

Retrospective Review



Chronic Pain Practices: An Evaluation of Positive and Negative Online Patient Reviews

Mariam Salisu Orhurhu, MD¹, Bisola Salisu, BS², Emily Sottosanti, BS³, Niyi Abimbola, BS², Ivan Urits, MD⁴, Mark Jones, MD⁴, Omar Viswanath, MD⁵, Alan D. Kaye, MD, PhD⁶, Thomas Simopoulos, MD⁴, and Vwaire Orhurhu, MD⁴

From:¹Department of Anesthesia and Critical Care Medicine, Johns Hopkins School of Medicine, Baltimore, MD; ²Meharry Medical College, Nashville, TN; ³University of Massachusetts Medical School, Worcester, MA; ⁴Department of Anesthesia, Critical Care, and Pain Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA; ⁵Valley Anesthesiology and Pain Consultants, Phoenix, AZ; Department of Anesthesiology, University of Arizona College of Medicine-Phoenix, Phoenix, AZ; Department of Anesthesiology, Creighton University School of Medicine, Omaha, NE; ⁶Department of Anesthesiology, Louisiana State University Health Sciences Center, New Orleans, LA

Address Correspondence:
Vwaire Orhurhu, MD
Department of Anesthesia, Critical Care, and Pain Medicine
Beth Israel Deaconess Medical Center
Harvard Medical School
330 Brookline Ave., FD-221A
Boston, MA 02215
E-mail:
vwos69@mail.harvard.edu

Disclaimer: There was no external funding in the preparation of this manuscript.

Conflict of interest: Each author certifies that he or she, or a member of his or her immediate family, has no commercial association (i.e., consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted manuscript.

Manuscript received: 12-30-2018
Revised manuscript received:
03-08-2019
Accepted for publication:
03-26-2019

Free full manuscript:
www.painphysicianjournal.com

Background: The role of patient satisfaction continues to play an important role in health care quality measures. The use of online review platforms has been adopted by patients to share their perceptions about the quality of care provided by physicians. Chronic pain practice has unique challenges regarding patient satisfaction.

Objectives: The main goal of this study is to identify the themes associated with positive and negative reviews of chronic pain physicians at publicly available online review platforms.

Study Design: A retrospective study design.

Setting: We evaluated publicly available online patient-generated reviews of chronic pain physicians from Yelp and Healthgrades.

Methods: This retrospective study evaluated patient-generated reviews of chronic pain physicians from 2 online platforms—Yelp and Healthgrades—between the September 1, 2018 through November 1, 2018. Ninety chronic pain physicians were randomly selected from 4 diverse geographic cities in the United States: New York (NY), Houston (TX), Chicago (IL), and Seattle (WA). Primary outcome was defined as high and low rating scores. Secondary outcome was the proportion of positive and negative attributes (patient, physician, procedure, and administrative attributes) that was associated with high and low rating scores.

Results: A total of 1,627 reviews were extracted from 90 physicians evaluated at Yelp and Healthgrades. Of this total review, 1,296 (79.7%) were high scoring and (331) 20.3% were low scoring. Chronic pain providers who were high scoring had positive reviews that consisted of physician attributes (63.5%), administrative attributes (23.4%), and patient attributes (12.2%). The highest proportion of the first 3 physician attributes associated with high ratings were knowledgeable, helpful, and caring. Chronic pain providers who were low scoring had negative reviews that consisted of physician attributes (41.4%), administrative attributes (52.1%), and procedure attributes (5.2%). The highest proportion of the first 3 physician attributes associated with low ratings were disrespectful, unhelpful, and uncaring.

Limitations: First, this study looks at reviews of 4 large cities, thus we may have excluded patient populations with substantially different preferences as health care consumers. Second, it is impossible to confirm the validity of individual reviewers' interactions with the pain management specialist who provided care or validate the identity of the reviewers. Third, it is very difficult, or even impossible, to tell if the rater is a patient or someone posing as a patient, such as an unhappy employee or a business competitor.

Conclusions: Online platforms provide a medium that facilitates immediate communication among patients. These platforms may provide timely data for chronic pain physicians to gain more insight into the quality of care perceived by patients, thereby aiding providers to improve on ways to optimize patient-care experiences and encounters.

Key words: Chronic pain practice, online review, patient review, patient satisfaction

Pain Physician 2019; 22:E477-E486

Online reviews are an important component of a health care organization's identity. According to the latest consumer report, 84% of patients turn to review sites to find a doctor, and 80% of consumers trust online reviews as much as personal recommendations (1,2). Despite these trends, the role of online ratings in health care provision is still poorly understood, and attitudes vary greatly on their viability as a quality metric in medicine. A 2017 survey of patients and physicians by Holliday et al (3) revealed that physicians place substantially more trust in health system patient experience surveys than in third-party Web sites. Conversely, patients reported the inverse, placing more trust in online ratings (3). Still, aggregate data taken from multiple Web-based rating sources have shed light on several themes common to positive and to negative reviews (4-6). Provider empathy and demeanor, facility cleanliness, and logistical burden placed on patients (e.g., waiting times) are prominent in literature (6-9).

Despite poor physician confidence in online feedback, there is growing evidence that aggregated online ratings may predict a subset of hospital outcomes. An analysis of the Choices Web NHS (National Health Service) service demonstrated positive patient reviews were negatively correlated with mortality and readmission rates, whereas revealing that even medically, irrelevant impressions of hospital cleanliness were significantly correlated with low methicillin-resistant *Staphylococcus aureus* infection rates (5). In a similarly large study of 2 German hospitals, Emmert et al (10) observed a positive correlation between rating and outcomes in only a subset of clinical quality metrics.

Further obscuring the mechanistic relationship between patient feedback and objective provider quality is the heterogeneity with which Web reviews can predict outcomes across clinical sites and medical specialties. Existing literature suggests that surgical outcomes, for example, may be poorly or insignificantly correlated with standardized patient survey data (11,12). Furthermore, a recent study of exclusively third-party Web reviews by Chen et al (13) showed satisfaction was very poorly correlated with objective outcomes.

Online reviews constitute a potentially valuable, low cost source of patient satisfaction data distinct from that of traditional surveys. Low physician confidence in Web reviews and limited applicability to select specialties necessitates further research, especially at sites in which consumer choice and online rating data are more abundant. In the present investigation, a retrospective

study analyzing (n = 1,627) online reviews from Yelp and Healthgrades was performed to identify positive and negative attributes that were associated with high and low rating chronic pain practice scores, and to explore the consistency of these data with other practices.

METHODS

Study Population

Our study investigated publicly available online reviews of chronic pain medicine physicians from September 2018 through November 2018. These reviews were written by patients either as a comment or feedback about their experiences with their chronic pain physicians. Qualitative and quantitative data from these reviews were obtained from 2 reputable online platforms: Yelp.com and Healthgrades.com. The Yelp online platform, founded in 2004, is a free online interface that allows customers to rate or provide reviews and feedback for local businesses (14). This interface has also been cited as the most used and trusted platform for physician reviews (15). Healthgrade, however, is an online platform that provides a bridge between patients and providers by providing solutions that help with scheduling appointments and improving patient-physician relationships through online reviews (16).

Inclusion and Exclusion

Search tools from Yelp and Healthgrades were used to identify chronic pain practices at 4 diverse geographic locations in the United States: New York (NY), Houston (TX), Chicago (IL), and Seattle (WA). We included reviews of the first 15 chronic pain practices that were randomly identified based on proximity to the individual cities. These reviews were included in our analysis if they were written in English and the physician being reviewed was a board-certified pain management physician in terms of Healthgrades, or in the case of Yelp, a pain practice run by MD or DO licensed physicians—confirmed through practice Web site review.

The present investigation excluded online platforms if they had any of the following: (1) lacked negative comments in their patients' reviews and reported skewed ratings that were biased toward high physician ratings (e.g., ZocDoc); (2) difficulty with accessing patient reviews, thereby impeding analysis; (3) lacked comments in their patients' reviews, thereby making qualitative analysis impossible (e.g., Vitals); or (4) required a subscription for viewing the reviews, thereby limiting access (e.g., Angie's List).

Data Collection

For each pain management practice, the following data were collected: total number of ratings, total number of written comments, mean overall rating (on a scale of 1-5 stars, with 1 as the lowest level and 5 as the highest level), and all individual comments and ratings. The reviews from each city were separated into positive (4 or 5 star) and negative (1 or 2 star) categories. Reviews with 3 stars from Yelp and Healthgrades were excluded from this aspect of the analysis.

Data were then tabulated, and reviewer comments were assessed independently by 2 evaluators (B.S. and N.A.) using a modified grounded theory approach (17). This theory has been validated in multiple disciplines including psychology, public health, business, engineering, and medicine. First, using prior assessment of the literature, specific key themes of patient experiences were selected (6-9). Then, after independent assessment of 100 reviews during which the researchers identified additional factors that drove reviewer satisfaction or dissatisfaction, the researchers discussed and agreed on a common set of themes by which all patient reviews would be assessed. Any conflicts were considered and adjudicated by both evaluators. Codes were entered into an Microsoft Access (Microsoft Corp., Redmond, WA) database for descriptive analysis.

Outcomes

Our primary outcome was the proportion of high and low physician score ratings. Secondary outcome was the proportion of positive and negative characteristics (patient, physician, procedure, and administrative attributes) that were associated with high and low rating scores, respectively. Additional characteristics under patient, physician, procedural, and administrative attributes were also analyzed.

Statistical Analysis

Normality of our data distribution was determined using the Kolmogorov–Smirnov test with Lilliefors correction (Stata, Release 12, Statistical Software, Stata-Corp LP, College Station, TX). Data were analyzed by investigators not involved in the data collection phase of the study. Parametric data were presented as mean \pm standard deviation or as a number (%). We reported nonparametric data as median with interquartile range. For data with normal distribution, single comparisons were tested using the t test, whereas multiple comparison were tested with analysis of variance with Tukey post-hoc pairwise testing, when appropriate. The

chi-square tests were used to determine differences among groups. The Kruskal–Wallis H test was used to analyze nonparametric data, and multiple pairwise comparisons were performed using the Mann–Whitney U test. Nominal data were analyzed by using either the chi-square test or the Fisher exact test, as appropriate. $P < 0.05$ was considered significant.

Ethical Considerations

All source data that were searched and reported here are accessible online and available within the public domain. Therefore we did not seek individual subject consent to report this information, nor did we seek approval from our institutional research ethics board to conduct this study, as per standard operating procedures for such work.

RESULTS

Qualitative themes were centered on characteristics of the patient progress, physician-patient interaction, procedure, and administration (Table 1). Themes that emerged from the positive and negative reviews were similar in content but opposite in valence. Patient-specific themes included pain improvement, mood, and physical activity. Physician-specific themes included knowledge and competency, helpful, compassion, temperament, communication abilities, and time spent with patient. Procedure-specific themes included procedure pain, procedure time, complications, and outcome. Administrative-specific themes included scheduling, staff temperament, office cleanliness, waiting room time, office location, interprofessional care team, and insurance.

Ninety chronic pain physicians were randomly identified from 4 diverse cities across the United States. From these chronic pain physicians, 1,627 reviews were extracted from Yelp and Healthgrade combined. Of this total review, 1,296 (79.7%) were high scoring and 331 (20.3%) were low scoring. Among the high-scoring physician group (79.9%), 77.1% scored a 5 and 2.8% scored a 4 overall. The low-scoring physician group consisted of 17.3% who received a score of 2 and 3.0% who received a score of 1.

The Yelp online platform reported a significantly higher proportion of low rating scores compared with Healthgrade ratings (33% vs. 13%; $P < 0.0001$). On the opposite spectrum, however, the Yelp online platform reported a significantly lower proportion of high rating scores compared with scores from Healthgrade (66% vs. 85%; $P < 0.0001$) (Fig. 1).

Table 1. Qualitative themes and representative quotes from positive and negative reviews.

Theme	Representative Quote From Positive Review	Representative Quote From Negative Review
Patient related attributes		
Pain	I had the shot nearly 3 months ago. It's a game changer. Dr.* told me that it would take a few weeks to start working... Within 2 or 3 weeks my pain was down dramatically. And my knee is better now than I can remember it being in years.	The injections were painful and did not provide any relief, my back pain is worse than I had before coming to this practice. I can hardly work now. Stay far away from this place.
Mood	My headaches are almost completely gone and I am able to live my life normally again and overall be happy. Thank you to Dr * and his staff for making this possible.	I feel much worse than i did before coming to the practice. I feel depressed
Physical Activity	Because of his injections I can now continue to lift weights at the gym. He has given me back my life.	I no longer play bridge, travel, or participate in daily life.
Physician related attributes		
Knowledge	Dr. * and his staff are incredible and knowledgeable. I have been Dr.* patient for over a year regarding my lower back issues that I had developed after years of competitive dancing. He was able to properly diagnose my issues and provide me with multiple treatment options (medications, injections, holistic options, etc.)	Doesn't have a knowledge to help patients. I went to see her twice, but her unenthusiastic attitude and blank comments like, if you want to do that/this, I will do it for you. If I know the answer i wouldn't have gone to see the specialists
Helpful	I also would like to present my best appreciation to dear doctor * for understanding my health issues, reducing my pains and taking care of me professionally the way I've never had from any doctor in my 57 years of life.	We came to realize this clinic is just another pill farm. Dr. * had no interest in trying to understand my wife's condition.
Compassion	He is professional, knowledgeable, caring and willing to listen. I definitely recommend this doctor.	Neither one of them expressed any compassion or interest in my pain.....They were cold, callous, and obviously had never experienced any type of injuries themselves. Nor did they care to empathize with a potential new patient.
Courteous/ Respect	I felt respected as a human being and cared for. Being a Health professional myself, I understand the value in this. I cannot tell you what a relief and the level of gratitude I have.	Dr. * needs to learn to treat his patients with dignity & respect. He was the stereotypical doctor with a "God" complex. He has the worst bedside manner I've ever seen. He didn't explain anything very well at all, and did give me the opportunity to ask questions. He is self-righteous & pompous.
Listened	Great Dr. as he genuinely takes the time to listen to his patients with compassion. he is also concerned with your overall pick picture as a patient. He is not quick to just hand over prescription.	Cold & arrogant, didn't listen attentively, would cut me off.
Communication	He went over my MRI and XRAYs in great detail and explained all the different treatment options available to me.	I don't feel that I was presented with a clear understanding of my prognosis; the level of severity of the structural problem with my spine; what is considered the standard practice for treating my particular problem; and some guidance by what is common for a majority of patients with this problem.
Time	My first appointment was long and very thorough. They took the time to talk to me, to listen.	Too bad zero stars is not recognized by overall stats for places. You know its a bad situation when a Dr begins sensitive conversation with the door open (privacy) or when your exam is completed in less than 5 minutes. Was not even asking for medicine - just a comprehensive discussion with a professional
Procedure/ treatment related attributes		
Procedure pain	The nerve block was quick and painless using modern equipment under fluoroscopy.	The injections were painful and did not provide any relief.
Complications	Not Applicable	I literally could not walk for 6 days. I stayed in bed for the duration. The procedure was done incorrectly. now am dealing with recovery from SPINAL MENINGITIS. I almost died.

Table 1 (cont.). *Qualitative themes and representative quotes from positive and negative reviews.*

Theme	Representative Quote From Positive Review	Representative Quote From Negative Review
Procedure outcome	Not Applicable	I ended up getting a steroid injection by him but my pain is even worse before the injection. So frustrated!
Procedure time	The entire procedure was fairly quick, about 30 mins total	Not Applicable
Administrative attributes		
Staff temperament	During my appointment, the staff were very polite and courteous and I was called in to see the doctor very promptly.	The staff is as rude & unprofessional as they come.
Office cleanliness/ Comfort	His staff are highly professional and his facilities are clean and comfortable.	This place needs to be investigated for sanitary reasons as well as practice
Scheduling	Was referred next to Dr*... front desk called me and got me in the next morning.	The phone system is unbelievable. I have been trying to set an appointment for over a week. No way will I let them treat me!
Waiting time	The office is always bustling, yet I've never waited more than 10-15 minutes beyond my appointment time before being seen by someone;	I spent 2 hours in the waiting room!
Coordination of care	She does a great job of balancing modern medicine and a holistic approach to healing.	I needed an MRI, and couldn't get that scheduled because the order was never sent. They also never sent the order for physical therapy
Communication	The office staff are excellent! They are professional, friendly, and responsive - most of my contact was in person or via email.	Third ding was that once I rescheduled for the following week, I was told that I'll get a call confirming and walking over pre-op. Still no call so I just went ahead and scheduled elsewhere.
Insurance/billing	It was a nightmare figuring out things such as a preliminary MRI, etc., through my insurance. So when the front desk staff offered to get things straightened out, it made my life so much easier.	and Dr. * shook my hand and confirmed they were In-Network with Cigna. After many months and bills later, I was finally contacted by * and told that I'd be getting a "major discount" for their error. *even offered to write a letter on my behalf to Cigna, requesting my procedure be treated as In-Network. Several months passed, and despite my many phone calls and email attempts to contact * and *, I never heard back from either, and no letter ever came. As bills (for the original full amount) continued to arrive, I was forced to pay them in their entirety.
Location convenience	The office is situated downtown by city hall and which is so easy to get to. The environment is beautiful and relaxing.	You have to travel to pretty far to see him.
Inter-professional care team	I liked that he even included my neurosurgeon and primary doctor in our plan	For such a supposed state of the art facility, I was surprised to have to walk almost a mile to Chinatown to get X-rays. (which, with my back problem, I was barely able to do); the facility doesn't even have the capabilities.

The proportion of positive characteristics observed with high score ratings were mostly physician-related attributes (63.5%). This was subsequently followed by administrative (23.5%), patient (12.2%), and procedure-related (0.79%) attributes (Fig. 2). Among the low rating group, the proportion of negative characteristics observed were mostly administrative (52.1%), followed by physician (41.4%), procedure (5.2%), and patient-related (1.3%) attributes (Fig. 2).

The proportion of positive characteristics observed with high rating physicians consisted of physician-relat-

ed attributes such as: knowledgeable (39.1%), helpful (38.9%), caring (26.9%), respectful (26.0%), and a good listener (17.9%) (Table 2). There was also a high proportion of courtesy and helpful characteristics among the administrative attribute (31.1%). Other attributes are detailed in Table 1. Regarding the low rating scores, the proportion of negative characteristics observed were administrative attributes such as: lack of courtesy/help (32.9%), insurance/billing (29.6%), lack of clear communication with staff (17.5%), prolonged waiting time (16.0%), and poor coordination of care (14.8%) (Table

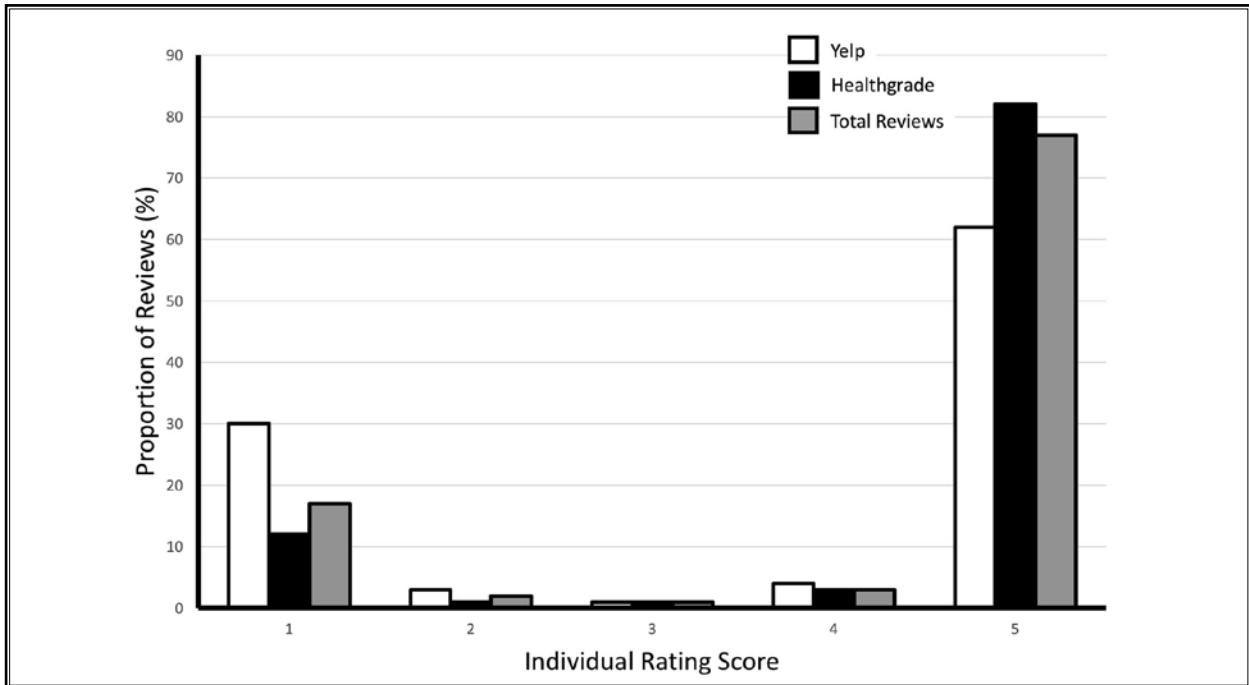


Fig. 1. Physician Review Score Distribution.

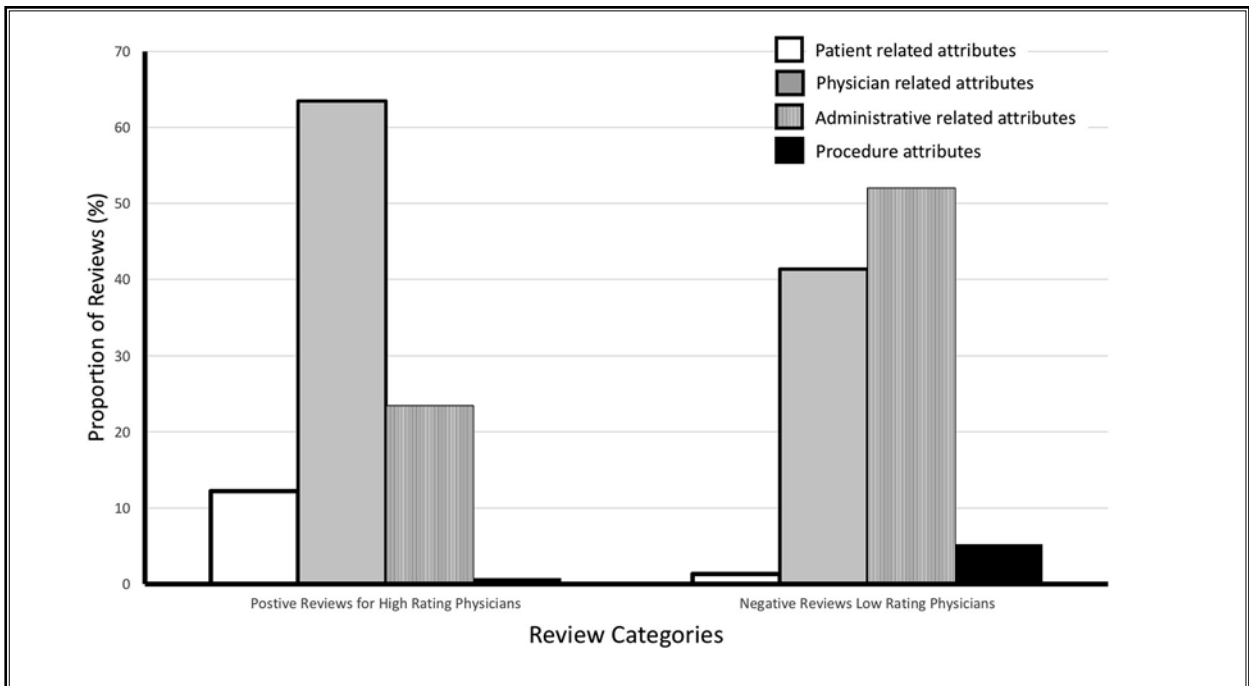


Fig. 2. Distribution of positive and negative characteristics amongst high and low rating scores.

Table 2. Characteristics of 1,296 positive reviews.

Characteristics	Number (%)
Patient-related attributes	
Pain	256 (19.75)
Physical activity	111 (8.46)
Mood	67 (5.17)
Physician-related attributes	
Knowledge/competency	507 (39.12)
Helpful	505 (38.97)
Caring	349 (26.93)
Courtesy/respect	337 (26.00)
Listened	232 (17.90)
Communication	194 (14.97)
Time	134 (10.34)
Procedure/treatment-related attributes	
Procedure pain	14 (1.08)
Procedure time	14 (1.08)
Administrative attributes	
Staff courtesy/respect	403 (31.10)
Office cleanliness/comfort	107 (8.26)
Scheduling	89 (6.87)
Waiting time	78 (6.02)
Coordination of care	72 (5.56)
Clear communication	31 (2.39)
Insurance/billing	24 (1.85)
Location convenience	21 (1.62)
Interprofessional care team	10 (0.77)

Table 3. Characteristics of 331 negative reviews.

Characteristics	Number (%)
Patient-related attributes	
Physical activity	6 (1.81)
Mood	5 (1.51)
Pain	1 (0.30)
Physician-related attributes	
Courtesy/respect	105 (31.72)
Helpful	80 (24.16)
Caring	47 (14.20)
Time	28 (8.46)
Knowledge/competency	22 (6.65)
Communication	36 (10.87)
Listened	22 (6.65)
Procedure/treatment-related attributes	
Complication	21 (6.34)
Outcome	14 (4.23)
Procedure pain	8 (2.42)
Administrative attributes	
Staff courtesy/respect	109 (32.93)
Insurance/billing	98 (29.60)
Communication	58 (17.52)
Waiting time	53 (16.01)
Coordination of care	49 (14.80)
Scheduling	39 (11.78)
Office cleanliness/comfort	12 (3.63)
Location	7 (2.11)
Interprofessional care team	3 (0.91)

1). Physician-related attributes include: disrespectful (31.7%), unhelpful (24.2%), and uncaring (14.2%). Additional characteristics are detailed in Table 3.

DISCUSSION

Patient online reviews represent a growing, but under used, source of practice quality and patient experience information. Pain medicine is a high volume, elective field and provides the opportunity to analyze and validate the content of online physician rating Web sites. Examining themes that appear in positive and negative reviews can aid initiatives to improve patient satisfaction and health care outcomes. In this study, we assembled online provider reviews from 2 independent rating sites—Yelp and Healthgrades—and identified negative and positive attributes that were associated with high and low rating scores.

Our data showed that 79.7% and 20.3% of chronic pain physician ratings were high scoring and low scoring, respectively. To date, numerous studies have evaluated online patient reviews (6-9,18-24). Our study finding is similar with prior studies examining physician rating Web sites across a variety of specialties. A study focusing on hand surgeon online ratings revealed higher scores, and that 98% of hand surgeons had an online rating (22). Sports medicine surgeon online ratings also noted high ratings for most surgeons, and written comments were affected by surgeon affability and perceived competence (23). A study of 500 urologists noted that 80% were reviewed on at least one patient review Web site, and 86% of all urologists had a favorable rating (19). It is worth mentioning that the 20% rate of negative reviews among chronic pain physician is higher than previously reported negative

reviews at other medical subspecialties. This may be explained by high denial rate of patient request for inappropriate doses or combinations of medications such as benzodiazepines or opioids. A study by Jerant et al (25) observed an association between denial of certain kinds of patient request with worse patient satisfaction. These interactions are very frequent among chronic pain providers and may subsequently explain some high proportion of negative reviews. Similarly, one can also postulate that some positive reviews may be as a result of opioid seekers successfully filling their prescriptions.

Interestingly, we observed that Yelp online platform contained a significantly higher proportion of low rating scores for pain physicians compared with Healthgrades. A similar difference between Yelp and ZocDoc was noted by Smith and Lipoff (6) and Trehan et al (24). They noted a similar difference between RateMD and Vitals, the latter containing a significantly higher proportion of negative reviews compared with the former. However, Kirkpatrick et al (22) did not find a significant difference between Healthgrades and Vitals among regional datasets. Structural factors of each review platform may indeed influence the proportion of negative reviews for a given physician. Furthermore, Yelp reviews for consumer goods have been shown to be susceptible to influxes of computer or competitor-generated negative ratings (5). Services such as ZocDoc that verify patient visits may provide a more accurate depiction of negative reviews.

Our study found that the proportion of positive characteristics observed with high score ratings were mostly physician-related attributes followed by administrative, patient, and procedure-related attributes. These results were largely in agreement with online ratings of dermatologists, obstetric surgeons, hand surgeons, and spine surgeons (6,7,18,22). Furthermore, studies of pan-specialty hospital ratings identify physician attributes key in positive reviews (10). Interestingly, Trehan et al (24) also found a number of reviews regarding an individual physician to be correlated to positive ratings. This may suggest that physicians who experience a high frequency of positive patient interactions are more likely to generate ratings.

Among the low rating group, we found the proportion of negative characteristics observed were largely administrative. Smith and Lipoff (6) and Trehan et al (24) observed similarly frequent themes in negative reviews across specialties. Ranard et al (4) also found that Yelp reviews more often mentioned insurance and

billing, and cost of hospital visits were more tightly associated with negative reviews, whereas Emmert et al (10) identified wait time as the principal concern. In contrast, data from Bakhsh and Mesfin (9) suggest that interpersonal interactions with physicians primarily influence ratings. Negative patient experiences can be varied in cause and degree between practices. Although our data suggest that administrative factors generate negative ratings more frequently than do physician characteristics, this may be heavily influenced by local insurance markets, physician training sites, and other regional factors.

There are several limitations in this study. First, the present investigation only evaluated 1,296 positive reviews and 331 negative reviews of pain management practices, and it is possible if a larger number of reviews were evaluated our findings may be different. However, these findings with regard to the themes common in positive and negative reviews have been reported in other publications (1,2,8-13). Second, this study looks at reviews of 4 large cities, thus we may have excluded patient populations with substantially different preferences as health care consumers. Furthermore, patient demographics that are (1) unaware of physician rating sites, or (2) unable to use the platform because of a knowledge deficit may have also been excluded from this study. Another important limitation that should be discussed is that individual reviewers are anonymous. It is impossible to confirm the validity of individual reviewers' interactions with the pain management specialist who provided care or validate the identity of the reviewers. However, Yelp has a proprietary algorithm that selectively hides reviews that may be falsified (26). This is also confounded by our inability to identify reviews from chronic pain patients who are opioid seekers. We can presume that most reviews stem from legitimate physician-patient experiences. Finally, the reviews on Healthgrades are all given by "verified" patients. However, Healthgrades creates physicians' profiles based on information from government and commercially available services; therefore, Healthgrades may not capture all pain management practices and pain specialist.

Therefore online reviews are a fast, efficient, transparent way to obtain actionable feedback from patients (27). However, one of the major problems of physician online ratings is the lack of transparency. It is very difficult (if not, impossible) to tell if the online "rater" is actually a patient or an individual posing as a patient, that is, an unhappy employee, or a business competitor. Additionally, even positive ratings have lim-

ited use, as the origin of outstanding comments about health care providers may be that of a physician (28). To add further confusion, there is also evidence that for-profit online rating sites create their own positive posts and ratings. This remains a potential source of bias in this study. Although, the size of such a sample, when compared with the number of patients who any given physician takes care of, will likely lack any statistical significance.

Nevertheless, physician online ratings may have some serious unintended consequences to physicians. Zgierska et al (29) suggested that patient satisfaction survey use may promote job dissatisfaction, attrition, and inappropriate clinical care among some physicians. Fifty-nine percent of physicians surveyed in the study reported that their compensation was linked to patient satisfaction ratings. Additionally, 78% reported that patient satisfaction surveys either moderately or severely affected their overall job satisfaction, and because of this, 28% had considered quitting their job or leaving the medical profession (29,30).

Regardless, it is important for the pain medicine physician to acknowledge that the content on patient rating Web sites has the potential to influence patients' decisions and impact medical practice. Based on our data, here are some physician and administrative-related factors that may help the chronic pain physicians improve online reviews from patients:

Physician-Related Factors

We encourage providers to continue to stay updated with the guidelines and recommendations required for management of chronic pain conditions (especially areas that are very controversial, like the use of medical marijuana).

We encourage providers to listen and provide helpful recommendations when patients have questions about their therapy or diagnosis. Patients were very

appreciative of clinicians who took the extra time to provide insights to their questions.

We encourage providers to be caring toward patients with both simple and complex chronic pain conditions. Patients who knew that their conditions could not be improved appreciated physicians who remained compassionate and caring.

Administrative-Related Factors

During interactions with difficult patients, we encourage administrative staffs to maintain courtesy and respect at all times. Patients were more likely to describe staffs as rude and disrespectful during a telephone conversation.

We encourage administrative staffs to communicate billing and insurance information to the best of their knowledge with patients. Patients also appreciated when staffs communicated their lack of knowledge about the billing process than avoiding the conversation.

Reducing waiting time, which can be very difficult to accomplish, should be attempted daily. Patients were very appreciative of practices that informed them of potential delays during their visit.

CONCLUSIONS

A review of online platforms evaluating pain physicians from several chronic pain practices identified a range of positive and negative factors that affect patient experiences. These online platforms can serve as a useful tool that provide timely data for chronic pain physicians to gain more insight into the quality of care perceived by patients, thereby aiding providers to improve on ways to optimize patient-care experiences and encounters. Future research may include improving administrative negative attributes, for example, analyzing wait time and other quantifiable metrics for correlation with online rating.

REFERENCES

- Schleicher M. 2018 ReviewTrackers online reviews survey: Statistics and trends [Internet]. ReviewTrackers. 2018. www.reviewtrackers.com/reports/online-reviews-survey/Úccessed: November 12th 2018
- Carroll J. An expert's guide to patient privacy and online reviews. [Internet]. Yelp. 2018. <https://blog.yelp.com/2016/12/experts-guide-patient-privacy-online-reviews>Úccessed: November 12th 2018
- Holliday AM, Kachalia A, Meyer GS, Sequist TD. Physician and patient views on public physician rating websites: A cross-sectional study. *J Gen Intern Med* 2017; 32:626-631.
- Ranard BL, Werner RM, Antanavicius T, Schwartz HA, Smith RJ, Meisel ZF, Asch DA, Ungar LH, Merchant RM. Yelp reviews of hospital care can supplement and inform traditional surveys of the patient experience of care. *Health Aff* 2016; 35:697-705.
- Hawkins JB, Brownstein JS, Tuli G, Runels T, Broecker K, Nsoesie EO, McIver DJ, Rozenblum R, Wright A, Bourgeois FT, Greaves F. Measuring patient-perceived quality of care in US hospitals using Twitter. *BMJ Qual Saf* 2016; 25:404-413.
- Smith RJ, Lipoff JB. Evaluation of dermatology practice online reviews. *JAMA Dermatol* 2016; 152:153.
- Asanad K, Parameshwar PS, Houman J, Spiegel BM, Daskivich TJ, Anger JT. Online physician reviews in female pelvic medicine and reconstructive surgery. *Female Pelvic Med Reconstr Surg* 2018; 24:109-114.
- Evans RW. Negative online patient reviews in headache medicine. *Headache J Head Face Pain* 2018; 58:1435-1441.
- Bakhsh W, Mesfin A. Online ratings of orthopedic surgeons: Analysis of 2185 reviews. *Am J Orthop (Belle Mead NJ)* 2014; 43:359-363.
- Emmert M, Meszmer N, Schlesinger M. A cross-sectional study assessing the association between online ratings and clinical quality of care measures for US hospitals: Results from an observational study. *BMC Health Serv Res* 2018; 18:82.
- Sacks GD, Lawson EH, Dawes AJ, Russell MM, Maggard-Gibbons M, Zingmond DS, Ko CY. Relationship between hospital performance on a patient satisfaction survey and surgical quality. *JAMA Surg* 2015; 150:858.
- Schmocker RK, Cherney Stafford LM, Winslow ER. Satisfaction with surgeon care as measured by the Surgery-CAHPS survey is not related to NSQIP outcomes. *Surgery* 2019; 165:510-515.
- Chen J, Presson A, Zhang C, Ray D, Finlayson S, Glasgow R. Online physician review websites poorly correlate to a validated metric of patient satisfaction. *J Surg Res* 2018; 227:1-6.
- Yelp. About us [Internet]. Yelp, Inc. <https://www.yelp.com/about>Úccessed: Octob
- Bardach NS, Asteria-Peñaloza R, Boscardin WJ, Dudley RA. The relationship between commercial website ratings and traditional hospital performance measures in the USA. *BMJ Qual Saf* 2013; 22:194-202.
- Healthgrades. About us [Internet]. *Healthgrades*. 2018. <https://www.healthgrades.com/about/>Úccessed: October 23rd 2018
- Boyatzis RE. Transforming qualitative information: Thematic analysis and code development. Thousand Oaks, CA, SAGE Publications; 1998. {AU: Please confirm publisher and location added for reference 17}
- Zhang J, Omar A, Mesfin A. Online ratings of spine surgeons. *Spine (Phila Pa 1976)* 2018; 43:E722-E726.
- Ellimoottil C, Hart A, Greco K, Quek ML, Farooq A. Online reviews of 500 urologists. *J Urol* 2013; 189:2269-2273.
- Gilbert K, Hawkins CM, Hughes DR, Patel K, Gogia N, Sekhar A, Duszak R. Physician rating websites: Do radiologists have an online presence? *J Am Coll Radiol* 2015; 12:867-871.
- Kadry B, Chu LF, Kadry B, Gammas D, Macario A. Analysis of 4999 online physician ratings indicates that most patients give physicians a favorable rating. *J Med Internet Res* 2011; 13:e95.
- Kirkpatrick W, Abboudi J, Kim N, Medina J, Maltenfort M, Seigerman D, Lutsky K, Beredjiklian PK. An assessment of online reviews of hand surgeons. *Arch Bone Jt Surg* 2017; 5:139-144.
- Nwachukwu BU, Adjei J, Trehan SK, Chang B, Amoo-Achampong K, Nguyen JT, Taylor SA, McCormick F, Ranawat AS. Rating a sports medicine surgeon's "quality" in the modern era: An analysis of popular physician online rating websites. *HSS J* 2016; 12:272-277.
- Trehan SK, DeFrancesco CJ, Nguyen JT, Charalel RA, Daluiski A. Online patient ratings of hand surgeons. *J Hand Surg Am* 2016; 41:98-103.
- Jerant A, Fenton JJ, Kravitz RL, Tancredi DJ, Magnan E, Bertakis KD, Franks P. Association of clinician denial of patient requests with patient satisfaction. *JAMA Intern Med* 2018; 178:85-91.
- Yelp. Yelp's recommendation software explained [Internet]. Yelp. 2010. <https://blog.yelp.com/2010/03/yelp-review-filter-explained>Úccessed: October 23rd 2018
- Hill D, Feldman SR. Online reviews of physicians. *JAMA Dermatol* 2016; 152:143.
- Segal J. The role of the Internet in doctor performance rating. *Pain Physician* 2009; 12:659-664.
- Zgierska A, Rabago D, Miller MM. Impact of patient satisfaction ratings on physicians and clinical care. *Patient Prefer Adherence* 2014; 8:437-446.
- Ma L, Kaye AD, Bean M, Vo N, Ruan X. A five-star doctor? Online rating of physicians by patients in an Internet driven world. *Pain Physician* 2015; 18:E15-E18.