Original Article

AOSPINE

Global Spine Journal
2018, Vol. 8(7) 728-732

DOI: 10.1177/2192568218767385
journals.sagepub.com/home/gsj

SAGE

Patient-Rated Trust of Spine Surgeons: Influencing Factors

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Abstract

Study Design: Descriptive analysis using publicly available data.

Objectives: The purpose of this study was 2-fold: to assess patient-rated trustworthiness of spine surgeons as a whole and to assess if academic proclivity, region of practice, or physician sex affects ratings of patient perceived trust.

Methods: Orthopedic spine surgeons were randomly selected from the North American Spine Society directory. Surgeon profiles on 3 online physician rating websites, HealthGrades, Vitals, and RateMDs were analyzed for patient-reported trustworthiness. Whether or not the surgeon had published a PubMed-indexed paper in 2016 was assessed with regard to trustworthiness scores. Total number of publications was also assessed. Individuals with >300 publications were excluded due to the likelihood of repeat names.

Results: Recent publication and total number of publications has no relationship with online patient ratings of trustworthiness across all surgeons in this study. Region of practice likewise has no influence on mean trust ratings, yet varied levels of correlation are observed. Furthermore, there was no difference in trust scores between male and female surgeons.

Conclusion: Total academic proclivity via indexed publications does not correlate with patient perceived physician trustworthiness among spine surgeons as reported on physician review websites. Furthermore, region of practice within the United States does not have an influence on these trust scores. Likewise, there is no difference in trust score between female and male spine surgeons. This study also highlights an increasing utility for physician rating websites in spine surgery for evaluating and monitoring patient perception.

Keywords

physician ratings, patient responses, spine surgery, surgeon demographics, HealthGrades

Introduction

Trustworthiness is essential to any patient-physician relationship. The fundamental role of trust between physician and patient has been well documented for nearly a century, yet only recently has physician trustworthiness began to be measured, studied, and understood.[1-4] Several studies have since highlighted the important role of trust in effective clinical encounters. Such studies have demonstrated that a patient's perceived trustworthiness of their provider influences the patient's willingness to seek medical care, reveal information, agree to treatment, adhere to treatment, and that trust ultimately influences their long-term outcomes.[3,5-10]

Despite its reported impact on care, trust has been largely underevaluated in the literature because of the fact that patient perceptions of provider trustworthiness have been historically difficult to ascertain. However, in the increasingly consumer-oriented environment of orthopedics, the internet has been increasingly providing important patient-based perceptions of care and of their providers. This is a well cited trend, especially in orthopedics. In the United States, nearly 50%

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of orthopedic patients search for their providers online, and 30% of patients will compare patient-reported physician ratings when selecting a physician.[11,12] Although typically used to address patients' increasing desire to research and evaluate their physicians prior to meeting them, the online plethora of patient-reported data on healthcare review websites can likewise be used to promote quality in care and to study factors that influence patient perceptions. Although not a measure of objective quality of care, this subjective patient-reported data allows for unique insight into anonymous patient opinions regarding their care.

This patient-reported data is also categorized, providing feedback regarding patient perceptions of specific provider qualities such as physician friendliness, ability to explain conditions, knowledgebase, or aforementioned trustworthiness. These characteristic breakdowns are particularly useful to understand specific patient perceptions of their providers. Given the important role of patient-perceived physician trustworthiness in patient care, the purpose of this study is to use online patient-reported perceptions of spine surgeon trustworthiness across the United States in order to ascertain the impact of academic affiliation, recent academic proclivity, provider region, and provider gender on patient-reported opinions of spine surgeon trustworthiness.

Methods

Orthopedic spine surgeons practicing within the United States were randomly selected from the North American Spine Society (NASS) directory via a random number generator in Microsoft Excel (Microsoft Corporation, Redmond, WA). Each selected surgeon was verified to be board-certified and currently in practice. Surgeon profiles on 3 popular online physician rating websites, http://www.HealthGrades.com, http://www.Vitals.com, and http://www.RateMDs.com were analyzed and patient-reported trustworthiness and the recency of each review when possible was recorded for all selected surgeons. HealthGrades and Vitals record this metric out of 5, while RateMDs records metrics out of 100. Therefore, all scores were standardized to a 5-point scale. This metric ranged from 0 to 5, with 5 being the maximum rating of trustworthiness and 0 being the lowest. Surgeons without trustworthiness data were excluded. Total number of publications, and publications within the past year (2016) were also assessed and recorded as proxy measures of academic proclivity, both in total and recently. Surgeons with >300 publications were excluded due to the likelihood of repeat names on search within PubMed. The sex of each surgeon was likewise recorded, as was the region of practice for each surgeon (West, Southwest, Midwest, Northeast, or Southeast).

The correlation between total number of publications and trustworthiness was assessed via a Pearson's correlation. Whether or not the surgeon had published a PubMed-indexed paper in 2016 was also assessed with regard to trustworthiness scores by comparing mean trust scores for those surgeons with a publication in 2016 and those without. This was repeated while only including mean scores from reviews posted in 2016. In this analysis of review recency, only reviews with listed dates were considered, as many patient reviews were not dated online and their recency could not be verified. Furthermore, trustworthiness scores were compared between male and female surgeons, as well as between regions of practice. Finally, all factors were analyzed in a subanalysis by region of practice.

Correlations were assessed using a test of Pearson's correlation. Mean trust scores were compared between both surgeon sexes and between surgeons with or without recent publication via independent-samples T test. Mean trust scores were compared between surgeon regions of practice via 1-way analysis of variance. All analyses were performed using a $P < .05$ as significant and were conducted using SPSS version 23.0 software (IBM Corp, Armonk, NY). Given the nature of the publicly available data used for this analysis, local institutional review board approval was not required for this study.

Results

Of the 2817 orthopedic spine surgeons listed in the NASS database, 282 spine surgeons (10%) were selected at random from the directory. Forty-nine such surgeons did not have any trustworthiness scores and were excluded from analysis. As such, online evaluations were available for 233 (79.4%) of the spine surgeons evaluated in this primary screen. Furthermore, 9 surgeons with >300 publications were likewise excluded due to the likelihood of repeat names on search within PubMed. This left 224 spine surgeons included in the analysis. Of these 224 surgeons, 192 were male (85.7%) and 32 were female (14.3%). In terms of region of practice within the United States, 44 surgeons practice in the West (19.6%), 53 practice in the Midwest (23.7%), 58 practice in the Northeast (25.9%), 49 practice in the Southeast (21.9%), and 20 practice in the Southwest (8.9%). To assure a representative selection on randomization, surgeon sex as well as region of practice were compared with the total NASS directory via chi-square analysis and no differences were demonstrated. The average number of publications among included surgeons was 27.4 $\pm$ 49.1 (Table 1). A total of 102 surgeons (45.5%) had at least 1 publication within the past year (2016). The average number of ratings per surgeon varied based on website. The website http://www.Vitals.com had the highest number of average reviews per surgeon (21.912 $\pm$ 24.624), whereas http://www.HealthGrades.com had an average and standard deviation of 14.107 $\pm$ 14.892 reviews per surgeon, and http://www.RateMDs.com had an average and standard deviation of 4.121 $\pm$ 8.976 reviews per surgeon.

With regard to the influence of publications on trustworthiness, there was no significant correlation between total number of publications and trust score in total yet varying degrees of correlation between publication number and patient trust scores were observed depending on the region (Table 2). Likewise, there was no difference in mean trust scores between surgeons

Table 1. Surgeon Demographics.

Characteristic	Value	Chi-square Comparison With NASS Directory
Number of surgeons evaluated	224	2817
Male, n (%)	192 (85.1)	$P = .229$
Female, n (5)	32 (14.3)	
Number of publications, mean ± SD	27.4 ± 49.1	
Region of practice, n (%)		
West	44 (19.6)	$P = .618$
Midwest	53 (23.7)	
Northeast	58 (25.9)	
Southeast	49 (21.9)	
Southwest	20 (8.9)	

Abbreviation: NASS, North American Spine Society.

Table 2. Pearson Correlation Between Total Number of Publications and Trust Score by Region.

Total Publications and Trust Score	Pearson Correlation *r* Coefficient	*P*
All regions	0.067	.321
West	0.123	.427
Midwest	−0.118	.400
Northeast	0.231	.101
Southeast	0.025	.853
Southwest	0.041	.863

Table 3. Comparison of Mean Trust Scores Between Recent Publishers and Nonrecent Publishers by Region.

Region	Trust Score for Surgeons With Recent Publication, Mean ± SD	Mean Trust Score for Surgeons Without Recent Publication, Mean ± SD	*P* Value of Mean Comparison
All regions	3.99 ± 0.75	3.97 ± 0.79	.808
West	4.19 ± 0.77	4.16 ± 0.77	.883
Midwest	3.78 ± 0.85	3.90 ± 0.79	.598
Northeast	4.45 ± 0.37	3.65 ± 0.78	.012[a]
Southeast	3.97 ± 0.53	3.77 ± 0.61	.740
South	4.13 ± 0.70	4.02 ± 0.82	.632

[a]Indicates statistically significant difference ($P < .05$).

with recent publication (within the past year) and those without recent publication. This finding between surgeons with and without recent publication remained when only reviews assured to be from the past year were included ($P = .716$). On subanalysis of each region, this remained true for all regions except for the Northeast, where surgeons with recent publication have a significantly higher mean trust score than those without (Table 3). Independent of publication activity, there was no difference in mean patient-reported trust score between region of practice based on analysis of variance (Table 4). Similarly, there was no difference in mean trust score between male and female surgeons (Table 5).

Table 4. Mean Trust by Region of Practice.

Region	Trust Score, Mean ± SD	*P*
West	4.17 ± 0.75	.146
Midwest	3.84 ± 0.81	
Northeast	4.08 ± 0.75	
Southeast	3.81 ± 0.71	
South	4.05 ± 0.71	

Table 5. Mean Trust by Surgeon Sex.

Surgeon Sex	Trust Score, Mean ± SD	*P*
Male	3.99 ± 0.75	.756
Female	3.93 ± 0.90	

Discussion

In this study, neither recent publication nor total number of publications among spine surgeons in the United States correlated with online patient ratings of trustworthiness. However, this relationship varied by region. In the Northeast, surgeons with recent publication have significantly higher mean trust scores than surgeons without.

The growing trend of consumer-driven health care has influenced an increase in novel health care quality metrics, hospital rankings, and patient-reported physician ratings.[13] With the resulting rise in popularity of health care review websites, there has been a concurrent increase in literature evaluating the utility of online patient reviews, as well as assessing this patient-reported data. Recent cross-sectional study in the United States has reported that 74% of health care patients are familiar with physician review websites, and that 11% of patients have posted reviews or ratings of their physicians on such websites.[14,15] These studies further revealed that increased awareness and website utilization was correlated with younger patient age, suggesting that physician review websites will become increasingly popular as the current population continues to age and use such sites.

Physician review websites provide reviews across all medical specialties, but utilization varies based on physician type. A recent study analyzing 127 192 ratings from patients in Germany found that orthopedic surgeons were the most frequently rated and reviewed specialty.[15] Given high utilization in orthopedics, such physician review data becomes more insightful within the specialty. Despite this, there is a relative paucity in the orthopedic literature with regard to analysis of patient-reported ratings of health care and providers. Furthermore, international data like this is largely underevaluated in the literature, which highlights an area of needed research to better elucidate differences in patient perceptions based on country.

One study from Frost and Mesfin[16] evaluated 557 orthopedic surgeons from various orthopedic specialties in the United States to determine factors affecting patient-reported scores and ratings. The study reported no difference in overall rating between female and male surgeons, yet a more favorable rating

among academically affiliated surgeons. They did not report trust scores, yet their overall trend had similarities to the findings of this study. Our study demonstrates no difference in trust score between male and female surgeons. However, we found that academic proclivity based on total publications does not correlate with higher trust scores, and overall there is no difference in mean trust scores among surgeons with recent publications and among those without.

Conversely, on regional subanalysis, our data demonstrates a significantly higher mean trust score among surgeons with recent publication in the Northeastern region of the United States, and varying degrees of correlation between total publication and surgeon trust score. Although not statistically significant, the Northeastern region demonstrated the strongest correlation between total publication and trust score, while the Midwest demonstrated a negative correlation between academic proclivity and trust score. This observed regional variance could be explained by a number of factors, including patient demographics, socioeconomic factors, and social factors regarding how trust is evaluated in each region. As the Northeastern region has historically been more academic in nature, patients may have higher trust for those who are actively publishing in an academic setting, whereas Midwest patients may be more trustful of independent providers in their community. Frost and Mesfin[16] reported no difference in ratings based on geographic location, yet they did not provide a subanalysis of results by region like our study.

Other studies have undergone analysis of online reviews across multiple specialties. A recent study from Zhang et al[17] conducted a similar analysis on spine surgeons in the United States. Interestingly, this study found higher average online ratings for surgeons in academic practice compared to those in private practice. This differs from our study, which demonstrates no difference in mean trust score between surgeons based on recent and total publications. This is an important finding considering the results from Zhang et al,[17] as it potentially highlights the driving factor behind patient perceptions regarding academic practice. These findings together would suggest that increased ratings are more strongly correlated with an academic institutional affiliation as opposed to research activity, and that academic affiliation may be a greater consideration for patients than recent and total publications when reviewing spine surgeons in the United States. Like the study by Zhang et al,[17] our study demonstrates no difference between male and female surgeons regarding mean trust score. However, only 1.92% responding surgeons were female in the study by Zhang et al,[17] compared with 14.3% in our study. Therefore, our finding is more representative of the field, and provides the important finding that in a field with a historically greater male presence, female surgeons are not rated differently than their male counterparts.

One study from Ellimoottil et al[18] evaluated the online ratings of more than 500 urologists practicing in the United States, reporting no difference in online ratings between male and female physicians or between geographic locations of practice. Another similar study from Emmert et al[15] evaluated across all specialties and reported that female physicians had higher overall ratings online compared to their male counterparts, whereas our study demonstrates equal ratings of trust between male and female surgeons. Additionally, a study by Gao et al[19] evaluated physicians across a broad range of specialties and reported that board certification and graduation from a *US News and World Report* medical school correlated with higher patient reviews. This finding is in line with the Northeastern region subanalysis of our study, where it seems that academic proclivity has a role in patient-perceived trust.

Despite previous reports exploring factors that influence online physician reviews, this study presents the first evaluation of trust ratings among spine surgeons. Patient perceptions of trust are especially pertinent in spine surgery, a field which has historically been associated with lower trust and increased malpractice litigation. The results of this study not only provide influencing factors of this perceived trust but also suggest an increasing role for physician rating websites in spine surgery. With 79.4% of spine surgeons in this study having patient-reported reviews online, there is utility in evaluating and monitoring these readily available patient perceptions via increasingly popular physician rating websites.

This study is limited by its data source. Inherent to the study design, the data has been evaluated with the assumption that all online ratings are honest, authentic, and representative of patient perceptions. This is not guaranteed in the anonymous setting of physician review websites. Furthermore, the generalizability of this data may be limited by selection bias among patients willing to review their surgeons. Finally, trustworthiness is a subjective evaluation, and can be influenced by many factors not possible to be analyzed, which likely affected the ability of this study to fully evaluate comprehensive influences of patient-reported physician trustworthiness.

Conclusion

This study demonstrates that total academic proclivity via indexed publications does not correlate with patient-perceived physician trustworthiness among spine surgeons across the United States as reported on physician review websites. Furthermore, male and female spine surgeons have similar trust ratings from patients. This study may suggest variation across regions of the United States with regard to patient-perceived trustworthiness, specifically academic research activity playing a larger role in patient trust in the Northeast. Finally, with the vast majority of spine surgeons in this study having patient-reported reviews available online, there is increasing utility for physician rating websites in spine surgery for evaluating and monitoring patient perception.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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