



# The effect of patient satisfaction scores on physician clinical decision making: A possible factor driving utilization of opioid prescriptions, magnetic resonance imaging, and interventional spine procedures

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## ABSTRACT

**Objective:** To survey the effect of patient satisfaction scores on pain physicians' medical decision making, with an emphasis on resource utilization.

**Design:** Email-based Survey.

**Methods:** Setting & Subjects: A 23-question survey was approved for dissemination to membership of a medical society and emailed to all members. The survey was also available online and via a promoted QR code.

**Results:** An email with link to the survey was viewed 1,116 times, and clicked on 223 times, with 75 members completing the survey online once the link was clicked. Thirty-three additional physicians directly accessed the survey online and completed it. Seventy-seven percent of physicians reported that patient satisfaction scores were tracked by their institution and were used as a consideration in financial compensation (22%) or performance review (36%). Over half of the physicians surveyed reported feeling that satisfaction scores would decline if they did not order MRI imaging, prescribe opioids or provide work restrictions/disability. Thirty percent reported to have performed a spine injection due to concern about patient satisfaction scores. Twenty-one reported that they had prescribed an opioid medication because of this concern. Lastly 25% and 24% have filled out disability paperwork or provided a disability parking placard respectively.

**Conclusions:** Over half of physicians surveyed reported having ordered physical therapy, MRIs, opioid medications, spine injections, or provided disability documentation over concern about how providing or not providing such things impacts patient satisfaction scores. This may be an unintended consequence of the current emphasis placed on patient satisfaction scores.

## 1. Introduction

Health care systems are increasingly utilizing standardized questionnaires sent to patients after they receive care as means of assessing patient satisfaction. The goal of this, presumably, is to evaluate and subsequently enhance patient satisfaction. The associations between patient satisfaction and health outcomes, patient satisfaction and health care received, and patient satisfaction and physician satisfaction have all been reported [1–5]. The impact of patient satisfaction outcomes on

physician behavior is significantly less researched and in pain medicine has largely focused on opioid prescriptions [6,7]. This study aimed to survey additional physician behaviors that may be affected.

In healthcare, patient outcomes including rates of re-admission, patient reported outcomes and, more recently, patient satisfaction scores are actively measured with the intended goal of increasing transparency and improving patient experiences and outcomes. The passage of the 2010 Affordable Care Act provided a mechanism for value-based purchasing, wherein reimbursement is partially determined by satisfaction

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[8]. Often there are substantial financial consequences to these metrics for both physicians and hospitals [8,9]. Patient satisfaction can be measured by standardized questionnaires, such as the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) by Centers for Medicare & Medicaid Services [10,11]. Other standardized reporting questionnaires may be solicited from the patient by an institution, such as a hospital system sending out a proprietary questionnaire such as Press Ganey® to a random sample of treated patients [12]. The results of such surveys are potentially tied directly to departmental or physician reimbursement. Finally, physician rating websites (PRWs) exist wherein patients can leave ratings or comments that are unsolicited by the treating institution and physician [13,14]. The public reporting of patient satisfaction has the potential to alter the behavior of physicians.

While eliciting patient (i.e. consumer) feedback about their clinical experience is obviously in the public interest, it is not clear if empowered consumerism in healthcare is associated with improved outcomes or more cost-efficient patient care. PRWs of physicians have been found to be positively biased towards intrinsic and non-quality-related factors including biases towards younger physician age and male gender [13], but not with better patient outcomes [15]. Improved patient satisfaction may come with the price of increased, and possibly unnecessary, medical resource utilization [2,8,16]. A well-known example is physicians prescribing antibiotics for upper respiratory infections when there is a lack of medical justification beyond simple patient desire [3]. Conversely, other studies have shown increased patient satisfaction to be associated with lower rates of hospital readmission [17], improved guideline adherence and lower inpatient mortality rates for heart related conditions [18]. The concern of overutilization is of especially grave concern for pain management physicians as there is conflicting evidence that suggests attempts to improve patient satisfaction have been associated with increased prescription of opioids as well as inappropriate, and possibly more expensive, care [3,6,19].

The purpose of the survey was to examine if physicians who treat patients with spine and chronic pain conditions subjectively feel that patient satisfaction scores influence their own medical decision making, with an emphasis on how this may affect resource utilization.

## 2. Methods

A 23-question survey was developed and agreed upon by physicians at multiple institutions, with the primary goal of assessing whether or not patient satisfaction scores were being considered by physicians as part of their clinical decision making (Supplement 1). In addition to collecting demographics, questions were focused on two primary issues: health care utilization (8 questions) and physician job satisfaction (6 questions). In this study, we present the results pertinent to health care utilization. The results of the physician job satisfaction have been published elsewhere [20]. The survey was submitted to the Vanderbilt University Medical Center Institutional Review Board and deemed exempt. The survey was then submitted to the Spine Intervention Society (SIS) and was approved for dissemination to its respective membership consisting of nearly 3,000 members. The survey was collected via a health insurance portability and accountability act compliant database, Research Electronic Data Capture (REDCap). SIS members received a unique email asking for participation in the survey with a respective link to the REDCap database. The link was also available to members directly through the SIS website for 3 consecutive months. The authors of the study also provided a link to the survey and corresponding Quick Response code following speaking engagements with physician audiences that occurred during the three-month window (3 lectures total).

## 3. Results

The email linking to the survey that was disseminated to SIS members was viewed 1,116 times with 223 clicks on the link. 75/223 (34%) completed the survey. An additional 33 physicians accessed the survey

directly through the link provided on the SIS website. There was a total of 108 survey participants, with 106 completing all questions, and 107 responding to at least some of the questions.

Of the 115 practice settings were chosen by the 107 respondents reflecting multiple practice setting by respondents. There were 29/115 (25%) hospital employed, 35/115 (30%) were members of a private practice group, 34/115 (30%) were employed at an academic medical center, 8/115 (7%) were in solo practice, and 9/115 (8%) responder stated "other" (Table 1). In terms of primary specialty, 34/107 (32%) reported Anesthesiology, 67/107 (63%) reported Physical Medicine and Rehabilitation, 2/107 (2%) reported Neurology, 1/107 (1%) reported Interventional Radiology, and 3/107 (3%) reported "other". No responders reported Internal Medicine/Primary Care or Surgical Spine which were both listed as potential options. The mean number of years in practice was 14.98 (SD 10.75), with a median response of 12.25 (IQ range 6–24). The majority of the responders, 95/106 (89.6%), reported they practiced in the United States, with 7/106 (6.6%) practicing in Europe, 4/106 (3.8%) responding with "other". The majority of the responders were male, 85/107 (79%) (Table 1).

82/107 (77%) of responders reported that their employing institution tracked patient satisfaction scores. Less than a quarter of the respondents, 23/107 (22%), reported that their reimbursement was tied to patient satisfaction scores, and 39/107 (36%) reported their job performance evaluations were tied to patient satisfaction scores.

A total of 54/107 (51%) reported that the collection of patient satisfaction scores has influenced their clinical decision making. The following is a list of affirmative responses to the question "I feel my patient satisfaction scores are negatively impacted when I": "do not order physical therapy" 23/107 (22%), "do not order MRI" 55/107 (51%), "do not prescribe opioids" 70/107 (65%), "do not perform injections" 39/107 (36%), do not refer to surgery 26/107 (24%), "do not give work restrictions/disability" 61/107 (57%), and "other" 28/107 (26%) (Table 2).

With respect to specific actions, 35/107 (33%) reported having made a referral to physical therapy (PT) because they were concerned about patient satisfaction scores. Greater than half of the respondents, 56/107

**Table 1**  
Demographic data of survey respondents (n = 107).

What is your gender? (107 responses)	
Male	85 (79%)
Female	20 (19%)
Decline	2 (2%)
What is your practice setting? (115 responses)	
Private group practice	35 (30%)
Hospital employed	29 (25%)
Academic medical practice	34 (30%)
Other	9 (8%)
Solo practitioner	8 (7%)
Decline	0 (0%)
What is your primary specialty? (107 responses)	
PM&R	67 (63%)
Anesthesiology	34 (32%)
Other	3 (3%)
Neurology	2 (2%)
Interventional radiology	1 (1%)
Internal medicine	0 (0%)
Surgery	0 (0%)
Decline	0 (0%)
Where do you practice? (106 responses)	
USA	95 (89.6%)
Europe	7 (6.6%)
Other	4 (3.8%)
Decline	0 (0%)
How many years have you been in clinical practice?	
Average (SD)	14.98 (10.75)
Median (IQR)	12.25 (6–24)

IQR: Interquartile range; PM&R: Physical medicine and rehabilitation; SD: Standard deviation.

**Table 2**  
Physician responses to survey.

Does Your institution track satisfaction scores?	
Yes	82 (76.6%)
No	13 (12.1%)
Unknown	11 (10.3%)
No response	1 (0.9%)
Is your reimbursement tied to your patient satisfaction scores?	
Yes	23 (21.5%)
No	63 (58.9%)
Unknown	21 (19.6%)
Are your job performance evaluations tied to patient satisfaction scores?	
Yes	39 (36.4%)
No	53 (49.5%)
Unknown	15 (14.0%)
Have the collection of patient satisfaction scores ever influenced your clinical decision making?	
Yes	54 (50.5%)
No	53 (49.5%)
Do you feel pressured to consider/focus/emphasize patient satisfaction scores?	
Yes	54 (50.5%)
No	53 (49.5%)
Have you even prescribed pain medication because you were concerned about patient satisfaction scores?	
Yes	29 (27.1%)
No	78 (72.9%)
Have you ever prescribed an opioid because you were concerned about patient satisfaction scores?	
Yes	22 (20.6%)
No	85 (79.4%)
Have you ever ordered an MRI because you were concerned about patient satisfaction scores?	
Yes	56 (52.3%)
No	51 (47.7%)
Have you ever ordered or performed a procedure such as a spine injection because you were concerned about patient satisfaction scores?	
Yes	32 (30.0%)
No	75 (70.0%)
Have you ever filled out disability paperwork because you were concerned about patient satisfaction scores?	
Yes	27 (25.2%)
No	80 (74.8%)
Have you ever provided a disability placard because you were concerned about patient satisfaction scores?	
Yes	26 (24.3%)
No	81 (75.7%)
Have you ever made a referral to physical therapy because you were concerned about patient satisfaction scores?	
Yes	35 (32.7%)
No	72 (67.3%)
I feel my patient satisfaction scores are negatively impacted when I:	
Do not order PT	23 (21.5%)
Do not order MRI	55 (51.4%)
Do not prescribe opioids	70 (65.4%)
Do not perform injections	39 (36.4%)
Do not refer to surgery	26 (24.3%)
Do not give out work restrictions/disability	61 (57%)
Other	28 (26.2%)

MRI = Magnetic resonance imaging, PT = physical therapy.

(52%), have ordered an MRI due to concern about patient satisfaction scores. Thirty percent (32/107) reported to have performed a spine injection due to concern about patient satisfaction scores. While twenty seven percent (29/107) reported that they had prescribed pain medication over concern about their patient satisfaction scores. More specifically, 22/107 (21%) reported that they had prescribed an opioid medication because of this concern. Lastly, 27/107 (25%) and 26/107 (24%) have filled out disability paperwork or provided a disability parking placard, respectively, over concern about patient satisfaction scores (Table 2).

#### 4. Discussion

Patient satisfaction scores reported by standardized surveys, such as

HCAHPS, Press Ganey®, and less formal mechanisms, such as PRWs, are playing an increasing role in how patients decide how to receive health care [8]. This study is unique in that it specifically assessed if physicians attribute altering their clinical decision making due to their concern over patient satisfaction scores.

Under the protection of anonymity, 54/107 (51%) of the responding physicians reported to having altered their clinical decision making due to concern about the collection of patient satisfaction scores. In the most extreme conservative estimate, assuming all other 1,009 physicians who viewed the survey email but did not click the link have not acted in this manner, this still equates to 5% (54/1,009) of physicians who received the email altering their decision making because of patient satisfaction scores.

While the touted goals and benefits of tracking patient satisfaction scores are to improve the patient experience, as demonstrated in our survey, there are potential unintended negative consequences. While the overall risk of certain physician decisions, such as ordering physical therapy or ordering an MRI may have relatively low risk to the patient, there are associated health care and societal monetary costs to these decisions. Despite this, 33% and 52% of physicians reported ordering PT or ordering an MRI respectively because of concern over patient satisfaction scores. These behaviors call into question how much the emphasis to keep patients satisfied is a contributing factor to the escalating costs of health care, at the very least within the field of spine care and pain medicine.

More concerning is the apparent influence that patient satisfaction scores are having on physician decision making pertaining decisions that introduce additional risk to the patient. While interventional spine procedures have an overall low rate of complication, serious adverse events may occur [21]. Despite this, 30% of physicians reported having ordered or performed such procedures due to concern about patient satisfaction scores. Perhaps most concerning is that 27% and 21% reported that they had prescribed pain medication or specifically prescribed opioids over concern about their patient satisfaction scores. This is most surprising given the legal, regulatory, and societal pressures to limit opioid prescriptions [22]. One could reasonably argue that the incidence of this specific behavior should be at or near zero. Alternatively, this potentially speaks to the power that tracking patient satisfaction scores may have over physician behavior in today's practice environment, particularly in specialties that address patient complaints of pain and discomfort.

A potential association between opioid prescriptions and patient satisfaction scores has been investigated elsewhere. A survey of 77 primary care physicians found no statistical correlation between improved patient satisfaction with either the number of opioid prescriptions or the quantity of opioids provided to patients [3]. Similarly, postoperative opioid prescribing has been found to not correlate with HCAHPS pain measures [23]. Receiving an opioid medication in the ED was associated with slightly decreased patient satisfaction compared to not receiving an opioid with regards to the "How well was your pain controlled?" Press Ganey® questionnaire (4.2 vs. 4.3 95% CI -0.00 -0.11) among 4,749 ED patients [4]. Conversely, a study of musculoskeletal pain patients in a primary care setting found that, relative to nonusers/limited users, patients prescribed a moderate amount of opioids (five to nine prescriptions in the past year) were 55% more likely to report high satisfaction scores (OR = 1.55; 95% CI, 1.29–1.86) and heavy opioid users (more than 10 prescriptions per year) were 43% more likely to report high satisfaction scores (OR = 1.43; 95% CI, 1.20–1.70) [5]. A study of 146 PCPs in Colorado found that physicians who were financially incentivized by patient satisfaction surveys reported that these surveys had at least a slight impact on their propensity to prescribe opioids at a rate three times higher than physicians that are not financially incentivized (36% vs 12%  $p = 0.004$ ) [6]. Twenty five interviews with hospitalists in 2018 underlined a theme of institutional financial pressure to improve patient satisfaction scores for pain resulting in the prescription of larger amounts of opioids [7]. Opioid prescribing is an intervention that doctors may utilize in order to better treat pain, though the long-term effectiveness of

this strategy on pain outcomes is questionable [24,25]. Our study adds to the literature by demonstrating the physicians are actually considering patient satisfaction scores when deciding whether or not to prescribe an opioid medication.

There does appear to be positive correlation between positive patient satisfaction and positive health care outcomes in other areas of medicine. Among 3,796 hospitals that both reported HCAHPS and had at least 1 Yelp review in 2013, higher Yelp scores were associated with lower readmission and mortality for myocardial infarctions and pneumonia [26]. A 2012 survey of 146 English National Health Service hospital trusts found that positive online recommendations of a particular hospital were associated with lower standardized hospital mortality ratios (Spearman  $\rho = -0.20$ ;  $P = 0.01$ ), lower mortality from high risk conditions ( $\rho = -0.23$ ;  $P = 0.01$ ) and lower readmission rates ( $\rho = -0.31$ ;  $P < 0.001$ ) [27]. Increased patient satisfaction has also been associated with lower rates of hospital readmission [17], improved guideline adherence and lower inpatient mortality rates [18]. Similar findings have been seen in oncology [28].

A logical conclusion from this study is that many physicians report altering their behavior in an attempt to achieve higher patient satisfaction scores by meeting patient's expectations. There is evidence elsewhere that increased health care utilization does result in increased satisfaction that would support this belief [16]. Higher patient satisfaction scores measured by the Consumer Assessment of Health Plans have been associated with more inpatient admissions, 8.8% greater healthcare expenditures and 9.1 % greater prescription drug expenditures [2]. Interestingly, the same study also found that the most satisfied patients had a 26% greater mortality risk [2]. While this study did not assess outcomes or costs, these potential associations, reported elsewhere further calls into question if this outcome metric is having unintended potentially negative effects.

Indeed, there are limitations in this study. The primary flaw is that it is a survey design. While this study found associations it cannot assess causality. Specifically, while the physician respondents are reporting causality, the study design itself does not assess causality. While a physician may have ascribed prescribing a certain test or treatment to patient satisfaction scores and answered in the affirmative in our survey, there may have been numerous other factors that had an effect on that decision which our study did not assess. Similarly, this survey is limited by recall bias, asking physicians to remember very specific decisions and thought processes that may not be recent. This survey study also is limited by responder bias. We would note, however, that this is the same flaw in the very surveys in which this study is assessing. Another limitation of this study is the responses to many of the questions were binary "yes" or "no" options. As a result, the results of this study cannot ascertain the frequency at which a physician who responded in the affirmative was considering patient satisfaction scores when making medical decisions. The response rate of the survey was 34% among those who clicked on the link within in the email, which is in line with similar studies [29]. A limitation, however is that only 20% of people who viewed the email even looked at the survey by clicking on the link. While only soliciting responses from members of a single professional medical society may limit the generalizability of these findings, the responding group represented multiple different specialties, a wide range of experience, and even including a number of international responders. Most responders were male. This is likely representative of the field currently, but certainly may underrepresent female behavior. Conversely, for the field of pain medicine anesthesiology may have been relatively underrepresented compared to PM&R. Another limitation includes the inability to discriminate responders based on email response versus the 33 linking to the survey online directly.

Expanded research on this topic is warranted. The impact patient satisfaction scores have on physician behavior potentially permeates through other fields of medicine. Within the field of pain medicine, larger studies with more advanced metrics would add further insight into this topic. Physicians likely have little influence on their respective

institutions' utilization of patient satisfaction scores. This study provides information that employing institutions should consider when deciding on the implementation of patient satisfaction scores.

While patients should have the ability to provide feedback regarding their experiences with hospitals and physicians, the unqualified interpretation of these often-unregulated reviews may lead to inaccurate assumptions being made regarding care. Many physicians have inclinations towards continuous learning and adaptation of their practices in order to deliver better care. A natural response to satisfaction score awareness by physicians is to alter their practice in attempt to improve these scores which may result in greater resource allocated to the treatment of pain without necessarily improving patient outcomes. This survey study finds that physicians report patient satisfaction scores have impacted their decisions to provide certain care including opioid medications and spine injections, which may be an unintended result of tracking patient satisfaction scores.

## 5. Conclusion

Over half of physicians surveyed reported having ordered physical therapy, MRIs, opioid medications, spine injections, or provided disability documentation over concern about how providing or not providing such things impacts patient satisfaction scores. This may be an unintended consequence of the current emphasis placed on patient satisfaction scores.

## Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Byron Schneider reports a relationship with Spine Intervention Society that includes: board membership. David J Kennedy reports a relationship with Spine Intervention Society that includes: board membership. Byron Schneider reports a relationship with State Farm Insurance Companies that includes: consulting or advisory. David Kennedy reports a relationship with State Farm Insurance Companies that includes: consulting or advisory. Byron Schneider reports a relationship with AIM Specialty Health that includes: consulting or advisory.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.inpm.2022.100012>.

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