Comparison of Narcotic Prescribing Habits Between Trainee and Attending Orthopaedic Surgeons

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ABSTRACT

Background: Orthopaedic surgeons are among the highest prescribing physicians of narcotics to opioid-naïve patients. Despite the current opioid epidemic, few studies have specifically quantified the appropriate amount of opioids necessary for postoperative pain control. We hypothesized a significant variability in the quantity of postoperative opioids prescribed among trainee (ie, residents and fellows) and attending surgeons at a single institution.

Methods: Postoperative narcotic prescribing habits were assessed using an anonymous survey. Ultimately, 28 trainee physicians and 17 attending physicians responded to the survey (86.5%). The survey recorded the amount of 5-mg oxycodone tablets that were commonly prescribed to manage pain after various typical orthopaedic procedures (eg, total knee arthroplasty). Non-narcotic analgesic use was also measured. Mean, standard deviation, and variance values were calculated, with significance set at $\alpha = 0.05$.

Results: After the following procedures, the respondents reported prescribing the following quantities of 5-mg oxycodone tablets: total knee arthroplasty, 56 (SD, 16); total hip arthroplasty, 53 (SD, 13); anterior cruciate ligament reconstruction, 38 (SD, 16); partial meniscectomy, 23 (SD, 14); arthroscopic rotator cuff repair, 39 (SD, 16); carpal tunnel release, 10 (SD, 10); A1 pulley release for treating trigger finger, 9 (SD, 9); open reduction and internal fixation (ORIF) for treating distal radius fractures, 32 (SD, 16); and ORIF for treating ankle fractures, 39 (SD, 15). Statistically significant variation existed between trainee and attending physicians for total hip arthroplasty and A1 pulley release. There was no difference for acetaminophen or nonsteroidal anti-inflammatory drugs, with about 70% of patients receiving at least one of these adjuncts.

Conclusions: Variability exists in postoperative opioid prescribing habits between trainee and attending physicians at the academic training institution we accessed. In light of the ongoing opioid epidemic, institutions may benefit from standardized postoperative pain protocols.

Keywords: Narcotic, Opioid, Postoperative, Pain Control

INTRODUCTION

The opioid epidemic in the United States has reached catastrophic proportions, with opioid overdoses now the leading cause of death related to unintentional injury.[1,2] In certain states, deaths due to fentanyl and other synthetic opioids have increased by 219% from 2010 to 2015—an increase driven largely by illicitly manufactured fentanyl.[3,4] The state of New Mexico ranks twelfth in the country in drug overdose deaths, with a rate that is 25% higher than the national average.[5] Data from 2017 indicate that prescription drugs were involved in 68% of drug overdose deaths in the state.[6] Additionally, the New Mexico Department of Health reported that prescription opioids caused the most unintentional drug overdoses at 47% between 2011 and 2015.[5]

Orthopaedic surgeons play a vital role in the opioid epidemic. Nationally, they account for about 7.7% of total opioid prescriptions filled and are only surpassed by general practitioners, internists, and dentists.[7] To further complicate the situation, between 21% to 29% of patients misuse prescribed opioids for chronic pain, with an estimated 4% to 6% of those transitioning to heroin.[7-10]

Despite the opioid epidemic, few studies have quanti-fied the optimal number of opioids needed for managing

postoperative pain, particularly in relation to specific procedures. The resources that do exist typically offer broad-based suggestions on multimodal pain management.[11,12] Owing to the lack of data, we hypothesized that there would be a high variability in the quantity of postoperative opioids prescribed among trainee physicians (ie, residents and fellows) and attending physicians in an orthopaedic department at a single institution.

METHODS

We received approval from our Human Research Review Committee (HRRC #17-483). Study participants included trainee and attending physicians of the orthopaedic residency program at a level 1 trauma center, The University of New Mexico Hospital. An anonymous online survey (SurveyMonkey Inc, San Mateo, CA) was distributed and completed by 28 trainee physicians and 17 attending physicians, with an 86.5% response rate. Prescribing habits were evaluated by querying the quantity of 5-mg oxycodone tablets routinely prescribed postoperatively after common orthopaedic procedures. Prescribing habits for non-narcotic analgesia, specifically acetaminophen and nonsteroidal anti-inflammatory medications (NSAIDs), were also queried. The following procedures were included: total knee arthroplasty (TKA), total hip arthroplasty (THA), anterior cruciate ligament (ACL) reconstruction, partial meniscectomy (PM), arthroscopic rotator cuff repair (RCR), carpal tunnel release (CTR), A1 pulley release

for treating trigger finger, open reduction and internal fixation (ORIF) for treating distal radius fractures, and ORIF for treating ankle fractures. The mean, standard deviation, and variance between trainee and attending physicians were calculated. The α was set to a 0.05 significance level.

RESULTS

The average number of 5-mg oxycodone tablets prescribed for each procedure was as follows: TKA, 56 (SD, 16); THA, 53 (SD, 13); ACL reconstruction, 38 (SD, 16); PM, 23 (SD, 14); arthroscopic RCR, 39 (SD, 16); CTR, 10 (SD, 10); A1 pulley release for treating trigger finger, 9 (SD, 9); ORIF for treating distal radius fractures, 32 (SD, 16); and ORIF for treating ankle fractures, 39 (SD, 15).

There was a statistically significant difference in the number of tablets prescribed between trainee and attending physicians after THA (P = 0.03) and A1 pulley release for treating trigger finger (P = 0.05; Figure 1). Notably, there were differences in prescribing that approached statistical significance after TKA (P = 0.08) and PM (P = 0.06). There was no statistical difference in prescribing habits for acetaminophen or NSAIDs, with about 70% of patients receiving at least one of these adjuncts (Figure 2). There were various responses regarding the amounts of 5-mg oxycodone tablets prescribed after procedures (Table 1). There were no observed prescribing differences among trainee physicians by postgraduate year.
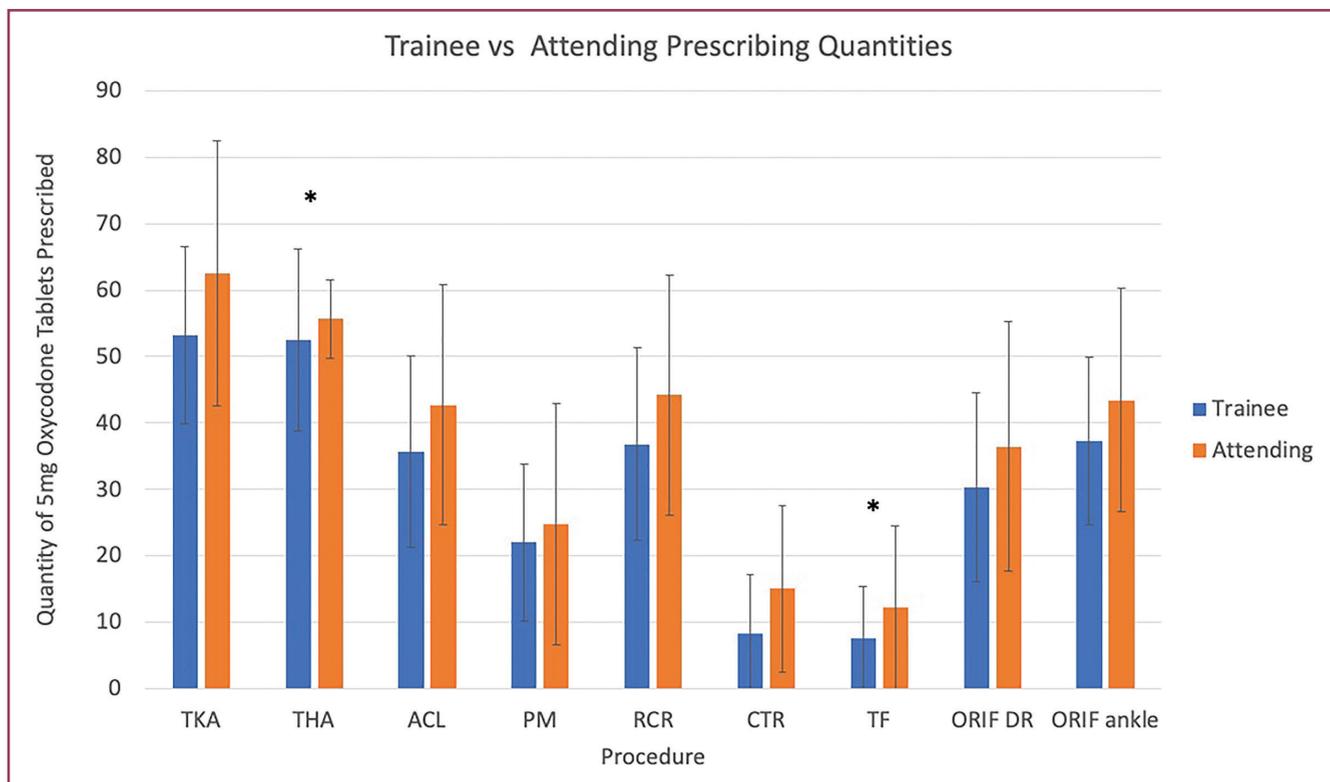

Figure 1. *Trainee versus attending physicians' quantity of opioid prescribed after various orthopedics procedures. Star (*) denotes statistically significant difference. Error bars represent standard deviation. TKA, total knee arthroplasty; THA, total hip arthroplasty; ACL, anterior cruciate ligament; PM, partial meniscectomy; RCR, rotator cuff repair; CTR, carpal tunnel release; TF, trigger finger; ORIF DR, open reduction and internal fixation for treating distal radius fractures; ORIF ankle, open reduction and internal fixation for treating ankle fractures.*
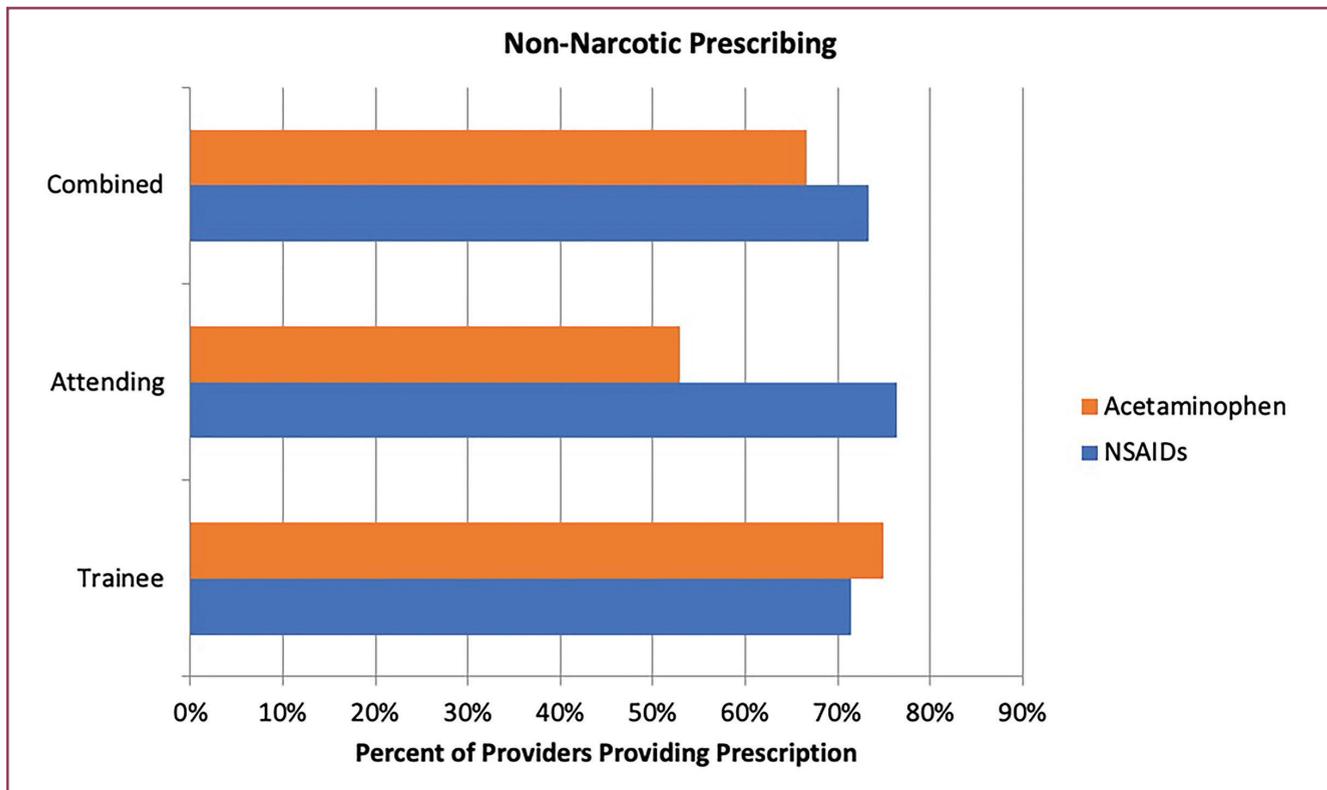
Figure 2. *Trainee, attending, and combined prescribing patterns for non-narcotic postoperative pain medication. NSAIDs, non-steroidal anti-inflammatory drugs.*

Table 1. *Survey results showing reported ranges of postoperative oxycodone tablets (5 mg) prescribed after common procedures by trainee physicians, attending physicians, and both*

Procedure	No. prescribed by trainee physicians (range)	No. prescribed by attending physicians (range)	No. prescribed by trainee and attending physicians combined (range)
TKA	28-90	45-120	28-120
THA	28-90	45-60	28-90
ACL reconstruction	20-60	20-90	20-90
PM	5-60	0-60	5-60
Arthroscopic RCR	20-80	20-90	20-90
CTR	0-40	0-30	0-40
A1 pulley release for treating TF	0-30	0-30	0-30
ORIF for treating DR fractures	10-60	15-90	10-90
ORIF for treating ankle fractures	15-60	20-90	15-90

TKA, total knee arthroplasty; THA, total hip arthroplasty; ACL, anterior cruciate ligament; PM, partial meniscectomy; RCR, rotator cuff repair; CTR, carpal tunnel release; TF, trigger finger; ORIF, open reduction and internal fixation; DR, distal radius.

DISCUSSION

In our study at a single institution, we found a high rate of variation in the self-reported narcotic prescribing habits of the respondents. Specifically, there were significant differences between trainee and attending physicians for number of prescribed opioids after THA and A1 pulley release for treating trigger finger. Attending physicians typically prescribed more than did trainees.

Reasons for this difference are likely multifactorial. First, THA and A1 pulley release for treating trigger finger represent both extremes of expected postoperative pain, with A1 pulley release being one of the least painful procedures and THA being one of the most. Second, both procedures are almost exclusively performed by hand and joint surgeons within our department. The surgeons who do not perform these procedures regularly are less likely to have developed routine prescribing habits. Third, attending physicians who were trained before recognition of the opioid epidemic and who do not routinely perform A1 pulley release and THA are more likely to prescribe more opioids for these procedures. Both procedures were associated with a wide range of 5-mg oxycodone tablet

quantities that the respondents reported prescribing for a given procedure.

In the current study, each procedure was associated with a surprisingly wide range of 5-mg oxycodone tablets prescribed to the patients. Regarding trainee physicians, the prescribed quantity for arthroscopic RCR ranged from 20 to 80 of the 5-mg oxycodone tablets. This difference is even more apparent when including both trainee and attending physicians, ranging from 28 to 120 of the 5-mg oxycodone tablets after TKA (Figure 1).

Large variations in narcotic prescribing habits have been well documented in emergency medicine and obstetric studies. In a single institution review of narcotic prescriptions for women discharged postpartum, Badreldin et al[13] found that the total milligram morphine equivalents for women discharged after vaginal delivery and after cesarean section ranged from 25 to 1200 and 50 to 1800, respectively. In a national study of opioid-naïve patients prescribed narcotics by an emergency department for treating ankle sprains, Delgado et al[14] found prescribed ranges of 0 to 450 milligram morphine equivalents. These findings support our own and highlight that large variations in prescribing habits exist not only between trainee and attending physicians, but among all physicians across many specialties.

The cause of the large variation in prescribing is likely multifactorial. Despite the current opioid epidemic and recent guidelines of the Centers for Disease Control and Prevention,[15] there are few standardized protocols for prescribing narcotics in the postoperative period. Although some postoperative pain protocols have been successful in reducing milligram morphine equivalents prescribed,[16] it is challenging to define a sufficient quantity of narcotics for postoperative pain control after a given procedure. This is because of multiple variables including surgical procedure, surgical time, preoperative opioid exposure, use of non-narcotic agents, and patient variability in pain perception.[17] For example, a recent review by Wojahn et al[18] found that the number of opiate pills consumed after knee arthroscopy varied greatly. Among individuals who were undergoing meniscal repair, patients who smoked and those taking preoperative opioids were significantly more likely to take higher numbers of opiates (≥ 20 pills vs a median of 7 pills). Furthermore, a debate exists as to whether postoperative narcotics should be prescribed on the basis of a given procedure or by patient-specific opioid usage during hospital admission.[12] This is further convoluted by the known differences in patient opioid consumption versus opioids prescribed.[19] Although our findings revealed that about 75% of respondents stated they prescribe non-narcotic analgesia, it is still unknown whether prescribing or recommending over-the-counter acetaminophen and NSAIDs results in higher patient compliance with these medications.

Despite these challenges, it appears clear that patients would benefit from more standardized postoperative pain protocols. We published a companion article that explores potential protocols.[20]

There are several limitations to our study. First, there may be larger disparities in what respondents stated they prescribe as opposed to what they actually prescribe because of the limitations of survey design. Furthermore, all orthopaedic subspecialties were queried and might account for some of the large variation. For example, a survey respondent who practices pediatric orthopaedics may be unfamiliar with studies regarding opioid consumption after arthroplasty. Although most studies quantify milligram morphine equivalents, our study limited our definition to 5-mg oxycodone tablets. This was intentional because we presumed that many of our prescribers were unfamiliar with milligram morphine equivalents conversion. This may limit the external validity of these data. We also did not query length of time for which a narcotic should be prescribed, which may have yielded more or less variability. Lastly, this study was limited to a single, high-volume academic tertiary institution. There may be differences in variability of prescribing at other academic centers or community hospitals.

In light of the ongoing opioid epidemic, institutions may benefit from standardized postoperative pain protocols. Multimodal analgesia should be included in these protocols, including acetaminophen and NSAIDs, as well as preoperative discussions with patients regarding expectations to optimize postoperative pain control. Studies evaluating the benefits of a multisubspecialty postoperative pain protocol are currently underway, and future work dedicated to minimizing narcotic use remains paramount.

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