

Social Media Use Among Foot and Ankle Orthopedic Surgeons

Garret Garofolo-Gonzalez, MD¹, Cesar R. Iturriaga, DO^{2,3} ,
Jordan B. Pasternack, MD¹, Adam Bitterman, DO^{4,5},
and Gregory P. Guyton, MD⁶ 

Abstract

Background: Digital media is an effective tool to enhance brand recognition and is currently referenced by more than 40% of orthopedic patients when selecting a physician. The purpose of this study was to evaluate the use of social media among foot and ankle (F&A) orthopedic surgeons, and the impact of that social media presence on scores of a physician-rated website (PRW).

Methods: Randomly selected F&A orthopedic surgeons from all major geographical locations across the United States were identified using the AAOS.org website. Internet searches were then performed using the physician's name and the respective social media platform. A comprehensive social media use index (SMI) was created for each surgeon using a scoring system based on social media platform use. The use of individual platforms and SMI was compared to the F&A surgeon's Healthgrades scores. Descriptive statistics, unpaired Student *t* tests, and linear regression were used to assess the effect of social media on the PRW scores.

Results: A total of 123 board-certified F&A orthopedic surgeons were included in our study demonstrating varying social media use: Facebook (48.8%), Twitter (15.4%), YouTube (23.6%), LinkedIn (47.9%), personal website (24.4%), group website (52.9%), and Instagram (0%). The mean SMI was 2.4 ± 1.6 (range 0-7). Surgeons who used a Facebook page were older, whereas those using a group website were younger ($P < .05$). F&A orthopedic surgeons with a YouTube page had statistically higher Healthgrades scores compared to those without ($P < .05$).

Conclusion: F&A orthopedic surgeons underused social media platforms in their clinical practice. Among all the platforms studied, a YouTube page was the most impactful social media platform on Healthgrades scores for F&A orthopedic surgeons. Given these findings, we recommend that physicians closely monitor their digital identity and maintain a diverse social media presence including a YouTube page to promote their clinical practice.

Level of Evidence: Level IV.

Keywords: physician ratings, social media, patient satisfaction, online patient ratings

Introduction

Social media has become a leading forum for discourse, connecting to 2 billion Facebook users, 500 million Twitter users, 2 billion daily YouTube viewers, and 600 million Instagram accounts.^{3,7,10,22} Users rely on the platforms to disseminate health care information and as source of referrals,^{15,20,27} and in response, physicians have amplified their online presence in this rapidly changing medium.¹⁶ Recent studies show that 80% of patients use the Internet for health care questions and 90% of physicians use a social media platform.²⁷ Orthopedic patients more extensively research their musculoskeletal conditions online and those traveling from 120 to 180 miles to see an orthopedic surgeon are more

¹ Department of Orthopaedic Surgery, Maimonides Medical Center, Brooklyn, NY, USA

² Department of Orthopaedic Surgery, Northwell Health Plainview Hospital, Plainview, NY, USA

³ Department of Orthopaedic Surgery, Northwell Health Long Island Jewish Medical Center, New Hyde Park, NY, USA

⁴ Department of Orthopaedic Surgery, Northwell Health Huntington Hospital, Huntington, NY, USA

⁵ Donald and Barbara Zucker School of Medicine at Hofstra, Hempstead, NY, USA

⁶ Department of Orthopaedics, MedStar Union Memorial Hospital, Baltimore, MD, USA

Corresponding Author:

Cesar R. Iturriaga, DO, Long Island Jewish Medical Center, Department of Orthopaedic Surgery, 270-05 76th Avenue, New Hyde Park, NY 11040, USA.
Email: citurriaga@northwell.edu



Table 1. Calculation of Social Media Index (SMI) Score.

| Platform | Points Associated |
|------------------|-------------------|
| Facebook | 1 |
| LinkedIn | 1 |
| Twitter | 1 |
| YouTube | 1 |
| Personal website | 2 |
| Group website | 1 |
| Instagram | 1 |

likely to be social media users.^{6,7,21} Additionally, foot and ankle (F&A) patients have the highest rate of social media use (60%) among orthopedic subspecialties.⁷

Online social platforms have reshaped health care communication and contribute to the shift toward patient satisfaction based models.^{3,26} Increases in patient use of online health care resources have coincided with the growth of physician-rating websites (PRWs), used to highlight past patient outcomes and feedback.^{8,11} Online reviews now act as additional health metric, with a majority of patients considering information on PRWs when choosing a new provider.^{14,23,27} Although easily accessible to patients, PRWs are not a validated measure of clinical competency,^{7,23} and results may suffer from low sample size, false claims, or interactions not with clinical providers.^{9,26} Furthermore, negative comments regarding F&A orthopedic surgeons pertained to surgeon-independent factors, like inefficient patient flow.²⁸ Therefore, patients using these third-party metrics are often referencing inaccurate information when predicting their future quality of care.⁹

The upward trend in patient and physician social media use, coupled with limited knowledge of the role in patient care,^{7,19,27} necessitates further examination. There is a paucity of literature assessing the online platforms used in orthopedic F&A surgery for patient engagement and outreach. Therefore, the purpose of this study was to assess the role of social media in orthopedic F&A surgery by evaluating surgeon use rates among popular social media platforms and their individual influence on the PRW scores. Additionally, we attempted to develop a scoring system quantifying the impact of a surgeon's social media presence on overall patient satisfaction.

Methods

This observational study was performed from October 1, 2018, to January 15, 2019. In accordance with the methods outlined in our index paper on social media use in hand surgeons practices, we employed the same methodology to F&A orthopedic surgeons.¹² This study was exempt from our institutional review board because only publicly available information was accessed for this investigation. Physicians were identified using the American Academy of Orthopaedic Surgeons (AAOS) directory of all active members. On the AAOS.org website, surgeons were queried

using the "Find me an Orthopaedist" tab and selecting filter by "Foot and Ankle" specialist. As previously presented by the Bureau of Economic Analysis, a single state was selected at random to represent the geographical region. F&A orthopedic surgeons were added at random to our database by selecting every fifth physician.

Social Media Identity Database

Google searches were performed with the following keywords: "physician's name," "MD" or "DO," and "<specific social media platform>." The social media platforms queried were Facebook profile, LinkedIn account, YouTube page, Twitter handle, Instagram account, personal website, and group website. As previously described, a personal website was classified as an entity individually operated and managed by an orthopedic surgeon.^{9,12} Professional group websites required inclusion of at least 2 orthopedic surgeons. For this investigation, institutional websites were not included. Social media and Internet website queries were confirmed to verify the accuracy of the F&A orthopedic surgeons and that the platform was intended for professional use.

Healthgrades.com was used as our quantitative outcome measure, due to prior literature demonstrating it was the most recognizable online physician rating website.^{6,16,23} The queries done on Healthgrades.com reflected the prior searches: "physicians name" + "MD" vs. "DO" + "Healthgrades Score (HGS)." Variables of interest collected from Healthgrades.com included physician age, care philosophy, type of practice, number of ratings reviews, years in practice, and overall HGS rating (range 0-5).

Social Media Index (SMI) Score

As previously described, F&A orthopedic surgeons' comprehensive social identity score was classified based on social media platform use, as demonstrated in Table 1.¹²

Statistics

Descriptive statistics were calculated as means and SDs for continuous variables and as frequencies and percentages for categorical data. Group differences were evaluated using independent sample *t* tests for continuous variables. Linear regressions were used to assess the relationship between orthopedic surgeon experience, respective HGS, and number of reviews. Significance was determined by a *P* value less than .05 and a correlation of determination (r^2) greater than 0.20.

Results

A total of 123 board-certified orthopedic F&A surgeons were included in our study. 123 out of 123 (100%) were evaluated on HealthGrades.com and were included in our database. The average age was 53.9 years old \pm 8.6 years.

Table 2. Comparison of Demographics and Healthgrades Scores (HGS) Among Foot and Ankle Orthopedic Surgeons With Different Uses of Social Media Platforms.^a

| Social Media Platform | Sample (n) | Age (y) | Years in Practice (y) | Healthgrades Score | Healthgrades Reviews (count) |
|--------------------------|------------|----------------|-----------------------|--------------------|------------------------------|
| Facebook | 60 | 56.1 ± 8.1 | 18.2 ± 8.8 | 3.9 ± 0.9 | 13.9 ± 9.5 |
| Without Facebook | 63 | 51.8 ± 8.7 | 14.4 ± 8.6 | 4.1 ± 0.7 | 15.1 ± 14.5 |
| Significance | | <i>P</i> < .05 | <i>P</i> < .05 | ns | ns |
| LinkedIn | 59 | 54.2 ± 8.7 | 16.8 ± 9.2 | 3.9 ± 0.8 | 16.5 ± 13.7 |
| Without LinkedIn | 64 | 53.6 ± 8.6 | 15.6 ± 8.5 | 4.1 ± 0.8 | 13.4 ± 11.9 |
| Significance | | ns | ns | ns | ns |
| Personal website | 30 | 53.2 ± 8.1 | 15.7 ± 8.3 | 4.11 ± 0.7 | 15.2 ± 11.0 |
| Without personal website | 93 | 54.1 ± 8.7 | 16.4 ± 9.0 | 3.97 ± 0.8 | 14.7 ± 13.4 |
| Significance | | ns | ns | ns | ns |
| Group website | 65 | 51.6 ± 7.8 | 14.2 ± 8.2 | 4.0 ± 0.8 | 17.9 ± 15.1 |
| Without group website | 58 | 56.5 ± 8.6 | 18.5 ± 8.9 | 4.0 ± 0.9 | 11.4 ± 8.6 |
| Significance | | <i>P</i> < .05 | <i>P</i> < .05 | ns | <i>P</i> < .05 |
| Twitter | 19 | 52.8 ± 5.7 | 15.8 ± 5.6 | 4.1 ± 0.6 | 18.8 ± 10.7 |
| Without Twitter | 104 | 54.1 ± 9.0 | 16.3 ± 9.3 | 4.0 ± 0.8 | 14.1 ± 13.2 |
| Significance | | ns | ns | ns | ns |
| YouTube | 29 | 53.5 ± 8.8 | 16.2 ± 9.1 | 4.3 ± 0.6 | 15.6 ± 12.8 |
| Without YouTube | 94 | 54.1 ± 8.6 | 16.2 ± 8.7 | 3.9 ± 0.8 | 14.7 ± 13.0 |
| Significance | | ns | ns | <i>P</i> < .05 | ns |
| Social Media Index | | | | | |
| <3 | 73 | | | 3.9 ± 0.9 | |
| 3-6 | 47 | | | 4.1 ± 0.7 | |
| >6 | 3 | | | 4.0 ± 0.2 | |
| <3 vs 3-6 | | | | | ns |
| <3 vs >6 | | | | | ns |
| 3-6 vs >6 | | | | | ns |

Abbreviation: ns, not statistically significant.

^aGroup results are presented as mean and SD.

The mean number of years in practice was 16.2 ± 8.8 years. The average SMI score 2.39 ± 1.57.

Gross analysis of the sample indicated that 48.8% of F&A orthopedic surgeons used Facebook (n = 60), 15.5% used Twitter (n = 19), 23.6% used YouTube (n = 29), 47.9% used LinkedIn (n = 59), 24.4% used a personal website (n = 30), 52.9% used a group website (n = 65), and 0% used Instagram (n = 0). In this study, 69.9% were in private practice (n = 86), 63.5% had an academic appointment (n = 78). Approximately 30.5% of social media platforms available to orthopedic F&A surgeons were being used.

Independent sample *t* tests and regression analyses were used to evaluate the F&A orthopedic surgeons with respect to each social media platform, differences in characteristics, and patient-reported satisfaction (Table 2).

Facebook

Independent sample *t* tests comparing F&A orthopedic surgeons with and without a professional Facebook account did demonstrate a significant difference with respect to age and years in practice (*P* < .05). However, surgeons with a professional Facebook account did not have significantly different HGS, or reviews (*P* > .05). Linear regression analysis found no significant correlation between HGS in surgeons using Facebook account vs years in practice.

Group Websites

Independent sample *t* tests comparing F&A orthopedic surgeons using a group website to those without one, demonstrated a significant difference with respect age, number of reviews, and years in practice (*P* < .05). Linear regression analysis found no significant correlation between HGS in surgeons using a group website account vs years in practice.

YouTube

Independent sample *t* tests comparing F&A orthopedic surgeons using a professional YouTube channel to those without one demonstrated a significant difference with respect to HGS (*P* < .05). Linear regression analysis found no significant correlation between HGS in surgeons using a YouTube page vs years in practice.

LinkedIn, Personal Website, Twitter

Independent sample *t* tests comparing F&A orthopedic surgeons using a LinkedIn, personal website, or Twitter account to those without one did not demonstrate a significant difference with respect to age and years in practice, HGS, or number of reviews (*P* > .05). Linear regression analyses found no significant correlation between HGS in surgeons using these platforms vs years in practice.

Social Media Index Score

The mean SMI for board-certified orthopedic F&A surgeons was 2.4 ± 1.6 (Table 2). Subgroup analysis stratified surgeons into cohorts with an SMI <3, 3-6, and >6. Surgeons in the SMI <3 cohort had an average SMI score of 1.35 ± 0.73 (n = 73) and an average HGS of 3.9 ± 0.9 . F&A orthopedic surgeons in the SMI 3-6 cohort had an average SMI of 3.8 ± 1.0 (n = 47) and an average HGS of 4.1 ± 0.7 . Surgeons in the SMI >6 cohort had an average SMI of 7 ± 0 (n = 3) and an average HGS of 4.0 ± 0.2 . Independent sample *t* tests comparing F&A orthopedic surgeons with lower SMI to those with higher SMI did not reach significance ($P > .05$). Linear regression analyses found no significant correlation between HGS and SMI.

Discussion

With the advent of social media, dissemination of medical information and dynamics of practice have undergone rapid paradigm shifts.^{3,10} Expansion of online platforms and PRWs have prompted increased competition and put pressure on orthopedic surgeons to identify new patients using novel mediums.^{10,17} Considering that 90% of F&A orthopedic surgeons have at least one 1-star rating²⁸ and more than a third of patients report avoidance of a physician due to negative online scores,¹⁸ we evaluated current trends in social media use and influence of online profiles. Velasco et al examined ratings among the 3 most popular PRWs for 210 orthopedic F&A surgeons and found a mean HGS of 4.03 among an average of 15.4 reviews,²⁸ but our study further stratified surgeons by their online social media platform use. YouTube was the only platform to demonstrate significant difference among groups, and despite only being used by a quarter of orthopedic F&A surgeons, these providers had the highest mean HGS. The use of Facebook was more common in older surgeons with more experience, and the group using this platform was the only one to demonstrate lower numbers of reviews than those who did not. Although surgeon stratification by SMI did not yield significant results, an average SMI of 2.4 highlights the underuse of social media among F&A orthopedic surgeons.

In comparison to other subspecialties, orthopedic surgeons underuse social media.²¹ The use of the SMI has previously been evaluated in orthopedic hand surgery, and increasing levels were significantly associated with increased PRW scores.¹² The authors showed hand surgeons from 2015 to 2017 and reported a lower mean SMI (1.53) than our study but found significant correlations with increasing SMI and improved HGS, possibly indicating that a social media presence alone does not equate patient engagement or satisfaction. There is considerable opportunity for orthopedic F&A surgeons to expand their digital footprint, but must effectively improve their practice accessibility to attract more patient referrals.⁷ In acknowledgment of the potential benefits but also pitfalls, supervising

associations such as American Academy of Orthopaedic Surgeons (AAOS), American College of Surgeons, and American Medical Association are providing guidance to physicians that are creating social media identities.^{10,17} The clinical influence on patient care remains misunderstood. A national survey found that a third of patients selected a physician based on scores from a PRW while another third avoided a physician with poor marks.^{3,4,13} Despite these findings, surgeons often minimize the influence of PWRs. Samora et al found that only 20% of physicians personally check their physician-rating scores, with 17% of these believing that the score had no effect on reimbursement, number of patients seen, or volume of patient referrals.²³

Except for Facebook, our study showed social media was used by younger F&A orthopedic surgeons in earlier stages of clinical practice. Although younger individuals use social media and online platforms at a higher frequency,^{6,7,21,25} our study highlights the recent demographic shifts in Facebook users: increases in use among older (55 and older) and decreases among younger Americans.²⁵ In a survey study of 752 orthopedic patients in 2014, Curry et al found lower rates of social media use in arthroplasty and older patients, and concluded that surgeons with this population should continue to rely on word of mouth.⁷ Although our study showed slightly lower mean HGS and reviews for surgeons using Facebook, owing to developing trends, orthopedic F&A providers caring for an older patient population may still increase patient engagement with use.

Although PWRs may not accurately reflect quality care, studies show they do impact patients' choice of physician. Additionally, implementation of the Affordable Care Act permits financial penalties and rewards for health care institutions based on patient satisfaction scores.¹ Prior studies found that orthopedic surgeons increased their patient satisfaction when developing a digital presence.²² Our study found a higher number of Healthgrade.com Reviews (HGR) of surgeons with all platforms except for Facebook. This reflects similar findings in another study where spine surgeons with a presence on social media had a significantly higher number of ratings and comments on 3 PWRs.⁸ Our study demonstrated that surgeons using a YouTube profile demonstrated the highest mean HGS. While numerous orthopedic studies have questioned the clinical usefulness of the educational material on this platform,^{2,5,29} increases in digital presence can enhance the physician-patient relationship and promote equal communication.^{22,24} Given these findings, we recommend that orthopedic F&A surgeons cultivate a digital identity to meet the needs of their technologically savvy patients and promote their clinical practice.

Certain limitations of our study need to be considered. The investigators evaluated scores using one PWR, Healthgrades.com. Furthermore, surgeons were selected for the AAOS.org website, which could influence our selected samples. In different regions of the United States, varying economic resources and technology availability among patients and surgeons may influence the importance or use of these

social media platforms, skewing HGR and HGS. Nevertheless, the selection from diverse geographical regions allows the study to demonstrate a representation of the nationwide population. Another limitation was the select number of social media platforms evaluated: Facebook, Twitter, YouTube, LinkedIn, group websites, personal websites, and Instagram. However, these platforms are the most commonly assessed and used in prior social media literature and by patients.^{8,22,25} Furthermore, the inherent personality traits found in surgeons who use a more engaging platform, like YouTube, may positively influence their patients, leading to increased HGS. Finally, our study represents a time point of social media use by F&A orthopedic surgeons, but as technology and trends rapidly evolve, fluctuations in current data may exist.

This study sought to analyze the impact of social media and Internet platforms on patient satisfaction scores of F&A orthopedic surgeons across the United States. Our findings demonstrate that patient satisfaction may correlate with surgeon's social media identity, especially with YouTube. With the inherent rapid changes in methods of communication and outreach, we believe orthopedic F&A surgeons should use social media platforms to maximize patient engagement.

Ethics Approval

Ethical approval was not sought for the present study because only publicly available information was accessed for this investigation.



Declaration of Conflicting Interests

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ORCID iD

Cesar R. Iturriaga, DO,  <https://orcid.org/0000-0002-6263-5410>
Gregory P. Guyton, MD,  <https://orcid.org/0000-0002-1238-3673>

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