

## RESEARCH ARTICLE

# Correlation between Opioid Prescribing Habits and Patient Satisfaction

Abdo Bachoura, MD; Jacob Tulipan, MD; Daren Aita, MD; Daniel Fletcher, MD;  
Pedro Beredjikian, MD

Research performed at Rothman Orthopaedics, Philadelphia, PA

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## Abstract

**Objectives:** The purpose is to evaluate the correlation between patient-reported satisfaction measures and opioid prescribing practices of hand surgeons.

**Methods:** This retrospective study evaluated the opioid prescription practices of 19 fellowship-trained hand surgeons at a single practice, over a 12-month period. The total number of opioid prescriptions sent, opioid prescriptions per surgery, average total morphine milligram equivalents (MME) prescribed per patient and the average MME per prescription were determined. The correlation coefficients were calculated for the total opioid prescriptions and the likelihood to recommend a physician, the overall service impression and the impression of physician empathy.

**Results:** 5,089 patient satisfaction surveys were completed. Pearson's correlation demonstrated the "likelihood to recommend a surgeon" exhibited a moderate negative correlation with the total number of opioid prescriptions and the average MME per prescription ( $R=-0.38$ ,  $R^2=0.142$ , and  $R=-0.30$ ,  $R^2=0.089$ ) respectively. Overall service impression exhibited a moderate negative correlation with total opioid prescriptions and average MME per prescription ( $R=-0.39$ ,  $R^2=0.142$ , and  $R=-0.30$ ,  $R^2=0.088$ ), respectively. Perception of physician empathy exhibited a very weak negative correlation with total opioid prescriptions and weak correlation with average MME per prescription ( $R=-0.06$ ,  $R^2=0.004$  and  $R=-0.29$ ,  $R^2=0.087$ ), respectively. There were no statistically significant differences.

**Conclusion:** This study demonstrated that measures of patient satisfaction did not correlate with opioid prescriptions.

**Level of evidence:** IV

**Keywords:** Hand surgery, Opioid, Pain medications, Patient satisfaction

## Introduction

The opioid crisis in the United States has resulted in substantial morbidity and mortality.<sup>1-3</sup> As a result, a great deal of research and public health efforts have focused on reducing opioid prescriptions in an effort to curtail a potentially controllable source of narcotic abuse.<sup>4-6</sup> Recently, there has been a considerable body of literature demonstrating that opioid medications are not as necessary as previously thought for post-operative pain control following various hand surgery procedures.<sup>7-10</sup> Patient satisfaction scores and other patient-reported outcome measures (PROM) have also recently gained

popularity.<sup>11-13</sup> These PROMs can influence practice and physician reimbursement in the era of performance-based reimbursement and bundled care payment models. Recognizing the significance of patient satisfaction scores, some physicians have raised concerns that limiting opioid prescriptions may negatively impact patient satisfaction, and in turn, may lead to worse patient outcomes, diminished referral patterns, and decreased physician reimbursement.

Several studies have evaluated the relationship between opioid prescriptions and patient satisfaction scores and

**Corresponding Author:** Abdo Bachoura, Rothman Orthopaedics, Orlando, FL

**Email:** hassaninalkaduhimi@gmail.com



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demonstrated that opioid prescriptions have minimal association with patient satisfaction, including Press Ganey scores among varied practices and patient populations.<sup>14-16</sup> Furthermore, it has been demonstrated that patient perception of pain control (rather than opioid dosage) is correlated with patient satisfaction scores.<sup>17</sup>

Multiple factors are associated with patient satisfaction in the hand surgery setting.<sup>18,19</sup> The purpose of this study is to evaluate the correlation between patient-reported satisfaction measures and opioid prescribing practices of hand surgeons at a single practice. We hypothesized that there would be no correlation between physician opioid prescribing quantity and patient satisfaction scores.

### Materials and Methods

A retrospective review of all patients treated at a single, private, and academically affiliated practice was conducted between January 1<sup>st</sup> and December 31<sup>st</sup>, 2021. This included all operatively and nonoperatively treated patients. The number of opioid prescriptions of 19 fellowship-trained hand surgeons was included. Each surgeon prescribed the medication at his or her discretion following both operative and nonoperative treatment. No patients were excluded. For every surgeon, a computerized chart review was performed to calculate surgical case volume over the 12 months, total number of opioid prescriptions sent, opioid prescriptions per surgery, average total morphine milligram equivalents (MME) prescribed per patient (calculated based on U.S. Department of Health and Human Services guidelines),<sup>20</sup> and average MME per prescription. MME was used as a standardized parameter of the quantity of opioids prescribed. All opioid prescriptions were submitted electronically through a single electronic medical record. At the time the data was captured in 2021, telephone opioid prescriptions were not being accepted by pharmacies in the regions where the study was conducted. The majority of prescriptions were sent by the attending surgeon. On occasion, physician assistants may have prescribed narcotics under the supervision of the attending. Residents working with the attendings did not send opioid prescriptions. During the same period, all patients presenting to each surgeon's office were asked to complete a patient satisfaction survey by email and text message using Social Climb, a third-party vendor ([www.socialclimb.com](http://www.socialclimb.com)). Patient surveys were sent to both operatively and nonoperatively treated patients following each office visit. The three survey questions that were selected as markers of patient satisfaction assessed the patient's likelihood to recommend a physician, the patient's overall impression of the provider's service and the impression of physician empathy. The three survey questions and their respective response options were:

- 1- Likelihood to recommend physician:
  - a. Strongly agree
  - b. Agree
  - c. Neither agree or disagree
  - d. Disagree
  - e. Strongly disagree
- 2- Overall experience of the provider's service:
  - a. Excellent
  - b. Very good

- c. Good
- d. Fair
- e. Poor
- 3- I feel my physician cares about me:
  - a. Yes
  - b. No

The percentage of top-level responses ("strongly agree" or "excellent") for each question was calculated for each provider. The correlation coefficient (Pearson's R) was calculated between the total opioid prescriptions and the likelihood to recommend a physician, the overall service impression and the impression of physician empathy ("physician cares about me") based on the top-rated responses. Similarly, Pearson's R was calculated for the average MME per prescription and the likelihood to recommend a physician, the overall service impression and the impression of physician empathy. Institutional review board approval was not required for this study.

### Results

Between the 19 hand surgeons, 10,700 procedures were performed during the study period beginning January 1<sup>st</sup> and ending December 31<sup>st</sup>, 2021. A total of 173,852 patient satisfaction surveys were sent to all patients seen in the twelve months and 5,089 were completed (response rate, 2.4%). The average number of opioid prescriptions per physician was 324 per year, the average number of opioid prescriptions per surgery were 0.54, the average MME per surgical patient was 107.9, and the average MME per prescription was 51.42. The average "top-level" response rate was 85.9% for "likely to recommend," 85.9% for "overall provider service," and 98.2% for "physician cares about me" questions.

Pearson's correlation demonstrated that the "likelihood to recommend a surgeon" exhibited a moderate negative correlation with the total number of opioid prescriptions and the average MME per prescription ( $R=-0.38$ ,  $R^2=0.142$ ,  $p=0.12$  and  $R=-0.30$ ,  $R^2=0.089$ ,  $p=0.21$ ) respectively.

Similarly, overall service impression exhibited a moderate negative correlation with total opioid prescriptions and average MME per prescription ( $R=-0.39$ ,  $R^2=0.152$ ,  $p=0.10$  and  $R=-0.30$ ,  $R^2=0.087$ ,  $p=0.22$ ), respectively.

Finally, correlation analysis demonstrated that perception of physician empathy exhibited a very weak negative correlation with total opioid prescriptions and weak correlation with average MME per prescription ( $R=-0.06$ ,  $R^2=0.004$ ,  $p=0.81$  and  $R=-0.29$ ,  $R^2=0.087$ ,  $p=0.23$ ), respectively.

### Discussion

The abuse of both prescription and illicit opioids remains a public health crisis in the United States,<sup>21</sup> as prescription opioids were involved in nearly 24% of all opioid-related deaths in 2020.<sup>22</sup> In a healthcare climate where patient expectations and satisfaction may affect physician compensation, some healthcare providers have raised concerns about potentially worsening patient satisfaction as a result of limiting patient access to opioid pain medications and presumed inadequate pain control. A 2018 survey of physicians found that physicians with incentives for patient

satisfaction reported this as impacting their opioid prescribing three times as much as physicians without such incentives.<sup>23</sup> A 2020 study in patients undergoing outpatient orthopaedic surgery found that, although opioid utilization did not correlate with patient satisfaction, pain score and satisfaction showed a significant correlation, which highlights the importance of postoperative pain control.<sup>24</sup> Over the past few years, there have been concerted efforts by the hand surgery community to tackle the practices of over-prescription and over-utilization of opioids. The spectrum of efforts includes the modification of the number of opioid pills,<sup>25</sup> multimodal pain control protocols,<sup>26</sup> patient education tools,<sup>8</sup> the complete abolition of narcotics for certain procedures such as carpal tunnel release<sup>27, 28</sup> or in some cases, complete elimination of opioid prescriptions in a surgical practice.<sup>29</sup> Despite these efforts and the abundance of emerging data, a decrease in opioid prescriptions has not been widely adopted by surgeons who manage upper extremity conditions.<sup>30</sup>

Patient satisfaction in hand surgery is a complex and multifactorial outcome measure that depends on the perception of pain control,<sup>17, 23</sup> patient factors (expectations, psychosocial factors, language),<sup>31</sup> physician factors (physician empathy),<sup>19</sup> practice factors that are not always under the direct control of the physician (wait times,<sup>32</sup> and number of patient encounters prior to having a surgery).<sup>33</sup> Interestingly, patient satisfaction does not appear to correlate with patient outcomes<sup>34</sup> or the safety of care<sup>35</sup> and may be more related to higher costs and mortality.<sup>36</sup> More specifically, physician empathy is independently associated with patient satisfaction and accounts for 65% of the variation in satisfaction scores.<sup>32</sup> Patient satisfaction is known to be inherently subjective and labile, and tied to patient expectations, which tend to vary across time.<sup>37</sup>

The results of this study demonstrate an inverse correlation between opioid prescriptions by a provider (quantity and MME) and the patient's likelihood to recommend that provider, as well as an inverse relationship between the patient's perception of service and opioid prescriptions. These results however, did not reach statistical significance. We believe that the contribution of opioid prescriptions to overall patient satisfaction is minor when compared to more significant factors, such as physician empathy, which have been shown to account for a large amount of the variation of satisfaction scores.<sup>19</sup> As noted previously, patient satisfaction is a complex outcome measure that may be influenced by numerous patient-related, physician-related and practice-related factors. Furthermore, greater use of opioids in a physician's practice may be a response to poor patient satisfaction, could result from the surgeon's failure to address underlying pathology adequately, or could indicate a practice population with more patient-related factors increasing opioid requirements. Other studies have demonstrated similar results. For patients undergoing carpal tunnel release, Shetty et al reported that patients remaining

on prescription pain medications two weeks after surgery reported worse outcomes compared to those who discontinued. The authors recommended further research to guide policy around using pain and patient-reported outcomes as quality measures for high-risk patient subgroups.<sup>38</sup>

The limitations of this study include a low response rate of 2.4%. While this may reflect an inadequate representative sample of the population studied, over 5000 surveys were analyzed. Furthermore, the risk of participation bias may have skewed the results. In addition, it may have been more informative if the survey results were stratified by the procedure type and patient demographics; however, this data was not available using the survey database.

### Conclusion

This study demonstrated that measures of patient satisfaction in a hand surgery practice did not correlate with the number of opioid prescriptions. This information adds to the current literature in support of the notion that patient satisfaction does not correlate with the number of opioid prescriptions in hand surgery.

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Abdo Bachoura MD <sup>1</sup>

Jacob Tulipan MD <sup>2</sup>

Daren Aita MD <sup>2</sup>

Daniel Fletcher MD <sup>3</sup>

Pedro Beredjiklian MD <sup>2</sup>

1 Rothman Orthopaedics, Orlando, FL, USA

2 Rothman Orthopaedics, Philadelphia, PA, USA

3 Rothman Orthopaedics, Hamilton Township, NJ, USA

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