Does Social Media Matter When It Comes to Rank Lists? A Survey of Applicants for General Surgery Residency During COVID-19

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Abstract

Introduction: The COVID-19 pandemic greatly disrupted traditional social interactions between residency applicants and General Surgery programs. There is no previous research on the influence of social media in General Surgery residency recruiting.
Methods: We performed a multi-institutional survey of General Surgery residency applicants from the Northeast United States about the effect social media had on their decision to interview and rank programs, after the results of the 2021 National Resident Matching Program. The survey was sent to 311 email addresses. The 22-question survey consisted of multiple choice, Likert Scale, and free text responses.
Results: 66 applicants completed the survey (minimum response rate = 21.2%). Respondents cited word of mouth (53/63, 84.1%) and program website (39/63, 61.9%) as more important for learning about a program than program's social media presence (both p < 0.01). Only 12.6% (8/63) reported that social media influenced their decision to accept an interview with a program and only 13.1% (8/61) stated that social media influenced their final rank list.
Conclusions: Although social media use is ubiquitous among applicants to general surgery residency programs, it does not have as great of an impact on rank lists compared to traditional sources of information such as word of mouth and a program's website. As the COVID-19 pandemic continues to alter normal everyday activities and residency and fellowship match are conducted virtually, the role of social media on the match process should be studied further.

Keywords: General surgery residency, COVID-19, Social media, Rank list

Introduction

The COVID-19 pandemic has greatly affected the process of interviewing for General Surgery residency. Due to travel restrictions and need for social distancing starting in 2020, residency interviewing has been conducted virtually. Applicants, program directors, and other faculty were thus deprived of the typical informal and formal in-person interactions that are facilitated during the traditional interview format. These social interactions have been thought of as critical to assessing one's "fit" within a residency program, but now social media is being used to bridge that gap in recruitment.

Many General Surgery residency programs use social media to showcase attributes of their program and trainees. Additionally, faculty and

residents often employ social media to publicize personal or institutional achievements that highlight a program's strengths.[1] Prior research has examined if applicants used social media to learn and interact with postgraduate training programs in Oral Maxillofacial Surgery, Plastic Surgery, and Anesthesia before the COVID-19 pandemic.[2−5] Social media is being touted as an important way for applicants to learn more about general surgery residency programs to determine "fit". The role of social media during the interview process for General Surgery residency has been explored, such as the proliferation of General Surgery residency social media accounts and professional conduct, but its impact on matching has not been fully examined to date.[6−8] This is of particular significance as the Association of Program Directors in Surgery continues to endorse virtual interviewing.[9]

The objective of this study was to determine the effect of social media on applicants' decisions to interview and rank a program during the COVID-19 pandemic.

Methods and materials

Three residency programs from a single city in the northeast collaborated to perform a one-time cross-sectional survey of medical students who applied to at least one of these three programs for General Surgery residency during the 2020−21 application cycle.

The survey consisted of 22 questions (Supplementary Tables 1 and 2) which consisted of multiple choice, Likert scale, and free-text responses. Questions aimed to address the following broad topics: applicant and program engagement with social media; influence of social media on applicant perceptions of programs and rank list formulation; and prevalence and influence of program diversity, equity, and inclusion (DEI) endeavors. The five-point Likert scale included affirmative responses (Agree and Strongly Agree or Important and Very Important), a neutral response, and negative responses (Disagree and Strongly Disagree or Low Importance and Not at all Important). Respondents also provided free responses regarding strategies programs could employ to better connect and interact with applicants. These questions were developed by the investigators (surgeons and residents) and piloted amongst five current residents at one of the three institutions. The piloting process allowed for an iterative approach to ensure the survey questions were adequately designed to address the research objectives.

The survey was developed on the Google Forms application using a secure hospital intranet server. The survey was emailed to all medical students who interviewed at one of our General Surgery residency programs. Measures were taken to protect applicant confidentiality, email addresses were not recorded in the survey and applicant lists and contact information were not shared between programs. Responses were limited to a single response per email address, to prevent duplicate responses from applicants who interviewed at multiple programs. Since applicant lists were not shared between the three programs, we could not assess for duplicate survey requests. As a result, we report a minimum response rate assuming that there was no overlap of applicants among programs.

The survey was open for data collection from March 22, 2021 to April 22, 2021. This timing after the 2021 National Resident Matching Program (NRMP) Match Week had concluded was selected to reduce bias related to the match process. Basic demographic data (including age, gender, ethnicity, and race) were collected at the end of the survey. Survey data were exported from Google Forms (Mountain View, CA) to Microsoft Excel (Redmond, WA). The affirmative and negative responses were analyzed together. Categorical ordinal variables were described with median and interquartile range and categorical variables were presented as percentages. Non-normality was assumed given the limited sample size. Wilcoxon Rank Sum test, Wilcoxon matched-pairs signed tests, and Kruskal−Wallis test were used for univariate comparisons. A sub-group analysis was performed to evaluate if there were any differences in responses based on applicant gender, race or ethnicity. Missing data were handled by complete case analysis. Significance was stablished at $p < 0.05$. Stata 16 (College Station, TX) was used for all quantitative analyses. A power calculation prior to distributing the survey was not possible since the true study population was not known, applicant confidentiality was prioritized by not sharing lists of interviewees between programs. Free response questions were analyzed using word cloud analysis (Wordart.com). A Word cloud is a visual representation of text with frequently used words represented with greater prominence in the image. For the purposes of this study, common words and institution names were omitted and acronyms were all expanded prior to generating the image.

IRB approval and data sharing agreements were obtained at each institution. Consent was obtained from each participant prior to starting the survey. No identifying information was collected.

Results

Demographics

Each program independently emailed their applicants. We sent out a total of 311 emails. To protect confidentiality, we do not know how many duplicate emails were sent, so our analysis is based on the assumption that none of those surveyed interviewed at more than one of the institutions, which may underestimate the response rate. There were 66 responses for a minimum response rate of 21.2% (Supplementary Table 1). Most respondents were women (47/66, 72.3%). There was no significant difference in the gender makeup of each programs' applicants compared to the overall cohort of applicants surveyed. Most respondents were 25−29 years old (n = 49, 76.6%), identified as white (n = 38, 61.3%), and graduated from US medical schools (n = 64, 96.9%).

Applicant engagement on social media

63 of the 66 respondents (95.5%) had an active social media account. Facebook (n = 57, 90.5%) and Instagram (n = 52, 82.5%) were most used by respondents, while Twitter (n = 42, 66.7%) and professional networks LinkedIn (n = 32, 50.8%) and Doximity (n = 30, 47.6%) were less frequently used (Supplementary Table 2). 45 respondents (68.3%) had three or more social media accounts and 33 respondents (52.4%) reported using social media ≥1 h per day. 37 respondents (58.7%) self-censored their accounts before applying to general surgery residency by changing their username (n = 11, 42.3%), removing posts of photos or text (n = 17, 65.4%), changing their privacy settings (n = 6, 23.1%), and/or deleting their social media accounts (n = 2, 7.7%). Twenty-three applicants (37.5%) used social media to announce that they were applying to residency. Most applicants (n = 45, 71.4%) reported interacting with programs through social media in one form or another. The most common type of interaction was "Liking" posts (n = 28, 44.4%). Replying to posts (n = 12, 19.1%), sharing a post referencing a specific program (n = 10, 15.9%) and sending private messages (n = 8, 12.7%) were less common.

Program engagement on social media

Respondents saw more posts from a General Surgery residency program on Instagram (69.8%) and Twitter (63.5%) than on Facebook (7.9%). When programs did advertise on social media, respondents recalled that they were most likely to feature residents (n = 58, 92.1%) and attendings (n = 45, 71.4%), followed by Program Directors (n = 37, 58.7%) and Chairs of Surgery (n = 20, 31.7%). 60.3% of respondents felt that residency programs' social media presence helped them gain more information about a program (Supplementary Table 2).

Impact of social media on respondents

A residency's social media presence made 52.4% (responses Agree and Strongly Agree) respondents think more favorably about a program and gave 65% (responses Agree and Strongly Agree) a sense of the program's culture. Whereas only 15 respondents (23.8%, responses Agree and Strongly Agree) felt that a program's social media presence influenced their decision to apply to a particular program, 12.6% (8/62 responses Agree and Strongly Agree) reported that social media influenced their decision to accept an interview with a program, and 13.1% (8/61 responses Agree and Strongly Agree) stated that social media influenced their final rank list (Figs. 1 and 2).

Although a ranking on the importance of social media, program website, and word of mouth was not asked in this small survey, each applicant's responses to variable importance was compared on a head-to-head basis with Wilcoxon matched-pairs signed tests. This statistical test assumes that an applicant would assign the same importance score for each variable. Despite high usage of social media, a program's social media presence was significantly less likely to influence respondents compared to a program's website and word of mouth. Most applicants (n = 39 responses Important and Very Important, 61.90%) believed a program's website was more important to forming their impression of a program as compared to a program's social media presence, while only 5 (7.94% responses Important and Very Important) rated social media presence as more important than a program's website (p < 0.01). An even higher proportion of respondents (n = 54, 84.1%) believed word of mouth about a program was more important (responses Important and Very Important) than a program's social media presence, and only 3 (5.76%) rated social media presence as more important (Important and Very Important) than word of mouth (p < 0.01).

Impact of gender and diversity, equity, and inclusion

An overwhelming majority of respondents (n = 56, 88.9%) saw posts from programs regarding diversity, equity, and inclusion (DEI) endeavors while 26 (43.3% responses Agree and Strongly Agree)
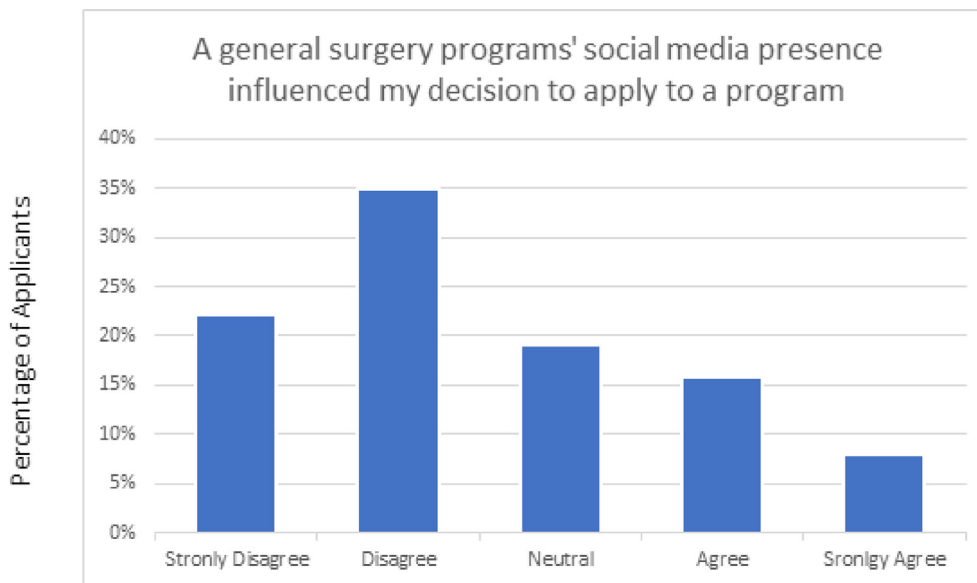
Fig. 1. Response to "A general surgery programs' social media presence influenced my decision to apply to a program".

actively searched for information regarding DEI. Furthermore, most respondents (n = 42 responses Neutral, Disagree, and Strongly Disagree, 66.4%) reported that a program's advertisements of DEI endeavors did not affect their rank list. There was no difference in impact of DEI endeavors on rank list based on respondent gender, race, or ethnicity (Supplementary Table 2).

Free response

The most common words used were "hangouts", "helped," and "resident" (Fig. 3). These terms were

used by respondents to refer to more casual meetings with residents where they did not feel they were being evaluated. These points were often connected to the words "culture" or "personality" implying that informal hangouts were a way for applicants to ascertain "fit" with the program. Respondents mentioned the importance of fit in relation to underrepresented minorities by specifically pointing out hangouts, webinars, and videos as opportunities to understand more about LGBTQ+ and minority experiences at each program. Other useful experiences during the application process were open virtual houses, newsletters, "day in the
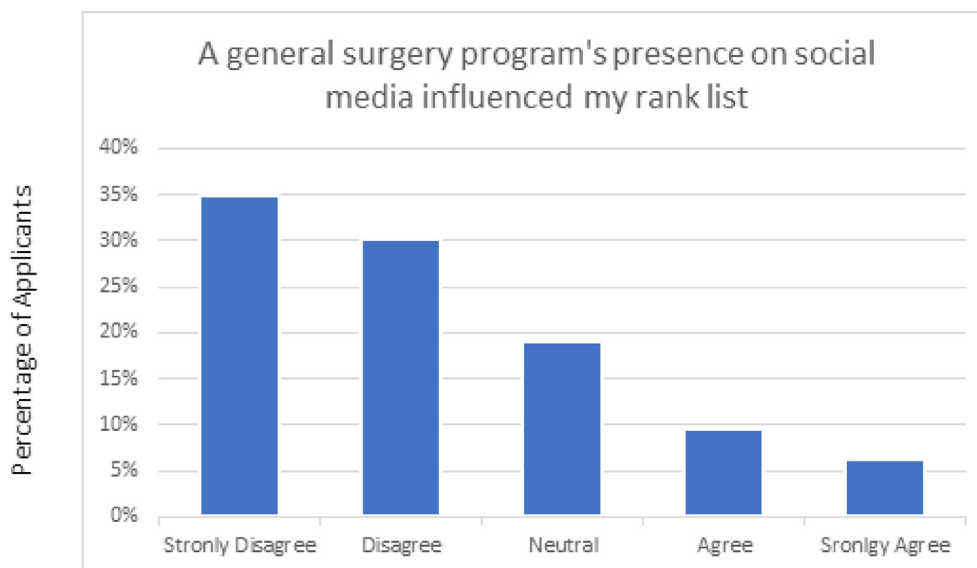

Fig. 2. Response to "A general surgery program's presence on social media influenced my rank list".

Fig. 3. Word cloud generated based free response question.

life" videos, small group breakout sessions during interviews, and links to participate in the programs' weekly conferences or education sessions. "Second Look" was also mentioned as something that could be helpful to finalize rank lists.

Discussion

In the past decade, there has been increasing research into the usage of social media by residency programs.[2−5] To the best of our knowledge, this cross-sectional survey of applicants from the 2020−2021 application cycle is the first study to assess the effect of social media on applicants' decision to interview and rank General Surgery residency programs. We hypothesized that social media use by residency programs would positively influence applicants to apply, interview, and favorably rank a program.

Social media was used by 95% of respondents and was perceived to be important, as it helped applicants find more information about a program. This finding is consistent with prior studies evaluating social media use in Anesthesia and Plastic Surgery.[2−5] Twitter and Instagram were the preferred platforms to interact with residency programs and other applicants, which mirrors the increasing use of Twitter and Instagram by residency programs. However, most respondents only engaged with programs by "liking" a post and suggests that applicants are not actively engaging with programs on social media. This passive use of social media may explain the insignificant impact on applicants' decision-making process. In this study, social media had the weakest influence on applicants' decisions to rank programs compared to word of mouth and a

program's website, opposite of our original hypothesis. This is similar to data from one survey on Anesthesia residency applicants, where only 12% reported social media was helpful in deciding to apply to a program.[4] Additional research from Anesthesia residency recruiting shows that social media was only rated a top tool for learning about programs in 13.5% of applicants, whereas program website (69.4%) and information from currently enrolled resident (56.3%) was utilized more often.[10] Word of mouth is the traditional mechanism by which applicants learn about residency programs and in our data holds the most weight, even in the era of pervasive online advertising.

Social media is a tool for residency programs to showcase diversity, equity, and inclusion initiatives. Our study did identify conflicting messages regarding the importance of highlighting DEI endeavors. Our free word responses did indicate a consistent theme that applicants wanted to learn more about the minority experience during training. Even though DEI endeavors are commonly advertised by programs, 66.4% of applicants felt it did not affect their program rankings. Interestingly, the majority of our respondents were women which reflects the changing demographics of applicants over the last 20 years. In 2020, more women than men were enrolled in medical schools for the first time and 43.1% of General Surgery residents were women compared to 36.2% in 2010.[11−13] While we did not find any clear difference in the approach to the use of social media by gender or underrepresented minority status, it is possible that our study was underpowered to detect such a difference. Although not the primary objective of this study, the survey results did show that applicants frequently self-censored their

social media profiles to prepare for the application process. Self-censorship indicates that applicants try to maintain a professional social media presence and avoid negative evaluations by program directors. The topic of professionalism and social media in Surgery, for faculty and residents, has been shown to effect personal reputation, professional position, and institutional standing.[1,14—16]

We acknowledge a few important limitations to this study. The main limitation of this study was the low minimum response rate, although this is similar to other studies' response rates of 12—41%[2—5] It is likely that the number of survey requests was higher than the number of unique applicants, thus decreasing the true denominator and yielding a higher response rate. This also limits our ability to detect a true difference in the categories of influence since power cannot be calculated in a survey without knowing the true population size. The generalizability of our survey results to all applicants across the country is limited by at least three reasons. Our research group only collected data from 63 applicants from 3 programs in the Greater Boston area, which offer 19 categorical positions and 9 preliminary positions, out of the 4897 total applicants for 1569 categorical positions and 1136 preliminary positions available in 2021.[17] Additionally, our sample may be further biased since 72% of our respondents were female, when the national percentage of female general surgery residents is 43.1%.[13] We also acknowledge that this analysis may be limited by recall bias of the participants, in that this survey was delivered after the NRMP had resulted. This timing was intentionally selected by the authors to avoid the potential for concerns about survey completion impacting rank or matching. Despite this, the outcome of the match and any related positive/negative emotions still might have impacted responses. It is also possible that the discordant findings of high utilization of social media by applicants with relatively low influence of social media on rank lists could be due to inconsistent interpretation of the survey instrument among respondents. An example would be not asking applicants to directly rank their perceived importance of social media, versus program website, versus word of mouth. Certain aspects of social media use were limited or omitted in the design of our survey to avoid a cumbersome and lengthy questionnaire for applicants to complete.

Despite these limitations, this is the first study to directly assess the effect social media had on applicants' decision to interview and rank programs. Future studies to better understand social media's impact on residency recruitment will need to survey larger numbers of applicants, further evaluate self-

censorship, and assess how applicants communicate amongst themselves with private social media groups, messaging platforms, or discussion boards. This is of particular importance as the match process for residencies and fellowships continues to be conducted in a virtual format.

Conclusion

This study demonstrates that social media use among applicants and programs is ubiquitous but that its true impact on the application process is not entirely clear. Although over 90% of respondents recalled seeing a General Surgery program post on social media, social media did not appear to have as great of an impact on rank lists compared to traditional sources of information such as word of mouth and a program's website. The COVID-19 pandemic has drastically altered residency and fellowship recruitment and the role of social media on the match process may continue to evolve. More studies are necessary on a larger scale to determine if social media may help replace the missing interpersonal interactions that exist during the interview process.

Prior or related publications

None.

Disclaimers

None.

Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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