General

Social Media Use Among Hand Surgeons

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Background

Recently social media use within healthcare has increased significantly. Today, it is common for patients to browse the Internet, including physicians' social media pages, to learn about their medical conditions and search for providers. The purpose of this study is to analyze the use of social media among hand surgeons, and to compare this use between academic and private surgeons.

Methods

Using the American Society for Surgery of the Hand's (ASSH) online directory, all active members practicing within the ten most populated U.S. cities were identified. Social media presence was determined by an Internet search of platforms. Members were stratified by practice model (academic vs. private). Chi-square and t-tests were used to compare categorical and continuous variables, and a multivariable logistic regression was performed for the binary variable practice model.

Results

Two hundred and fifty-six hand surgeons were identified with 150 (59%) in academic and 106 (41%) in private practice. For ResearchGate accounts, 51 (82%) were academic and 11 (18%) were private. Mean PubMed publications was 38 for academic and 9 for private. YouTube presence was 69 (70%) in academic and 29 (30%) in private. On multivariable analysis, the odds of having ResearchGate and YouTube presence were higher for academic practice. There was no statistically significant difference by practice type for Facebook, Twitter, LinkedIn, and Instagram.

Conclusions

With the recent social media expansion, surgeons have adopted social media platforms to reach patients. While the literature has shown that private practices are more active in social media, our results show they are not more active than academic practices in the ten most populated U.S. cities.

Level of Evidence

IV

INTRODUCTION

Various surgical subspecialties have adopted the use of social media in their practice, but the platforms used and the amount of activity varies within these specialties.[1–5] Recent studies have shown that younger surgeons are significantly more active on social media than their older colleagues.[1,2] These differences in social media usage have been associated with differences in apparent patient satisfaction with their surgeon. A study investigating social media use among spine surgeons found surgeons with a social media presence had higher ratings on Healthgrades.[2] In addition, there is a role for social media in medicine from an academic standpoint. Yoshimura et al. recently determined that dissemination of research through social media by hand surgeons led to a significant increase in short-term citations of articles and discussion of current research.[6]

However, the number of studies directly examining social media use and activity among hand surgeons is limited. It is important to understand the extent an Internet presence can impact the physician-patient interaction and how it correlates with provider ratings and research citations

given the increased use of social media among patients. Patients often employ Internet searches and use social media outlets to gain information about their medical conditions and providers. According to a 2020 Healthcare Consumer Insight & Digital Engagement Survey, patients are becoming increasingly reliant on their own online research to find a physician, with 28% of respondents having used social media to find a physician in 2020.[7] Rating and review websites are another significant online research tool employed by patients, with 41% having used rating and review websites such as Healthgrades and Vitals to find a physician.[7] In fact, a majority of respondents reported that their reliance on patient reviews increased from 2019 to 2020 as a result of the COVID-19 pandemic.[7] Overall, social media and the Internet are playing an increasingly important role in how patients approach and access healthcare.

We aim to investigate the impact social media has on provider networking with their patient population as well as with their colleagues publishing research. Additionally, we want to identify which hand surgeons are most likely to use social media. Overall, our goal is to quantify and analyze the use of social media platforms among hand surgeons within the ten most populated cities in the U.S. and determine the specific roles it plays for academic and private hand surgeons.

METHODS

IRB approval was not needed for this study. Using the American Society for Surgery of the Hand's (ASSH) online directory, all active members practicing within the ten most populated U.S. cities were identified. The ten cities selected for this study were New York, NY, Los Angeles, CA, Chicago, IL, Houston, TX, Philadelphia, PA, Phoenix, AZ, San Antonio, TX, San Diego, CA, Dallas, TX, and San Jose, CA. This analysis included only members listed as active or lifetime members of ASSH. All candidate residents, candidate fellows, and candidate members were excluded from this study. The search function in the member directory was utilized to identify the surgeons in each city by inputting the state and city into the search bar.

Social media presence was determined by a comprehensive online search. The member's name was searched using Google with separate queries. The member's professional name, including "MD" or additional professional titles was searched and then was searched again with the titles removed. If the surgeon had a middle name or initial listed in the directory, an additional search was performed that included the middle name. This initial search was to confirm their online professional profile and to identify their practice model (academic or private) and their specialty (general surgery, plastic surgery, or orthopaedic surgery). For the purpose of this study, we considered a practice model to be academic if the surgeon was employed by an academic hospital or held a position at an academic hospital.

Social media presence was then identified on the following platforms: Facebook, Twitter, Instagram, YouTube, LinkedIn, and ResearchGate. Only professional profiles on Facebook, Twitter, and Instagram were included in this study, which were defined as profiles that promoted their academics or practice. Each member was individually searched using the aforementioned search protocol for each platform. In addition, YouTube was stratified to identify members that had their own professional profiles, those that appear in YouTube videos but do not have their own profiles, and those with no presence at all. ResearchGate was used to gather the number of publications of each individual. ResearchGate was chosen due to the site being marketed as a social networking site for the scientific community. Lastly, the number of PubMed publications for these members were noted along with HealthGrades and Vitals scores from Internet searches of members on those respective websites. Chi-square and t-tests were used to compare categorical and continuous variables, respectively. Multivariable logistic regression was performed for the binary practice model variable (academic/private). Significance was set at $p < 0.05$. All calculations were performed using Stata 13.1 (StataCorp, College Station, TX).

RESULTS

A total of 256 hand surgeons were identified with 150 (59%) in academic and 106 (41%) in private practice (Table 1). There were 6 general surgeons (2%), 202 orthopaedic surgeons (79%), and 48 plastic surgeons (19%). With respect to gender, 214 were male (84%) and 42 were women (16%). When analyzing surgeon characteristics by practice type, there were no statistically significant differences with respect to specialty or gender (Table 2). For ResearchGate accounts, 51 (34%) were academic and 11 (10%) were private (Table 3 and Figure 1). Mean PubMed publications was 38 for academic and 9 for private (Table 3). YouTube presence was 69 (46%) in academic and 29 (27%) in private. There were statistically significant differences on comparison by practice type with respect to ResearchGate presence (82% for academic and 18% for private, $p<0.01$), mean number of PubMed publications (38 for academic and 9 for private, $p<0.01$), and YouTube presence (70% for academic and 30% for private, $p=0.04$) (Table 3 and Figure 1). There was no statistically significant difference by practice type for Facebook, Twitter, LinkedIn, and Instagram. In addition, we did not find a statistically significant difference in HealthGrades and Vitals scores by practice type, and we compared HealthGrades and Vitals scores between surgeons by presence of social media platform (Table 3 and 4). Whereas we noted higher HealthGrades scores in those with YouTube and ResearchGate, these were not found to be statistically significant. On multivariable analysis, the odds of having ResearchGate (OR 4.76, $p<0.01$) and YouTube presence (OR 2.18, $p=0.01$) were higher for academic practice (Table 5).

DISCUSSION/CONCLUSION

The recent Internet expansion has led to an increased prevalence and use of social media by physicians and healthcare systems to promote their practices and healthcare information.[7] Our study found that hand surgeons in the ten most populated US cities are using a variety of

Table 1. Surgeon Characteristics

Practice, n (%)	n = 256
Academic	150 (59)
Private	106 (41)
Specialty, n (%)	
General Surgery	6 (2)
Orthopaedics	202 (79)
Plastics	48 (19)
Gender, n (%)	
Male	214 (84)
Female	42 (16)

Table 2. Surgeon Characteristics by Practice Type

	Academic	Private	p-value
Specialty			0.31
General Surgery, n (%)	2 (1)	4(4)	
Orthopaedics, n (%)	117 (78)	85 (80)	
Plastics, n (%)	31 (21)	17 (16)	
Gender			0.11
Male, n (%)	130 (87)	84 (79)	
Female, n (%)	20 (13)	22 (21)	

Table 3. Surgeon Characteristics by Practice Type

Social Media Platform	Academic	Private	p-value
Facebook, n (%)	42 (28)	27 (25)	0.73
Twitter, n (%)	7 (5)	5 (5)	0.99
LinkedIn, n (%)	98 (65)	63 (59)	0.65
Instagram, n (%)	5 (3)	5 (5)	0.59
ResearchGate, n (%)	51 (34)	11 (10)	**<0.01**
PubMed (mean)	38	9	**<0.01**
YouTube, n (%)	69 (46)	29 (27)	**0.04**
Healthgrades (mean)	4.5	4.1	0.22
Vitals (mean)	4.2	4.1	0.22

different platforms to disseminate information. While our study may not demonstrate a statistically significant difference in all social media platforms by practice type or specialty, our findings may warrant further investigation and analysis to better understand how different practices and specialties are presenting clinical information to patients and other healthcare providers. This is evident in our findings comparing academic and private practices. While the literature has previously shown that private practices are more active in social media, our results show they are not more active than academic practices in the ten most populated U.S. cities in the field of hand surgery.[8,9] On the contrary, this study shows that academic hand surgeons in these cities have a greater presence on YouTube and ResearchGate. Academic hand surgeons having a greater presence on those platforms could be due to a higher likelihood of engaging in research and the education of residents and medical students at an academic center. This would lead to a higher number of publications on PubMed and engagement on ResearchGate, which is evident in this study. A 2021 study by Narain et al. examined the social media use of 676 shoulder and elbow surgeons and demonstrated that academic surgeons were more likely to have a ResearchGate account compared to their private practice colleagues, which is similar to what we have found in this study.[10]

While ResearchGate may be considered strictly an academic social platform, the findings of YouTube are surprising as many private practices do use the platform to market their practice. What we found within the YouTube presence of academic versus private hand surgeons is that those in academic practice have a greater production of educational videos and presentations on YouTube, whereas the private hand surgeons have more promotional videos on YouTube. The presence of YouTube based on academic practice may vary across different specialties. A recent study by Alotaibi et al. in 2016 on the use of social media among neurosurgeons determined that private practices had a greater social media presence, including more YouTube channel subscribers.[11] Conversely, findings on social media presence in radiology were similar to those of our study, as there was a statistically significant difference between YouTube subscribers with academic practices having more subscribers than private.[12]

Furthermore, Instagram has become one of the most popular social media platforms in recent years, with up to 75% of adults 18 to 24 years old reporting that they use the platform in 2019.[13,14] The rise of Instagram utilization within medicine has been even more evident in the past year with the COVID-19 pandemic and virtual residency interviews. Many academic institutions have created their own Instagram accounts to increase their visibility to applicants and disperse information about their programs.[14] Similarly, many applicants have created professional Instagram accounts to connect with programs. While the number of Instagram accounts in our study was relatively low and not statistically significant, the similar number of accounts by academic and private practices could be explained by this recent increase of Instagram utilization by academic practices. These academic practices now seek to promote their programs to both patients and prospective applicants, as private practices seek to promote their practices to potential patients.

Although there was not a statistically significant difference by practice type for Facebook, Twitter, LinkedIn, and Instagram presence in our study, a larger sample size may reveal a significant difference. A recent study performed by Lander et al. examining social media use among 987 or-

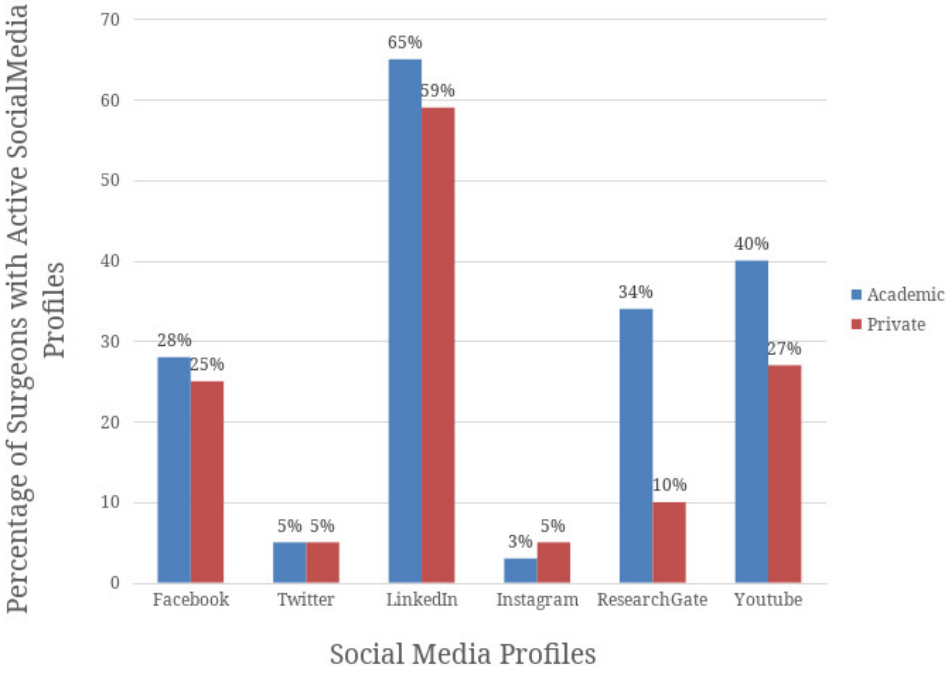

Figure 1. Surgeon Social Media Presence by Practice Type

There was a statistically significant difference in social media practice presence by practice type with respect to Research Gate ($p<0.01$) and YouTube ($p<0.05$).

Table 4. HealthGrades and Vitals Scores by Presence of Social Media Platforms

Social Media	HealthGrades	p-value	Vitals	p-value
Facebook		0.84		0.24
Yes	4.3		4.2	
No	4.4		4.2	
Twitter		0.97		0.98
Yes	4.4		4.2	
No	4.4		4.2	
LinkedIn		0.37		0.54
Yes	4.5		4.2	
No	4.2		4.2	
Instagram		0.92		0.97
Yes	4.3		4.2	
No	4.4		4.2	
Youtube		0.14		0.24
Yes	4.7		4.3	
No	4.2		4.2	
ResearchGate		0.08		0.42
Yes	4.9		4.3	
No	4.2		4.2	

thopaedic pediatric surgeons in North America found that social media utilization was doubled in private practice.[8] Additionally, Lander et al. also found that there was a statistically significant difference regionally in social media use in the Northeast United States using LinkedIn and ResearchGate compared to the South.[8]

Our study has several limitations that must be considered. The first limitation is our sample size. We only assessed active ASSH members in the ten most populated

Table 5. Odds Ratio for Practice Type by Social Media Platform

Social Media Platform	OR	CI	p-value
Facebook	0.99	0.53 – 1.85	0.99
Twitter	0.37	0.09 – 1.51	0.17
LinkedIn	1.16	0.66 – 2.04	0.60
Instagram	0.32	0.08 – 1.30	0.11
ResearchGate	4.76	2.20 – 10.3	**<0.01**
YouTube	2.18	1.20 – 3.96	**0.01**

cities of the United States (US). The decision to use only the ten most populated US cities was to generalize our findings to major US cities. Our findings were most likely underestimates because we only included surgeons who listed the large city they practice in on their ASSH accounts. We excluded surgeons whose offices were located outside of the city. This is an inherent limitation of our study design. We also did not include member candidates of the ASSH, which could have biased our results as active members of the ASSH could be speculated to be more likely to be active in social media as well. Future studies may consider using the member directories of multiple hand surgery societies while including all members. In addition, the use of the search bar function of the ASSH member directory may have limited our sample size. The search function only provides surgeons who list the specific city within their ASSH membership. It does not include surgeons in the surrounding area that may practice in the same city. However, we decided that being consistent in our methods is important. Another limitation was a lack of a standardized criteria to determine if a surgeon had an "active" social media account. Our study was based using an Internet search to identify the surgeon's social media accounts and determine if they were active based on recent activity or posts. These criteria of social media activity can also vary from study to study and lead to different results. This is demonstrated by a similar study performed by Reddy et al. who also examined social media use among hand surgeons through the ASSH database.[15] Finally, age is another possible limitation that must be considered as older surgeons may be less likely to use social media based on generational or technological literacy differences. A recent study by Auxier et al. in 2021 found that the most frequent users of Twitter, Instagram, Facebook, and SnapChat were in the age ranges of 18 to 29 years old and 30 to 49 years old.[16]

In conclusion, our study and a review of recent literature has demonstrated a growing social media presence by both hand surgeons and across other specialties within the United States and abroad.[16–20] This demonstrates the growing role of social media in promoting and disseminating healthcare information to patients. Hand surgeons could consider creating social media platforms to better communicate and present their clinical pearls and experiences to improve clinical education and healthy literacy among trainees and patients, respectively. However, larger studies across different societies and organizations with standardized criteria of social media activity need to be conducted to gain a greater understanding of social media presence among hand surgeons.

CONFLICT OF INTEREST STATEMENT

The authors have no conflict of interests to disclose

STATEMENT OF INFORMED CONSENT

No consent was required as this study did not involve any patient sensitive information

STATEMENT OF HUMAN AND ANIMAL RIGHTS

No human or animal rights were violated during the conduction of this study as it was performed as an analysis of social media profiles

STATEMENT OF FUNDING

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