regarding dental surgery from multiple sources, including their friends, their dental provider, and their parents and older siblings, it is their parent/caregiver that they ultimately turn to for informational support and structure in the post-operative period. Reaching a mutually acceptable plan concerning pain management means the parents have input, but ultimately the adolescents in our sample were responsible for managing their pain and following post-operative instructions. While this was often done for practical reasons (e.g., the parent not being with the child continuously), since pain is a subjective experience this reliance on the adolescent's perceptions of pain to guide dosing is both understandable and appropriate.(21, 22) However, parents in our sample sometimes anticipated their child's pain level based on their own personal experiences with the same or other surgical procedures. Dental providers may want to explain to adolescents and their parents that differences in pain sensitivity impact post-operative pain and encourage adolescents to share their perceived pain levels with their parents/caregivers to help guide and improve the pain management process.

Our findings also support those of Maughan and colleagues,(23) who found that over half of the opioids prescribed following a dental procedure went unused. While their study identified that an average of 28 opioid pills were prescribed to adult participants by their dental providers at the time the study was conducted, and that average opioid prescriptions may be lower now, given the American Dental Association's 2018 opioid prescribing policy,(24) our sample still noted that they were left with unused opioid medications in their home since the OTC medications and other treatments (e.g., icing the jaw to reduce inflammation) were sufficient for managing post-operative pain. Rather than needing 7 days of opioid pain medications, our sample reported using them no more than 2 or 3 days, at most, when there were no other post-operative complications.

Improving Clinical Practice

Since pain following a dental extraction is primarily due to inflammation and nonsteroidal anti-inflammatory drugs target inflammatory pathways, they are generally effective at managing pain following a dental extraction. Clinical trials show that they are at least as effective as opioids. The evidence would suggest that opioids should only be prescribed for the managing only the most severe pain.(25, 26) Our findings indicate that dentists may have opportunities to discuss increasing the dose of nonsteroidal anti-inflammatory drugs and combining them with acetaminophen if the pain is not controlled. Rather than providing patients with any opioids in case of poor pain control, a discussion regarding dosing adjustments to the non-opioid analgesics and adding this information to the instructions sent with the patient should be the norm in clinical practice. Opioid analgesics should be considered only when nonsteroidal anti-inflammatory drugs or acetaminophen are not safe due to known side effects, medical conditions, or drug interactions. If an opioid is prescribed, information should be communicated and sent with the patient instructing them on the disposal of unused medication.

Limitations

Because this was an exploratory qualitative study, our sample size was small. All study participants were recruited from a single health care system in the Midwest where a small number of oral surgeons performed all the extractions described. Additionally, several parents expressed having higher education or occupations in healthcare-related fields. Findings may not generalize to other communities and populations, such as households without insurance coverage, or dentists. Also, we did not obtain information regarding the number of opioids prescribed based on the provider.

Conclusions

Our study sheds light on pain management decision-making for youth undergoing third molar extractions and necessary information to convey to both adolescents and their parents/caregivers. The concordance in patient and parent perspectives identified throughout our data is encouraging from a public health perspective, and indicate the acceptance of non-opioid pain management strategies.

List Of Abbreviations

EDCap -Research Electronic Data Capture

Declarations

Ethics approval: This study was approved by HealthPartners Institute Institutional Review Board. The procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation. Informed consent was obtained from all adult participants and informed assent was obtained from all participants under the age of 18.

Consent for publication: Not applicable

Availability of data: The datasets generated and analyzed during the current study are not publicly available due their potentially identifiable nature but are available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interests.

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Authors' contributions: SGM and DBR developed the study protocol and all authors contributed to the study completion; ART provided project management and conducted all qualitative data collection; SGM, ART and LMD performed analyses; SGM lead the paper writing; input, critical feedback, and final approval on the manuscript was provided by all co-authors.

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Tables

Table 1
Patient demographics (n = 15)

Characteristic	% (n)
Female	53 (8)
Age	
15	7 (1)
16	53 (8)
17	40 (6)
Race	
White	53 (8)
Asian	7 (1)
More than one race/other	40 (6)
Hispanic/Latino	13 (2)
Medicaid/state subsidy	53 (8)