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Utilization and Impact of Social Media in Hand Surgeon Practices

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Abstract

Background: Social media is an effective tool to enhance reputation and brand recognition and is being used by more than 40% of patients when selecting a physician. This study aimed to evaluate the use of social media in hand surgeon practices, and to assess the impact that one's social media presence has on physician-rating website scores (PRWs). **Methods:** Randomly selected hand surgeons from across the United States were identified. Sequential searches were performed using the physicians name + the respective social media platform (Facebook, LinkedIn, YouTube, Twitter, Instagram, personal website, group website). A comprehensive social media utilization index (SMI) was created for each surgeon. Utilizing descriptive statistics, we assessed the effect of social media on the PRW. **Results:** A total of 116 board-certified hand surgeons were included in our study. The sample identified 10.3% of the population used Facebook, 1.7% used Twitter, 25.8% used YouTube, 22.4% used LinkedIn, 27.5% used a personal website, and 36.2% used a group website, 0% used Instagram. The average SMI was 1.53 ± 1.42 (0-6). Physicians with a personal website received higher Healthgrades scores than those without one ($P < .05$). Analysis of SMI demonstrated that hand surgeons with an index less than 3 received lower Healthgrades scores compared to those with an SMI above 3 ($P < .001$). **Conclusion:** Hand surgeons underutilize social media platforms in their practice. A personal website is single most important social media platform to improve HealthGrades score in hand surgeons.

Keywords: social media, online patient ratings, patient satisfaction, physician-rating websites, digital identity

Introduction

Social media has revolutionized the way in which we communicate worldwide, as its use has increased by 50% over the last 5 years. As of 2017, there are 2 billion Facebook users, 500 million Twitter users, and 2 billion daily YouTube viewers, 600 million Instagram accounts.[2-4,6,14] Based on the popularity of this technology, it is likely that social media will play a substantial role in defining a new patient-centric health care model, driven by patient satisfaction.[2,17] A recent study has shown that a majority of patients were researching other patients' experiences and feedback on particular physicians, as well as viewing physician-rating websites prior to booking an initial consultation.[15]

Despite not being a validated measure of clinical competency, physician-rating websites are increasingly being utilized by the consumer-patient in selecting physicians.[1,4,15] These websites often comprise a sizable portion of a physician's digital presence and have considerable implications regarding the vitality of his or her practice. Several studies from various medical specialties have investigated these rating websites in an attempt to correlate factors that are associated with a higher score, such as physician sex, years in practice, medical specialty, volume of patient ratings, geographical location, academic location, and social medial footprint, but none have identified consistently beneficial factors.[17]

To a limited extent, the utilization of social media within health care has been explored; however, the impact that social media use has on an orthopedic hand surgeon's clinical practice remains unclear.[4,14] Surprisingly, no studies within the current literature have focused extensively on social media use or the effect that a robust social media presence may have on a hand surgeon's rating on the Internet.

The purpose of this study is to examine the prevalence of social media and Internet use in board-certified orthopedic hand surgeons across the United States. The primary objective of this study is observational; we aim to provide a cross-sectional view on how many hand surgeons are employing a professional Facebook profile, LinkedIn account, YouTube

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channel, Instagram account, personal website, group website, or Twitter handle into their digital identity. Our secondary objective is analytical, in that we aim to compare how individual social media platforms relate to a hand surgeon's score on a physician-rating website. Our hypothesis is that individuals with a more robust social media presence will have higher ratings and a larger number of reviews. Finally, it is our intention to develop a novel method for quantifying orthopedic hand surgeons' social media use, which we will denote as the social media index (SMI) score. This calculation will allow hand surgeons to predict the composite effect that their entire social media identity will have on their overall patient satisfaction scores.

Materials and Methods

Physician Selection

This observational study was performed from October 1, 2015, to January 15, 2017. This study was exempt from our institutional review board because only publically available information was accessed for this investigation. The American Academy of Orthopaedic Surgeons (AAOS) maintains a directory of all active members. Physicians were identified via the AAOS.org website, clicking the "Find me an Orthopaedist Tab," and selecting filter by "Hand and Wrist" specialist. In accordance with definitions from the Bureau of Economic Analysis, a single state was randomly selected to represent the geographical region. For all geographical regions, hand surgeons were randomly added to our database by entering every fifth physician.

Social Media Identity Database

After populating our database, sequential Google searches were performed including "physician's name" + "MD" versus "DO" + "the respective social media platform." The social media platforms explored were a professional Facebook profile, LinkedIn account, YouTube page, Twitter handle, Instagram account, personal website, and a group website. In contrast to Trehan et al, we defined a personal website as an entity operated and managed by an individual orthopedic surgeon.[17] Professional group websites included at least two orthopedic surgeons; however, all institutional- or hospital-provided websites were ignored for the purposes of this investigation. All social media and Internet platforms were assessed to ensure that the information accurately identified board-certified hand surgeons, currently in practice, and that the populated content was intended for professional use only.

We utilized Healthgrades.com as a quantitative outcome measure, as previous studies have demonstrated this website to be the most recognizable physician-rating website on the Internet.[8,9,15] Healthgrade searches were performed in an identical manner to the social media platform inquiries: "physicians name" + "MD" versus "DO" + "Healthgrades score (HGS)." The data recorded 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).

Table 1. Social Media Index Score.

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

Social Media Index Score

The hand surgeon's comprehensive social identity score was created and quantified based on a point system with respect to each social media platform, as demonstrated on Table 1. Each social media platform was equally valued (1 point each), with the exception of personal websites (2 points each), due to the fact that the other social media platforms can be created within a matter of minutes; a professional personal website requires on average 60 hours to create, with additional time needed for routine maintenance.[12]

Statistics

Descriptive statistics were calculated in terms of means and standard deviations for continuous variables, frequencies, and percentages for categorical data. Group differences among continuous variables were evaluated using independent unpaired sample *t* tests. Linear regression was utilized to assess the relationship between hand surgeon experience, respective HGS, and number of reviews. Significance was determined by a P value $<.05$ and a correlation of determination (r^2) >0.20.

Results

A total of 120 board-certified hand surgeons were identified for our study. Of 120 (97%), 116 were evaluated on Healthgrades.com and were included in our database. The average age of hand surgeons included was 56.1 ± 11.3 years. The mean number of years in practice was 18.1 ± 11.6 years. The average HGS was 3.96 ± 0.75 out of a total rating of 5.00. The average number of reviews was 18.9 ± 15.8. The average SMI score was 1.53 ± 1.42. Regression analysis comparing both the HGS and the number of reviews to

Table 2. Hand Surgeon Utilization of Social Media/Internet Platform With Respect to Geographic Location.

Location of practice	Facebook N (%)	Twitter N (%)	YouTube N (%)	LinkedIn N (%)	Personal website N (%)	Group website N (%)
United States	12 (10.3)	2 (1.7)	29 (25)	26 (22.4)	34 (29.3)	42 (35.3)
Geographic region						
Northeast	4 (33.3)	2 (100)	8 (26.7)	7 (26.9)	4 (12.5)	10 (23.8)
Far West	1 (8.3)	0 (0)	9 (30)	6 (23.1)	6 (18.7)	10 (23.8)
South	5 (41.6)	0 (0)	7 (23.3)	2 (7.7)	10 (31.3)	10 (23.8)
Midwest	0 (0)	0 (0)	1 (3.3)	2 (7.7)	2 (6.25)	3 (14)
Southeast	2 (16.7)	0 (0)	5 (16.7)	3 (11.5)	10 (31.3)	9 (21.5)

Table 3. Comparison of Hand Surgeon Characteristics and Patient Satisfaction With Respect to Utilization of Social Media/Internet Platforms.

	Facebook N (%)		Twitter N (%)		YouTube N (%)		LinkedIn N (%)		Personal website N (%)		Group website N (%)	
Platform	YES: 12/116 (10.3)	NO: 104/116 (89.7)	YES: 2/116 (1.7)	NO: 114/116 (98.3)	YES: 29/116 (25)	NO: 87/116 (97)	YES: 26/116 (22.4)	NO: 90/116 (76.6)	YES: 34/116 (29.3)	NO: 82/116 (70.7)	YES: 42/116 (35.3)	NO: 74/116 (64.7)
Age	52.5 ± 10.5	56.4 ± 11.4	49.5 ± 15.5	56.2 ± 11.4	54 ± 9.9	56.8 ± 11.7	53.4 ± 10.8	56.8 ± 10.8	53.1 ± 10.4	57.3 ± 11.5	53.9 ± 12.9	57.3 ± 11.9
Years in practice	14.3 ± 9.8	18.9 ± 11.8	14 ± 15.4	18.5 ± 11.7	16.9 ± 10.6	19 ± 11.9	15.2 ± 10.7	19.3 ± 11.4	15.2 ± 10.7	19.8 ± 11.7	16.8 ± 10.4	18.9 ± 12.5
HGS	3.99 ± 0.6	3.95 ± 0.7	4.1 ± 0	3.95 ± 0.7	4.16 ± 0.6	3.89 ± 0.7	3.93 ± 0.7	3.96 ± 0.7	4.2 ± 0.5	3.85 ± 0.7 $P \leqslant .005$	3.94 ± 0.9	3.97 ± 0.8
Reviews	13.3 ± 9.1	13.3 ± 9.1	28.5 ± 4.9	18.2 ± 16.4	23.6 ± 17.7	17.2 ± 14.9	22.5 ± 22.4	17.7 ± 13.2	22.7 ± 20.6	17.1 ± 13.1	23.4 ± 14.9 $P \leqslant .05$	16.2 ± 16

Note. HGS = Healthgrades score.

years in practice yielded an inverse relationship. However, the correlation of determination was weak ($r^2 < 0.1$).

A subanalysis of geographical differences in hand surgeon utilization of social media is demonstrated in Table 2. Univariate unpaired sample *t* test and regression analysis were used to evaluate the hand surgeons with respect to each social media platform to compare differences in characteristics and patient-reported satisfaction on the physician-rating websites (Table 3):

Facebook

Univariate unpaired sample *t* test comparing hand surgeons with and without a professional Facebook account did not demonstrate a significant difference with respect to age, years in practice, HGS, or reviews. However, linear regression analysis examining HGS in hand surgeons with a professional Facebook account compared to years in practice demonstrated an upward correlation ($r^2 = 0.22$).

LinkedIn

Univariate unpaired sample *t* test comparing hand surgeons with a LinkedIn account to those without one did not show a significant difference with respect to age, years in practice, HGS, or reviews. However, linear regression analysis examining HGS in hand surgeons without a LinkedIn account versus years in practice yielded a negative correlation ($r^2 = 0.23$).

Personal Website

Univariate unpaired sample *t* test comparing hand surgeons with a personal website to those without one demonstrated significantly higher HGS in hand surgeons with a personal website ($P \leqslant .005$). Univariate unpaired sample *t* test did not show a significant difference with respect to age, years in practice, or reviews. Linear regression analysis examining HGS in hand surgeons without a professional personal website versus years in practice yielded a negative correlation ($r^2 = 0.27$).

Group Website

Univariate unpaired sample *t* test comparing hand surgeons with a group website to those without one demonstrated significantly higher number of reviews ($P < .05$). Univariate unpaired sample *t* test did not demonstrate a significant difference with respect to age, years in practice, or HGS. Linear regression analysis examining HGS in hand surgeons without a professional group website versus years in practice yielded a negative correlation ($r^2 = 0.23$).

Twitter

Univariate unpaired sample *t* test comparing hand surgeons with a professional Twitter account to those without one did not demonstrate a significant difference with respect to age, years in practice, HGS, or reviews. Linear regression analysis examining HGS in hand surgeons without professional Twitter account to years in practice yielded a negative correlation ($r^2 = 0.13$).

YouTube

Univariate unpaired sample *t* test comparing hand surgeons with a YouTube page to those without one did not show a significant difference with respect to age, years in practice, HGS, or reviews. Linear regression analysis examining HGS in hand surgeons without professional YouTube page to years in practice yielded a negative correlation ($r^2 = 0.21$).

The average SMI for all board-certified orthopedic hand surgeons included in this study was 1.53 ± 1.42 (Table 4). Subgroup analysis was performed to separate hand surgeons into cohorts with a SMI <3, 3-6, and >6. Hand surgeons in the SMI <3 cohort had an average SMI score of 0.91 ± 0.82 (n = 90), and an average HGS of 3.86 ± 0.80. Hand surgeons in the SMI 3-6 cohort had an average SMI of 3.69 ± 0.88 (n = 26), and an average HGS of 4.29 ± 0.41. No hand surgeons were in the SMI >6 cohort. Univariate unpaired sample *t* test showed hand surgeons with an SMI between 3 and 6 demonstrated a significantly higher HGS than hand surgeons with an SMI <3 ($P < .001$). Linear regression examining HGS versus SMI did not yield a significant correlation.

Table 4. HGS With Respect to SMI Cohort.

SMI class	Average SMI	HGS	Significance
All	1.53± 1.42	3.96 ± 0.75	—
SMI <3	0.91 ± 0.82	3.86 ± 0.80*	$P \leq .001$
SMI 3-6	3.69 ± 0.88	4.29 ± 0.41*	

Note. HGS = Healthgrades score; SMI = social media index.
*Comparison of SMI <3 to SMI 3-6.

Discussion

The emergence of social media has revolutionized professional industries, including health care institutions and private practices.[2] This change in landscape has prompted competition among providers to increase catch radius, identify new patients, and provide reliable medical information.[6,10] In an effort to better understand the role of one's digital identity, our study aimed to provide correlations between a hand surgeon's social media use and their observed HGS. Trehan et al investigated the use of social media with respect to physician-rating websites for hand surgeons across the United States in 2016, documenting an average HGS of 4.0 and mean number of reviews to be 13, similar to our findings of 3.96 and 18.9, respectively.[17] They also observed that 88% of hand surgeons had a personal website; however, they combined personal and group websites in their data acquisition. Conversely, in distinguishing these two Internet platforms, we were able to highlight and identify both the significant correlation between a higher HGS and the presence of a personal website among a hand surgeon's practice, in addition to a significant relationship between the surgeon's presence in a group website and a higher number of online patient reviews.

Our results are unique when placed into context with traditional views of the physician-patient relationship and the growing use of social media within the health care system. Historically, the hand surgeon's slow implementation of social media into their digital identity was hypothesized to be due to a concern that incorporating these platforms would blur professional boundaries.[5,14] However, the spike in Internet usage and growth of social media outlets have highlighted a perceived lack of an Internet identity.[14] Today, failure to have an easily accessible digital identity can be considered a social and professional faux pas. When comparing social media use among hand surgeons to other professional industries, it is apparent that orthopedic surgeons underutilize social media.[11] A national survey found that 35% of patients selected a physician based on having good ratings on a physician-rating website and 37% of patients have avoided a physician based on poor marks.[2,7] Despite the apparent correlation between patient satisfaction scores and a patient's willingness to schedule a consultation, Samora et al found that only 20% of physicians personally check their physician-rating scores.[15] In addition, of that 20%, only 17% of physicians felt that their score had any effect on reimbursement, number of patients seen, or volume of patient referrals.[15] The lack of insight of the impact of their online ratings highlights a serious misconception among physicians. The implementation of the Affordable Care Act permits the withholding of funds from health care organizations that do not have high patient satisfaction scores.[13,15] It is unknown to what extent physician-rating websites will factor into the discussion of reimbursements in the future, but there is precedent in the United Kingdom by the National Health Service, which has implemented a platform for patients to rate their general practitioners to assess physician quality improvement suggesting it will play some role.[15] It is unclear whether uniform reporting will be adopted in the United States, but there is no question that these rating websites play a role in physician shopping, which could potentially impact more than just a physician's referral system.[13,15]

Currently, the utilization and incorporation of social media within an orthopedic surgery practice is growing and will likely play an increasing role in future clinical practice. In 2011, Franko and colleagues reported the number of YouTube videos for the terms "orthopedic surgery," "arthritis,"

and "joint replacement" to yield a combined 50 000 videos.[6] In December 2016, an identical search generated a 20-fold increase, returning almost a million hits of relevant YouTube generated content. A digital presence can enhance the physician-patient relationship, foster communication among colleagues, and improve physician accessibility and approachability.[14] In addition, a social media identity allows hand surgeons to introduce new services, highlight peer-reviewed publications, and circulate relevant information among their patients. The inherent benefits from incorporating a social media platform into ones clinical practice have led national organizations, such as the AAOS, American College of Surgeons, and American Medical Association to provide instructions and guidelines to physicians interested in creating and managing their social media identity, while complying with patient privacy regulations.[1,6,10] Some reports have suggested that physicians can protect their professional image and obtain optimal online patient satisfaction scores by creating content, including firsthand testimonials, and posting it to their respective social media platforms.[1]

Our study demonstrates that hand surgeons with a more robust digital identity observed significantly higher patient satisfaction scores. Furthermore, among all the social media platforms evaluated, statistical analysis demonstrated that hand surgeons who incorporated a professional personal website into their clinical practice observed a significantly higher HGS compared to those without a professional personal website. Although personal websites are not social media platforms in the traditional sense, the majority of personal websites included in this study contained hyperlinks to available social media platforms serving as portal to seamlessly transfer patients to available content. These findings suggests that it behooves hand surgeons to create a digital identity that includes at least a personal website, if not 3 or more social media platforms, to optimize patient satisfaction ratings. Notably, we also found an inverse relationship between HGS and level of experience, consistent with findings previously reported by Trehan et al.[16] This suggests that the patient's perception of the quality of care received is more dependent on the hand surgeon's digital footprint than the surgeon's clinical experience.

Consistent with other studies that have investigated the impact of social media use, our study is not without several limitations. First, the only physician-rating website included was Healthgrades.com, and the only social media platforms included were Facebook, Twitter, YouTube, LinkedIn, group websites, personal websites, and Instagram. Despite our best efforts, our search may be limited by the use of keywords and a lack of standardized guidelines to assess search metrics. Furthermore, our cohort consisted of a random sample of orthopedic hand specialists throughout the United States; thus, regional and economic differences make it imprecise to ascribe equal significance to all hand surgeons' social media footprint, given the disparities in resources available to particular patient populations. For instance, our study demonstrates that hand surgeons in the northeast were 4 times as likely to have a professional social media platform than hand surgeons in the Midwest, which is likely a reflection of the expectations and demands of their respective patient populations. Finally, our study represents a snapshot in time of the use of social media in hand surgeons. Social media use is dynamic, and due to the nature of membership, it is possible for fluctuations to occur on a daily basis.

This study sought to comprehensively investigate the use and impact of social media and Internet platforms on hand surgeons across the United States, with respect to scores provided online by their respective patient populations. Our findings demonstrate that in lieu of clinical experience, patient satisfaction is greatly impacted by the hand surgeon's social media identity. Professional social media platforms have increased surgeons' regulation over the information available via an Internet search and have provided a novel form of communication between providers and patients.[6] In this ever-changing Internet age, hand surgeons should evolve and embrace these social media platforms to comprehensively meet the needs of their technologically savvy patients.

Ethical Approval

This study was exempt from institutional review board as only publicly available information was used.

Statement of Human and Animal Rights

There was no identifying information included in this article. There were no animal subjects in this study.

Statement of Informed Consent

Informed consent was not needed as this was a cadaveric study. The cadavers were obtained from a licensed tissue bank.

Declaration of Conflicting Interests

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