Cross-Sectional Study

A Cross-sectional Study of the Social Media Presence of ACGME-Accredited Pain Medicine Fellowship Programs: Time to Get Online?

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Background: Approximately 70% of Americans use social media platforms, and use of specific platforms, such as Instagram, Twitter, Snapchat, and TikTok, is especially common among adults under 30. The presence of social media accounts among residency and fellowship programs in academic medicine has been used to connect with other specialties, highlight achievements and research, disseminate information to the general public, and as a recruiting tool for applicants.

Objectives: The objective of this cross-sectional study was to evaluate the social media presence, specifically on Twitter and Instagram, of the Accreditation Council for Graduate Medical Education (ACGME)-accredited Pain Medicine fellowship programs. We hypothesized that programs with more fellows were more likely to have a social media presence, as well as more content pertaining to branding for recruitment purposes.

Study Design: A cross-sectional study observing the social media presence of ACGME- accredited Pain Medicine fellowship programs.

Methods: Two independent reviewers conducted searches for corresponding official pain programs and departmental accounts on Twitter and Instagram over the period of July 1, 2020 to June 31, 2021. For all social media accounts identified, number of posts (total and within the study period), followers, and date of first post were recorded. Each post was categorized as medical education, branding, or social.

Results: Of the 111 ACGME-accredited Pain Medicine fellowship programs, 4 (3.6%) had both Twitter and Instagram accounts,10 (9%) only Twitter, 7 (6.3%) only Instagram, and 90 (81.1%) had neither. A significant association between the number of fellows and the odds of having an Instagram, but not Twitter, fellowship account was found (odds ratio 1.38, 95% confidence interval [CI]: 1.02,1.88; $P = 0.038$). Also, a linear relationship existed between the number of followers and tweets (B coefficient 3.7, 95% CI: 3.6, 3.8; $P < 0.001$).

Limitations: Limitations include that the data were collected during the COVID-19 pandemic, which may correlate to increased likelihood of social media usage. We were also limited by our ability to find all of the pain management fellowship program accounts on social media.

Conclusions: Less than 20% of the pain fellowship programs are currently utilizing Twitter and/or Instagram. When compared to primary anesthesiology residencies, social media presence among pain fellowships is much lower. By utilizing basic social media strategies, including image-based content posting, hashtags, and videos, programs can increase their engagement with the social media community, and increase their overall number of followers, thus expanding their potential reach to prospective applicants. Although social media can be an effective tool for branding purposes, it is vital to address the safe use of social media among all trainees.

Key words: Social media, pain management fellowship, Instagram, Twitter, social media in medicine, medical education

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Since the late 1990s, social media platforms have truly transformed the way we communicate, network, and share information with each other. Approximately 70% of Americans have used any kind of social media platform, and use of specific platforms, such as Instagram, Twitter, Snapchat, and TikTok, is especially common among adults under 30 (1).

According to the Association of American Medical Colleges (2), the average age among medical students who matriculated at US medical schools in the 2017-2018 school year was 24 years. As the population that is considered "Generation Z," or those who were raised with social media being a prominent part of their daily lives, begins entering medical school and eventually residencies and subspecialties, programs which are largely managed by those in age ranges that are not comfortable using social media must adapt to the increasing use of social media by patients and applicants, alike (2).

There were almost 400 applicants entering the National Resident Matching Program for the multidisciplinary Pain Medicine Fellowship in 2021 and approximately 350 positions available (3). The competitiveness of applicants has increased as has the importance of social media in engaging potential applicants of which many turn to social media to learn more about their prospective program. The presence of social media accounts among residency and fellowship programs in academic medicine has been used to connect with other specialties, highlight achievements and research, disseminate information to the general public, and as a recruiting tool for applicants (4). Specifically among anesthesiology residency programs (5), 70% had an Instagram account and 52.2%, a Twitter account.

In this cross-sectional study, we evaluated the prevalence of social media usage, specifically on Twitter and Instagram, among Accreditation Council for Graduate Medical Education (ACGME)-accredited Pain Medicine fellowship programs. We hypothesized that programs with more fellows were more likely to have a social media presence, as well as more content pertaining to branding for recruitment purposes.

Methods

This study was deemed exempt from the Mount Sinai Institutional Review Board. The ACGME was contacted to receive a complete list of all ACGME-approved Pain Medicine fellowship programs and the number of fellows in each program.

Two independent reviewers (PS, GI) conducted searches for corresponding official program and departmental accounts on Twitter and Instagram. To replicate how applicants search social media platforms for the presence of pain fellowships, common permutations of the institution name and the words "pain," "pain fellow(s)," and "pain fellowship" were used. Nondepartmental and residency program-only accounts were excluded. All posts over the period of July 1, 2020 to June 31, 2021 were analyzed.

For all social media accounts identified, number of posts (total and within the study period), followers, and date of first post (as a surrogate for age of account) were recorded. Each post was categorized as medical education, branding, or social. Medical education posts were classified as such if they provided information with the intent to instruct, teach, or disseminate information to house staff, faculty, or the community at large. Branding posts were related to departmental activity used to promote the department (i.e., departmental merits), promote recent achievements (i.e., awards, grants, research accomplishments), and create awareness of departmental activities for recruiting fellows (i.e., meet and greets). Social posts highlighted social activities both in the professional environment and out-of-hospital environments.

We tested normality using the Shapiro-Wilk test. Data were expressed as median (interquartile range [IQR]) or odds ratio (OR) (95% confidence interval [CI]), unless otherwise stated. A 2-sided P value < 0.05 was considered significant. All analyses were performed using R version 4.1.2 (www.R-project.org/).

Results

Of the 111 ACGME-accredited Pain Medicine fellowship programs, 4 (3.6%) had both Twitter and Instagram accounts, 10 (9%) only Twitter, 7 (6.3%) only Instagram, and 90 (81.1%) had neither. Eighty (72.1%) of the programs were located in metropolitan statistical areas (6), and the median number of fellows was 4 [IQR 2-5].

Ten (76.9%) of the 14 programs with a Twitter account, and 7 (63.6%) of the 11 programs with an Instagram account were considered active, defined as posting at least once in the last year. For Twitter accounts, the median number of tweets were 35 [IQR 23-62] and followers 171 [IQR 84-499]. The median number of posts and followers for Instagram accounts were 16 [IQR 11-23] and 284 [IQR 21-711], respectively. We found no significant association between the number of fellows and the odds of having a fellowship

Twitter account [$P = 0.295$]. The opposite was true for Instagram, where for every one-fellow increase in the program, the odds of having a fellowship account was estimated to increase by 1.38 times [exact logistic regression: OR 1.38, 95% CI: 1.02, 1.88; $P = 0.038$].

A linear relationship was found between the number of followers and tweets, where for every 10-follower increase, the number of tweets increased by 3.7 [B coefficient 95% CI: 3.6, 3.8; $P < 0.001$]. No statistically significant relationship was found between number of followers and number of Instagram posts. A total of 428 tweets and 135 Instagram posts were tallied during the study period. Programs with more than 4 fellows accounted for two-thirds of the total tweets and Instagram posts. Figure 1 shows the distribution of posts from all active Twitter (panel A) and Instagram (panel B) fellowship accounts, by number of fellows.

Fifty-four (48.7%) programs had an official Twitter departmental account (separate from a fellowship account), and they tweeted a total of 5,090 times during the academic year. Of those, 59 (1.2%) tweets were categorized as medical education, 146 (2.9%) as branding, and 2 (0.04%) as social posts that were related to the Pain Medicine fellowship. For Instagram, we found that 57 (51.4%) programs had an official departmental account, with a total of 2,534 posts during the same time period. Of that, 56 (2.2%), 1 (0.04%), and 54 (2.1%) posts were categorized as medical education, branding, and social-related-to-pain medicine, respectively.

Discussion

Social media usage has expanded rapidly throughout society since it was developed over 2 decades ago. It has had a significant impact in communication across the world both within and outside of medicine. Approximately 90% of people aged 18-29 use social media, while 77% of people between 30-49 use social media (1,7). This growth has had a specific impact on the Millennial generation and Generation Z (1). Those with higher levels of education, considered to be at least some college experience, also have a higher overall usage of social media (1,7). With this ongoing usage, fellowship applicants are also likely to engage with social media in some form. Moreover, social media usage throughout society has increased significantly since the COVID-19 pandemic (8). During the COVID-19 pandemic, applicants "visited" and interviewed at programs virtually, rather than in person. Social media platforms provide an avenue for pain programs to showcase their program to applicants from afar.

Prior to the COVID-19 pandemic, a study conducted in the 2017-2018 academic year among the 3 Mayo Clinic anesthesiology residency programs found that 52.8% applicants believed a residency social media account had at least some degree of impact on their assessment of the program, while 4.5% believed it had a significant impact (9). The importance of social media on the applicant's perception of a program has only grown since the onset of the COVID-19 pandemic.

In this paper, we chose to evaluate the presence of programs on Twitter and Instagram. Twitter is one of the most popular platforms for communication within health care, and is commonly used for sharing research, as well as social and professional networking (12). Use of Twitter to share peer-reviewed journal articles both increases views of the article itself, and the likelihood it is cited in future research (1). Instagram has also become increasingly popular as well amongst the Millennial and Generation Z population, which is the current population of residents and fellows. Feinstein et al (5) found that 70% of anesthesiology training programs

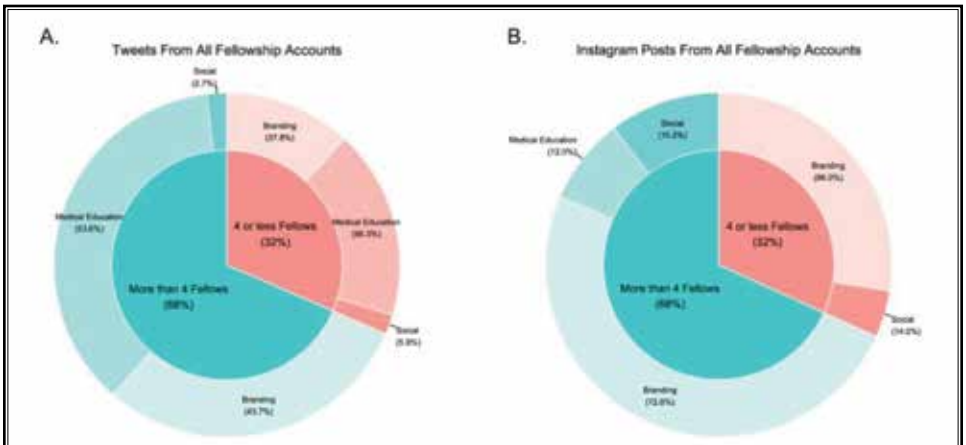

Fig. 1. *The distribution of posts from all active Twitter (panel A) and Instagram (panel B) fellowship accounts, by number of fellows*

had an Instagram account and 52.2%, a Twitter account. We determined that pain fellowships, which are frequently a subspecialty within the anesthesia department, would be likely to follow the same pattern.

We found that < 20% of the pain fellowship programs had some type of presence on Twitter and/or Instagram. When compared to primary anesthesiology residencies, social media presence among pain fellowships is much lower. The number of fellows within the program did not affect the existence of a Twitter account, but on the contrary, increased the likelihood for an Instagram account. This finding may suggest that larger programs with more fellows are more likely to have social media accounts, and particularly Instagram, a popular platform among Generation Z and Millennials. Furthermore, we found a relationship between number of followers and tweets, which may suggest that more active programs were more likely to have more followers. Programs with a social media presence, but in particular, an active social media presence, were likely to have more followers and thereby likely to be seen by potential applicants. It is likely that going forward beyond the pandemic, social media will continue to play a more integral role in assessing programs than it has in the past.

Furthermore, of the content posted on fellowship social media platforms, the majority of content was medical education related on Twitter and branding related on Instagram (Fig. 1). This is an important finding as it shows how programs use their posts primarily for the sake of educating their followers on Twitter and as a way to brand themselves to potential applicants on Instagram. By utilizing basic social media strategies, including image-based content posting, hashtags, and videos, programs can increase their engagement with the social media community, and increase their overall number of followers, thus expanding their potential reach to prospective applicants (8).

Strengths of this study include the review of social media usage over a 365-day period. This allows us to assess a full academic year, and to pinpoint the types of posts programs typically utilize. After classifying posts into categories, we were able to determine how different programs utilized their social media accounts, and could assess for consistencies across programs. Size of the program was also collected in order to determine if the number of fellows had an effect on the overall program's social media presence and usage.

Limitations include that the data were collected during the COVID-19 pandemic. Although we suspect this correlates with an increased likelihood of social media usage, it also likely reflects a significant shift in the way social media is used by pain fellowship programs. Additional research will be necessary to determine whether or not further shifts in social media use in health care will take place in a post-pandemic world. We were also limited by our ability to find all of the pain management fellowship program accounts on social media. However, we searched for up to 7 permutations to replicate an applicant's search and determined that any permutations beyond that would mean the program was difficult to find or did not have social media presence.

While social media has transformed the way we communicate, network, and share information with each other, it is important to acknowledge potential pitfalls of widespread use of social media by institutions (10,11). Health Insurance Portability and Accountability Act violations are becoming more frequent during the digital age, and the standards for confidentiality of patient information must be maintained (10,11). Institutions have introduced social media policies, and these policies should be reviewed prior to starting accounts that represent a training program. Also, as accounts are usually managed by an individual, there may be instances where controversial topics are posted that reflect the opinion of the poster rather than the program, which may affect the program's credibility (10,11). Finally, there may be instances where a disgruntled trainee or employee may resort to posting a negative review of a program which might affect further recruiting. However, despite several pitfalls of social media, the presence and importance of social media is undeniable in society as more people turn to social media for branding, education, advocacy, communication, and more.

Conclusions

With < 20% of ACGME-accredited Pain Medicine fellowships on Twitter and/or Instagram, it will be interesting to see if there is a substantial increase in usage, especially due to the COVID-19 pandemic's effects on in-person recruiting and interviewing. Further research regarding social media use and its impact on pain fellowship recruitment and overall residency recruitment is essential. An overwhelming majority of the members of the current generations, primarily applying for pain fellowship positions, utilize social media in many aspects of their lives. The relationship between social media and the rank order list of an applicant is poorly

understood, and further research will be necessary to understand social media's impact on an applicant's perception of a fellowship program. Additionally, further studies will be critical in determining the role social media will play among pain fellowship programs in a post-pandemic world especially as it pertains to medical education.

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