



## AOA Critical Issues in Education

# Utility of Social Media for Recruitment by Orthopaedic Surgery Residency Programs

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**Background:** As the use of social media continues to rise, the presence of social media accounts among orthopaedic surgery residency programs can foster connections with other specialties, highlight departmental achievements, and be a resource for applicants to learn more about the program. This study evaluated the current utility and landscape of social media, with an emphasis on the use of Instagram, in orthopaedic surgery residency programs in the United States.

**Methods:** A cross-sectional study of orthopaedic surgery residency Instagram accounts was performed. The Instagram accounts were evaluated for the number of followers, number of accounts following, and number of posts. Instagram posts were further categorized into academic, departmental, education, and COVID-19–related content. In addition, a search was performed to identify the presence of Twitter and Facebook accounts among orthopaedic surgery residency programs. Bivariate and multivariable logistic regression models were used to analyze the data in this study.

**Results:** Of the 192 orthopaedic surgery residency programs evaluated, 108 programs (56%) had an Instagram account, 65 programs (34%) had a Twitter account, and 58 programs (30%) had a Facebook account. Of the 108 programs with an Instagram account, 92 accounts (85%) were created in 2020. A higher Doximity ranking of a program was positively associated with the presence of an Instagram account ( $p < 0.001$ ). A significant correlation was found between the number of posts and the Instagram engagement score ( $p = 0.018$ ). The majority of Instagram posts contained departmental content (54%) followed by social (13%) and COVID-19–related (10%) content.

**Conclusions:** The presence of orthopaedic surgery residency programs on social media has grown significantly in the year 2020. With the presence of more than 50% of residency programs on Instagram, this can be a useful resource for prospective applicants and other healthcare professionals to gain insight into the activities of orthopaedic surgery residency programs across the United States.

Social media has become very popular in today's society. As of January 2020, there were 3.60 billion social media users worldwide with the most used applications being

WhatsApp, Facebook, WeChat, Instagram, and TikTok<sup>1,2</sup>. The United States has been ranked as having the largest Instagram audience worldwide, with steady and consistent growth each

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year. Most Instagram users have been identified as Gen Z and millennials, with the largest user group consisting of women younger than 34 years<sup>3</sup>. Social media has fostered the ability of individuals to communicate and collaborate in new ways while allowing businesses and organizations to market themselves and garner the interest of a larger audience.

As the presence of social media in our daily lives grows, its use in the medical field is evolving as well. Although concerns regarding professionalism and patient confidentiality in social media remain, social media in medicine has a multitude of functionalities. More than 1,500 hospitals nationwide have an online presence, and 31% of healthcare professionals use social media for professional networking<sup>4</sup>. In addition to physicians and residents who are active users of medicine-related social media, a considerable proportion of medical students use social media for educational purposes, to reach out to others in the medical field, and to learn more about residency programs they are considering applying to<sup>5,6</sup>.

Residency programs that have social media pages provide an additional resource for medical students to use when making their decision to apply, interview at, and rank a program<sup>7</sup>. The use of social media in surgical residencies such as otolaryngology, plastic surgery, and oral and maxillofacial surgery has been recently investigated and was found to have increased dramatically in the past year<sup>8-10</sup>. This growth in social media presence has been largely influenced by the COVID-19 pandemic and subsequent restrictions on events and travel<sup>11</sup>. With prospective applicants no longer being able to travel to their institutions of choice, explore the area around, and meet residents and faculty face to face, social media has become an important venue for conveying the ambience of an institution as well as fostering virtual connections. In addition, residency programs began promoting virtual events such as virtual open houses and guest speakers on their social media pages in which individuals from across the country can join through online platforms such as Zoom and Webex.

Orthopaedic surgery is classified as a competitive surgical residency, with more applicants than available positions and high average Step 1 scores on the U.S. Medical Licensing Examination<sup>12-14</sup>. The social media presence of orthopaedic surgery residency programs has not been evaluated to this date. This study aimed to evaluate the presence and use of social media, specifically Instagram, among orthopaedic surgery residency programs in the United States.

## Materials and Methods

A list of all accredited orthopaedic surgery residency programs was obtained from the Accreditation Council for Graduate Medical Education website<sup>15</sup>. This list included allopathic and osteopathic programs, civilian residency programs, military residency programs, and residency programs located in territories of the United States. The Doximity ranking of each residency program was recorded. The FREIDA residency program database was used to identify the location of each orthopaedic surgery residency program. Classification was performed by identifying which state the residency program was in

and determining the FREIDA location it fell under. FREIDA locations include New England, Mid-Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, Pacific, and Territory<sup>16</sup>. To find a residency program webpage, we conducted a Google search using the keywords "Program Name + Orthopaedic Surgery Residency Program." Program webpages were used to identify the program director, obtain the number of Postgraduate Year 1 (PGY-1) residents, and determine whether social media links were present on the program's webpage. To find an Instagram account, we used a combination of searching on individual residency program webpages, Google searches, and Instagram searches. The Google search was performed using the keywords "Program Name + Orthopaedic Surgery Residency + Instagram." The Instagram search was performed using the keywords "Program Name + Orthopedic Surgery Residency." Instagram engagement score was identified using the social stats website<sup>17</sup>. The process was repeated to identify which programs had Twitter and Facebook accounts. Data were collected in March 2021.

Instagram accounts were analyzed for the number of followers, number of pages followed, number of posts, usage of highlights/reels/Instagram TV (IGTV), and content of posts. Content of posts was categorized as educational, departmental, academic, social, COVID-19, and other. Posts were categorized as educational if the post discussed diseases, surgical techniques, imaging, or was a photograph from the operating room. Departmental posts included resident and chief highlights, residents working in the hospital or clinic, promotion of the program such as open houses and application deadlines, and general updates from the department heads. Academic posts were related to research, academic meetings, conferences, and guest speakers. Social posts included posts sharing resident life outside of the hospital. If a post mentioned COVID-19 or had a COVID-19-related hashtag, it was placed into the COVID-19 category. All additional posts were placed into the "other" category. Three authors independently conducted the search. All disagreements between authors were resolved by discussion. The presence of an account of the program director and affiliated hospital in account followers was also evaluated. Descriptive statistics were obtained from the collected data using Statistical Package for the Social Sciences (SPSS; Version 26; Armonk, NY) software. Data analysis, including bivariate and multivariate analyses, was further performed on the data set using the SPSS software. Multivariate analysis results were reported as odds ratio (OR) with 95% confidence intervals (CIs). This study was exempt from Institutional Review Board approval because no human subjects were involved in the study. No source of funding was used in this study.

## Results

Overall, 192 orthopaedic surgery residency programs were evaluated for the presence of an Instagram, Facebook, and Twitter account. Among them, 108 orthopaedic surgery residency programs (56%) had an Instagram account, 65 programs (34%) had a Twitter account, and 58 programs (30%) had a

Facebook account. Of the 108 residency programs with an Instagram account, a significant increase in the number of accounts was seen from 2019 to 2020. In 2019, only a total of 10 programs (9%) had an established Instagram account. Ninety-two programs (85%) created an Instagram account during 2020. A similar trend was seen among Twitter and Facebook accounts with 28 programs (43%) and 16 programs (28%), respectively, creating accounts in 2020.

### Instagram

Analysis of the orthopaedic surgery residency programs found a significant correlation between a program's Doximity ranking and its presence on Instagram. Residency programs with a higher Doximity ranking were more likely to have an Instagram account (OR = 0.98, 95% CI 0.983 to 0.994,  $p < 0.001$ ). In addition, programs with a larger PGY-1 class were also more likely to have an Instagram account (OR = 1.22, 95% CI 1.033 to 1.439,  $p = 0.019$ ). There was no significant correlation found between location of the program based on FREIDA classification and the presence of an Instagram account.

Of the 108 orthopaedic surgery residency programs identified to have Instagram accounts, 60 programs (56%) had a link to their Instagram page on their program website. Evaluation of the individual Instagram pages for the presence of program leadership revealed that 30 programs (28%) had the presence of the program director in the account followers. Similar analysis found that 46 programs (43%) had the presence of Instagram accounts of affiliated hospitals among their followers.

Analysis of the usage of Instagram features found that 55 programs (51%) used story highlights, 31 programs (29%) used IGTV, and 2 programs (2%) used reels. The number of total Instagram posts ranged from 1 post to 516 posts, and a significant regression equation was found ( $F[1,104] = 5.788$ ,  $p = 0.018$ ), with an  $R^2$  of 0.053, between the number of posts an Instagram page had and the Instagram engagement score. Analysis of Instagram posts found that 54% of posts contained departmental content, 13% contained social content, 10% were COVID-19-related, 8% contained educational content, 7% contained academic content, and 8% contained content which did not qualify under the previously stated categories.

### Twitter

Sixty-five of 192 orthopaedic surgery residency programs (34%) had a Twitter account. The first Twitter account was created in 2009. The Doximity ranking of a residency program was found to significantly correlate with the presence of a Twitter account. Programs with a higher Doximity ranking were more likely to have a Twitter account (OR = 0.98, 95% CI 0.977 to 0.990,  $p < 0.001$ ). The number of PGY-1 residents also increased the likelihood that a program had a Twitter account (OR = 1.37, 95% CI 1.148 to 1.628,  $p < 0.001$ ). In addition, the FREIDA location of a program was found to be correlated to the presence of a Twitter account ( $p = 0.025$ ), with most residency programs with a Twitter account located in West South Central.

### Facebook

Fifty-eight of 192 orthopaedic surgery residency programs (30%) had a Facebook account. The first 9 Facebook accounts were created in 2010. The Doximity ranking of a residency program was found to be significantly correlated with the presence of a Facebook account. Programs with a higher Doximity ranking were more likely to have a Facebook account (OR = 0.99, 95% CI 0.986 to 0.997,  $p = 0.002$ ). The number of PGY-1 residents also positively correlated with the presence of a Facebook account (OR = 1.25, 95% CI 1.060 to 1.471,  $p = 0.008$ ). In addition, the FREIDA location of a program was found to be correlated to the presence of a Twitter account ( $p = 0.047$ ), with most residency programs with a Facebook account located in West South Central.

### Discussion

With the large rise in the use of Instagram since its creation on October 6, 2010, the presence of this platform in medicine has also grown. Social media use by orthopaedic residency programs can serve as an educational outlet for medical and nonmedical professionals, highlight resident and faculty achievements, and be a source of additional information for future applicants<sup>18</sup>. The year 2020 has shown a rise in the presence of several residency programs on social media because the COVID-19 pandemic has promoted the use of virtual platforms in place of in-person interactions. Specifically, social media presence of plastic surgery and otolaryngology residency programs has grown significantly. Otolaryngology residency programs' Instagram accounts have grown 170% from 2019 to 2020, and 56.8% of plastic surgery residency programs had Instagram accounts in 2019<sup>8,9</sup>. Oral and maxillofacial surgery residency programs and dermatology residency programs were found to have a 20% and 7% account presence on Instagram, respectively<sup>10,19</sup>. Our study found that 56% of orthopaedic surgery residency programs had Instagram pages and 85% of these Instagram accounts were created in 2020.

One significant finding in our study was a correlation between the presence of a social media account and a higher Doximity ranking. The Doximity Residency Navigator system uses voluntary satisfaction surveys, reputation survey data, and objective data such as patient outcomes, research output, and board examination pass rate to determine the ranking of a program. The exact methodology of how Doximity calculates rankings remains unclear<sup>20</sup>. However, Doximity rankings continue to be a vital component for medical students when constructing their rank lists<sup>21-23</sup>. Feinstein et al. also found a positive correlation between program size and higher Doximity ranking<sup>20</sup>. Larger programs with higher Doximity rankings may have more resources available to them to maintain social media pages.

Our data also showed that Facebook and Twitter accounts were more popular among residency programs in the West South Central region. Of the 20 programs analyzed in this region, 13 are located in Texas. Ten of the 13 programs were active on Facebook, Twitter, or both which could be the reason for Facebook and Twitter accounts being more popular in this FREIDA region. One

explanation could be that individual institutions are trying to find ways to stand out among the vast choice of residency programs in Texas. Texas also had a large increase in its resident population between 2010 and 2020 and is among the top 5 states with the youngest average age of its residents<sup>24,25</sup>. Younger individuals may be more likely to create and maintain social media pages.

With the growing amount of evidence supporting the use of social media by residency programs, several areas for improvement and challenges arise. Our data showed that although most programs had an Instagram account, only 56% of those programs had their Instagram account advertised on their webpage. By having links to social media accounts displayed on the residency program webpage, not only can an applicant learn more about the program but also the account itself can gain more followers which can contribute to its growing presence on Instagram. We found that both the number of followers and the number of posts positively correlated with the Instagram engagement score. Although social media may be giving residency programs the upper hand in attracting prospective applicants, as more programs create Facebook, Instagram, and Twitter accounts, this advantage may diminish<sup>7</sup>. With the significant transition to virtual platforms that has occurred over the past year because of COVID-19, it can be expected that the use of these platforms will continue into the post-COVID-19 period.

Our study showed that most residency program Instagram accounts were found to use the diverse features Instagram offers such as story highlights, reels, and Instagram TV to showcase the daily work residents and department members do. Most posts made on these accounts were of departmental nature, consisting of resident highlights which included a short biography and unique facts about a particular resident. In addition, many programs had several posts dedicated to showing what resident life outside of the hospital is like. Perceived happiness of residents, their quality of life, and the camaraderie among the residents were some of the key features prospective applicants considered when ranking orthopaedic surgery programs<sup>26</sup>. McHugh et al.<sup>7</sup> reported that applicants to the anesthesiology residency program at University of Pittsburgh ranked the importance of social media presence of the residency program a 3 of 5. Of the 42 survey responders, 25% found the residency program's Facebook page useful when deciding where to interview and 29% found it useful when ranking their programs<sup>7</sup>.

Although there are many benefits of residency programs having a social media presence, concerns regarding guidelines, professionalism, and patient confidentiality commonly arise. There are currently no guidelines for the use of social media among the orthopaedic surgery community. This leaves a large area of ambiguity in terms of who has the right to post, what posts are allowed, and who maintains ethical and legal standards<sup>5,27</sup>. Chandawarkar et al.<sup>28</sup> discusses several categories of violations that

can occur among plastic surgery residents when posting on Instagram and included ethical and legal reasonings for each category. In addition, social media guidelines for interactions, content, clinical media, and supervision were proposed to prevent inappropriate social media use<sup>28</sup>. The violations highlighted in this study and the suggestions made for improving social media etiquette can be generalized across many residency programs.

The findings of this study should be viewed in the context of its limitations. First, only the Instagram accounts of orthopaedic surgery residency programs were analyzed. Although data regarding the existence of Facebook and Twitter along with the start dates for each were collected, no further analysis of posts was performed on these platforms. Doing an in-depth analysis of Instagram was chosen because of the ease of investigating the posts made and the larger percentage of programs having Instagram accounts. In addition, the individual program Instagram accounts may have been updated after our data collection period. However, we believe that the data collected during our designated period are representative of the Instagram accounts.

In conclusion, social media serves as a way for residency programs to reach a broader audience and display their work in unique ways. Orthopaedic surgery residency programs have greatly increased their presence on Instagram, Facebook, and Twitter over the past 2 years. Although social media allows for increased communication and connection as well as promotion of the program itself, it is important to maintain patient confidentiality and professionalism when creating and interacting with these accounts. ■

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