

Influenced: Exploring the Effect of Social Media on Medical Students' Perceptions of Plastic Surgery

Aubree Ford, MD*
Courtney Doherty, BS*
James D. Vargo, MD*†

Background: Medical students rarely receive dedicated education in plastic surgery, exposing them to influence from the internet or television programming that is frequently skewed toward cosmetic procedures. Additionally, social media posts from board-certified plastic surgeons make up a small portion of available content. These biased representations may impact students' perceptions, narrowing the scope of referrals and limiting career exploration.

Methods: Medical students at two academic medical centers were surveyed. Blinded data were collected on exposure to plastic surgery, social media usage, observed content, and perceptions of the specialty. Students' understanding of plastic surgery was evaluated using clinical scenarios.

Results: The response rate was 24.3%. Social media and television were the primary contributors to understanding of plastic surgery in 51.6% of students, especially for those who had not completed a surgical clerkship ($P < 0.026$). Students most frequently viewed plastic surgery content posted by influencers (28.1%), followed by board-certified plastic surgeons (24.1%), patients (21.2%), and nonplastic surgeon physicians (19.7%). Posts relating to cosmetic procedures (44.3%) were viewed most frequently. Students who followed board-certified plastic surgeons performed better when answering clinical vignettes (64.8% versus 50.9%).

Conclusions: Social media and television play a significant role in medical students' perceptions of plastic surgery. Students are also more likely to see posts from influencers than board-certified plastic surgeons, furthering potential bias. Quality content from board-certified surgeons and professional societies may improve scope of practice creep and student interest. (*Plast Reconstr Surg Glob Open* 2024; 12:e6036; doi: 10.1097/GOX.0000000000006036; Published online 7 August 2024.)

INTRODUCTION

Social media is ubiquitous in modern society and has developed an increasing role in medical education and exposure to medical information.^{1,2} Public fascination with plastic surgery also continues to grow, and this has resulted in plastic surgery becoming one of the foremost medical specialties represented on social media. Unfortunately,

plastic surgery as a specialty is often narrowly depicted. This is of growing concern because many physicians, residents, medical students, and the general public already have a limited understanding of plastic surgery and are primarily familiar with only the cosmetic aspects of the specialty.^{3,4} Medical students specifically have demonstrated a limited understanding of the breadth of plastic surgery.⁵⁻⁸ This is largely due to limited exposure to the field throughout medical education, leaving students to draw upon external sources such as social media.

Previous studies demonstrated that medical students' understanding of plastic surgery improved with increased clinical exposure.⁹⁻¹² Although this association is intuitive, it is less clear how those without clinical exposure to plastic surgery develop an understanding of the field. In the absence of plastic surgery education in medical school,

From the *Division of Plastic Surgery, University of Nebraska Medical Center, Omaha, Neb.; and †Division of Craniofacial/Pediatric Plastic Surgery, Children's Nebraska, Omaha, Neb.

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students have reported learning mainly through television or the internet.^{3,13}

The impact of social media, specifically, on medical students' understanding of plastic surgery has not been evaluated. Prior evaluations of social media trends have demonstrated that plastic surgeons with a cosmetic focus are more likely to engage with social media.^{14,15} Additionally, when assessing social media posts containing the search term "plastic surgery," only 31% of posts on Instagram (IG), Facebook (FB), and YouTube (YT) were posted by plastic surgeons, and only 16% were educational.¹⁶ This suggests that the remaining 69% of posts are shared by those without standardized plastic surgery training. Overall, influences from social media potentially have a compounding effect on existing misconceptions held by medical students about the scope of plastic surgery. Therefore, this study aims to assess how social media influences medical students' understanding of plastic surgery.

METHODS

After institutional review board approval was obtained, a survey was electronically distributed to all students (n = 1261) at two medical schools in Omaha, Nebraska, in 2022. The 40-question survey assessed exposure to plastic surgery, social media usage, observed content, and perceptions of the specialty. (See survey, Supplemental Digital Content 1, which displays all survey questions. <http://links.lww.com/PRSGO/D413>.) Social media usage was evaluated across six major platforms: FB, IG, Snapchat (SC), TikTok (TT), Twitter (Tw), and YT. Participants were initially blinded to the purpose of the survey and were asked to complete a survey on exposure to surgical subspecialties.

Results were de-identified and analyzed using Research Electronic Data Capture (REDCap). Appropriate statistical analysis was performed with the assistance of a statistician. All categorical data were summarized in two-way tables with counts and proportions. The Pearson chi-square test was applied for most comparisons. When cell counts were small, the Pearson chi-square exact test was applied. When multiple items were grouped together, a beta-binomial count model was applied, as overdispersion generally exists in this situation. All statistical significance tests for differences in means were two-sided. Statistical analyses were generated with the FREQ, FMM, and NLMIXED procedures from SAS/STAT software, Version 9.4 (2016) of the SAS System for Windows (Cary, N.C.).

RESULTS

In total, 306 of 1261 (24.3%) medical students responded. Demographic data are reported in Table 1. Among survey respondents, 33.3% of students indicated interest in a surgery specialty, and 2.1% noted interest in plastic surgery. Many students (74.7%) reported that independent exploration was the factor that contributed most to choosing a specialty. Conversely, when presented with similar answer choices, the factors contributing most to their understanding of plastic surgery were television programs and social media (51.6%) (Fig. 1). Students

Takeaways

Question: What role does social media play in medical students' perceptions of the scope of practice of a plastic surgeon?

Findings: Students with minimal clinical exposure to plastic surgery are primarily influenced by social media and television. Students are most likely to see posts related to cosmetic surgery and are more likely to see content from influencers than board-certified plastic surgeons.

Meaning: Medical students are exposed to a skewed representation of plastic surgery on social media, which may create biases that affect referral patterns to plastic surgeons.

who completed a surgery clerkship were more likely to indicate that clinical experiences contributed the most to their understanding of plastic surgery ($P < 0.0001$). In comparison, students who had not completed a surgery clerkship were more likely to indicate that television and social media contributed the most to their understanding of plastic surgery ($P < 0.026$) (Fig. 2).

Social media usage among students was prevalent across major social media platforms, with many reporting regular usage (YT, 87%; FB, 85%; IG, 85%; SC, 81%; Tw, 46%; and TT, 39%). For these users, medically related content was commonly viewed on IG (72%), YT (69%), and FB (50%) but was viewed less on Tw (37%), TT (35%), and SC (24%). Furthermore, these users noted that they viewed plastic surgery-related content across all platforms (IG, 47%; FB, 33%; YT, 30%; SC, 25%; TT, 23%; and Tw, 15%). Overall, plastic surgery content was viewed most frequently on IG when posted by influencers (28.1%),

Table 1. Survey Participant Demographics and Clinical Experience

	Percentage, %
Response rate	24.3
Sex	
Male	40.5
Female	58.5
Nonbinary/other	0
Prefer not to answer	1
Age, y	
20–24	40.8
25–29	55.6
30–34	2.9
35+	0.7
Stage of medical school	
M1	21.8
M2	9.9
M3	39.5
M4	28.9
Clinical experiences	
Completion of a surgical clerkship	41.5
Plastic surgery rotation	4.8
Plastic surgery shadowing	10.9

M1, first-year medical student; M2, second-year medical student; M3, third-year medical student; M4, fourth-year medical student.

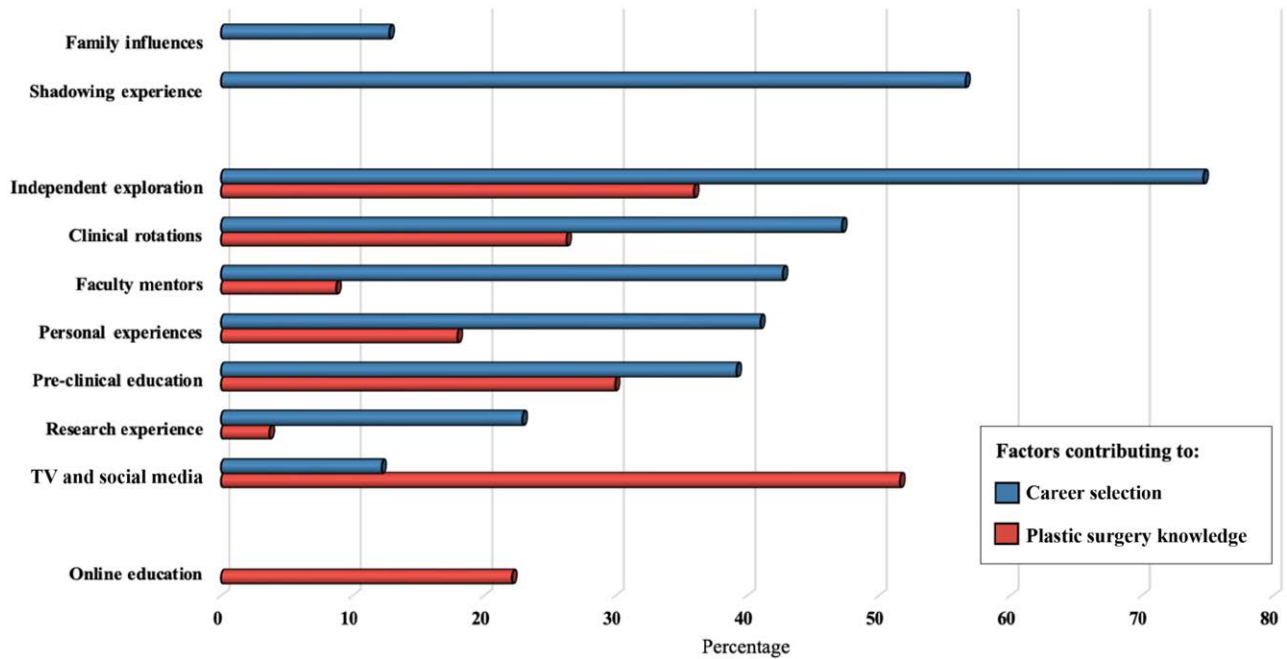


Fig. 1. Factors contributing the most to students’ career selection (blue) and understanding of plastic surgery (red). Options for “family influences” and “shadowing experiences” were given only when assessing career selection, whereas options for “online education” were given only when assessing understanding of plastic surgery.

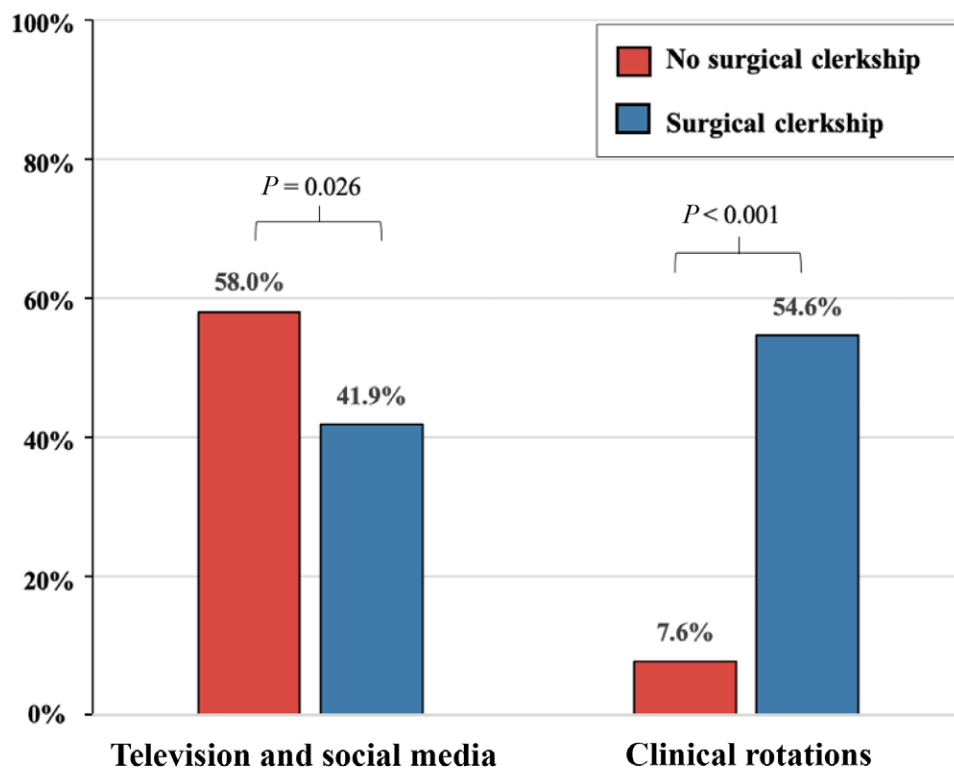


Fig. 2. Factors contributing the most to preclinical (red) and clinical (blue) students’ understanding of plastic surgery. $P \leq 0.05$ was considered significant.

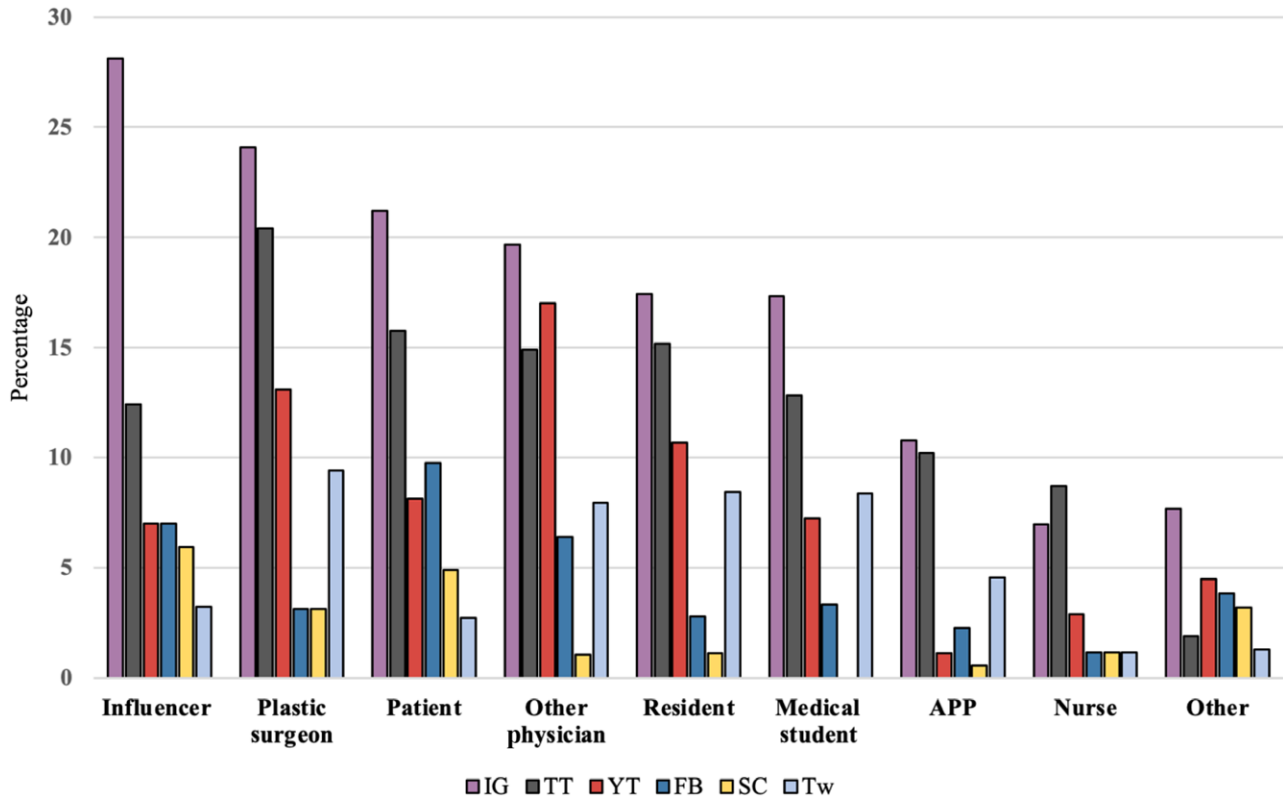


Fig. 3. Account owners of plastic surgery content viewed on social media by medical students. Numerical values represent percentage of students who view plastic surgery content posted on each respective social media platform. In the survey, participants were directed to select all that apply.

board-certified-plastic surgeons (24.1%), patients (21.2%), physicians (19.7%), residents (17.4%), students (17.3%), and nonphysician practitioners (10.8%). Plastic surgery posts from nurses were viewed more frequently on TT (8.7%) (Fig. 3). Across all social media platforms, posts relating to cosmetics (44.3%) were viewed most frequently, followed by reconstructive content (35.7%), educational material (29.2%), patient experiences (25.6%), surgical technique (19.6%), and residency program information (15.7%). IG was the leading platform in which content was viewed for each category except for surgical technique, which was viewed predominantly on YT (Fig. 4). Of students who “follow” accounts related to plastic surgery, those owned by board-certified plastic surgeons were the most common (18.9%), followed by influencers (7.8%) (Fig. 5).

Students were also presented with a series of clinical vignettes pertaining to four domains of plastic surgery: hand and peripheral nerve, craniofacial, breast and cosmetics, and general reconstruction. Although plastic surgery was an appropriate response for each, it was selected by only 53.4% of students for all cases. Across all platforms, there was no significant difference in performance between students who use social media and those who do not. However, students who follow board-certified plastic surgeons performed better when answering the clinical scenarios (64.8% versus 50.9%). This difference did not reach significance ($P = 0.11$); however, the sample

of students following board-certified plastic surgeons was small ($n = 40$).

Finally, 70% ($n = 205$) of students answered the following optional free-response question: “Have your experiences with social media affected how you perceive the specialty of plastic surgery?” Several responses are given in Table 2, highlighting both the positive and negative aspects of social media regarding plastic surgery. After removing filler words and terms relating to “plastic surgery” or “social media,” the most common word mentioned throughout the responses was “cosmetic,” noted 31 times (Fig. 6).

DISCUSSION

Medical students have minimal exposure to plastic surgery throughout their medical education. Previously, our group identified that students have a narrow understanding of the full breadth of the specialty regardless of whether they were at an institution with or without a plastic surgery training program. We sought to further evaluate exposure to plastic surgery and how social media affects specialty choice and perceptions of plastic surgery. We aimed to survey students without career interest in plastic surgery to help elucidate how their exposures may impact potential referral patterns and scope of practice creep.

In general, regardless of specialty of interest, study participants reported that they primarily selected their

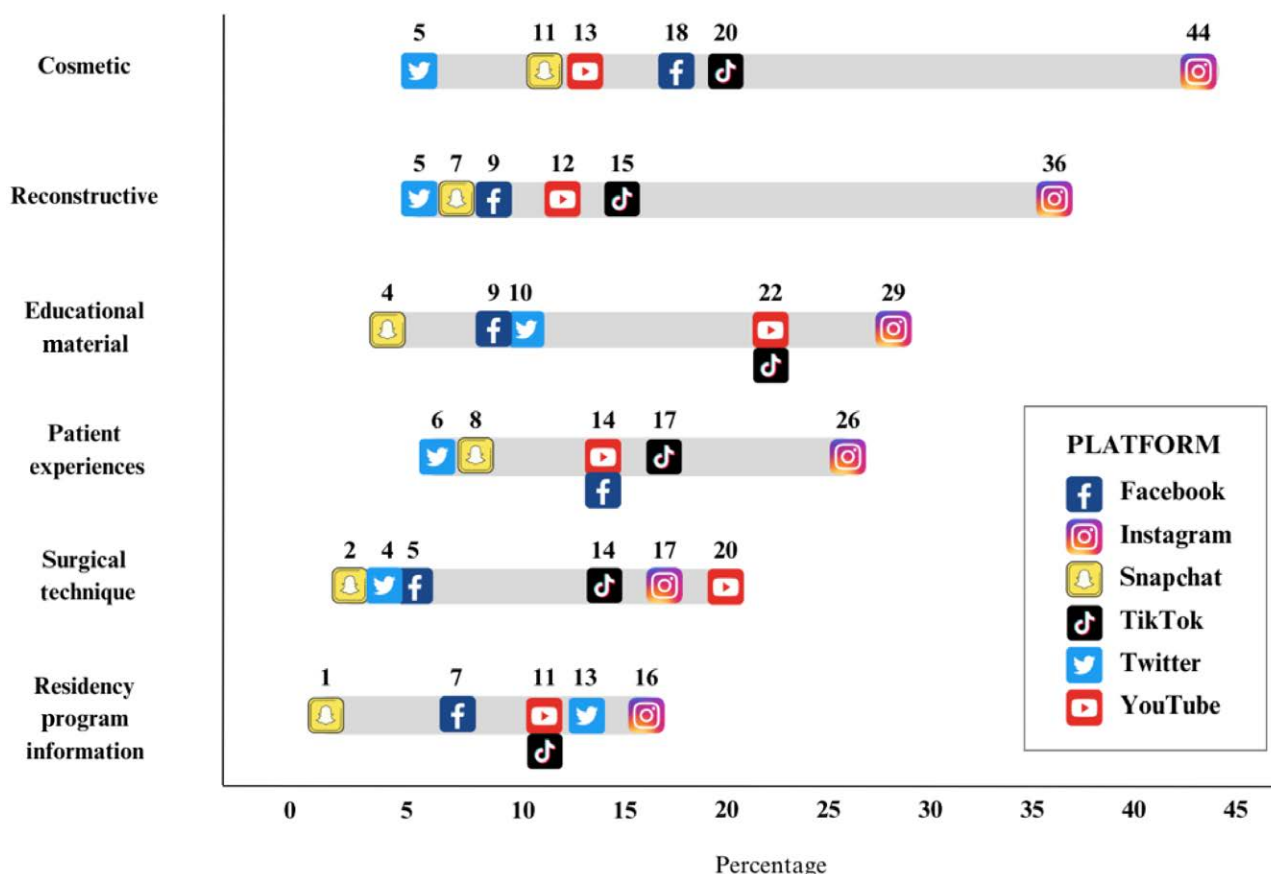


Fig. 4. Classification of plastic surgery content viewed by medical students across social media platforms. Numerical values represent percentage of students who use social media and view content relating to plastic surgery. In the survey, respondents were directed to select all that apply.

potential specialty based on individual exploration (74.7%), shadowing (56.6%), and clinical education (47.2%) (Fig. 1). Television and social media were the least reported influential factors, contributing to only 12.2% of students. Comparatively, more than 50% of survey participants reported that their main exposure to plastic surgery was through social media and television. This finding creates potential for bias, as prior studies have shown that cosmetic plastic surgery information is most prevalent on social media.^{14,19,20} Our data were consistent with this, with 43% primarily viewing cosmetic plastic surgery content on social media.

Overall, IG was the most popular social media platform used by medical students. Students felt they viewed the most plastic surgery IG posts created by “influencers” followed by plastic surgeons (Fig. 3). This differs from data by Braun et al¹⁷ that showed plastic surgeons were the most common creators of plastic surgery posts in the United States (25.3%, 143,218 posts). It also suggests a disparity between the high volume of content created by plastic surgeons and what “goes viral,” being seen by the most end users, such as medical students. Regarding type of content viewed, IG was also the primary platform for posts regarding cosmetics, reconstructive content, educational material, patient experiences, and residency program

information (Fig. 4). The exception was that surgical technique content was viewed predominantly on YT, which is expected considering the video format allows for greater elaboration. Notably, it has been estimated that only 6% of plastic surgery videos on YT are educational.¹⁸

Of all plastic surgery accounts followed by students, those owned by board-certified plastic surgeons were the highest collective group (Fig. 5). Students who follow board-certified plastic surgeons demonstrated an increased understanding of the breadth of the specialty on surveyed clinical vignettes. Although there is potential selection bias in that these students may have a higher baseline interest in plastic surgery, only 2% of participants indicated interest in plastic surgery as a career. This may also be explained by prior data demonstrating that board-certified plastic surgeons were significantly more likely to posteducational content on IG compared with nonplastic surgeons (62.1% versus 38.1%, $P = 0.02$).²¹ Overall, there was no significant difference in performance on the clinical vignettes between students who use social media and those who do not. Mortada et al¹² previously reported that medical students exposed to plastic surgery from television had improved awareness of the field; however, we did not observe the same trend when examining social media usage.

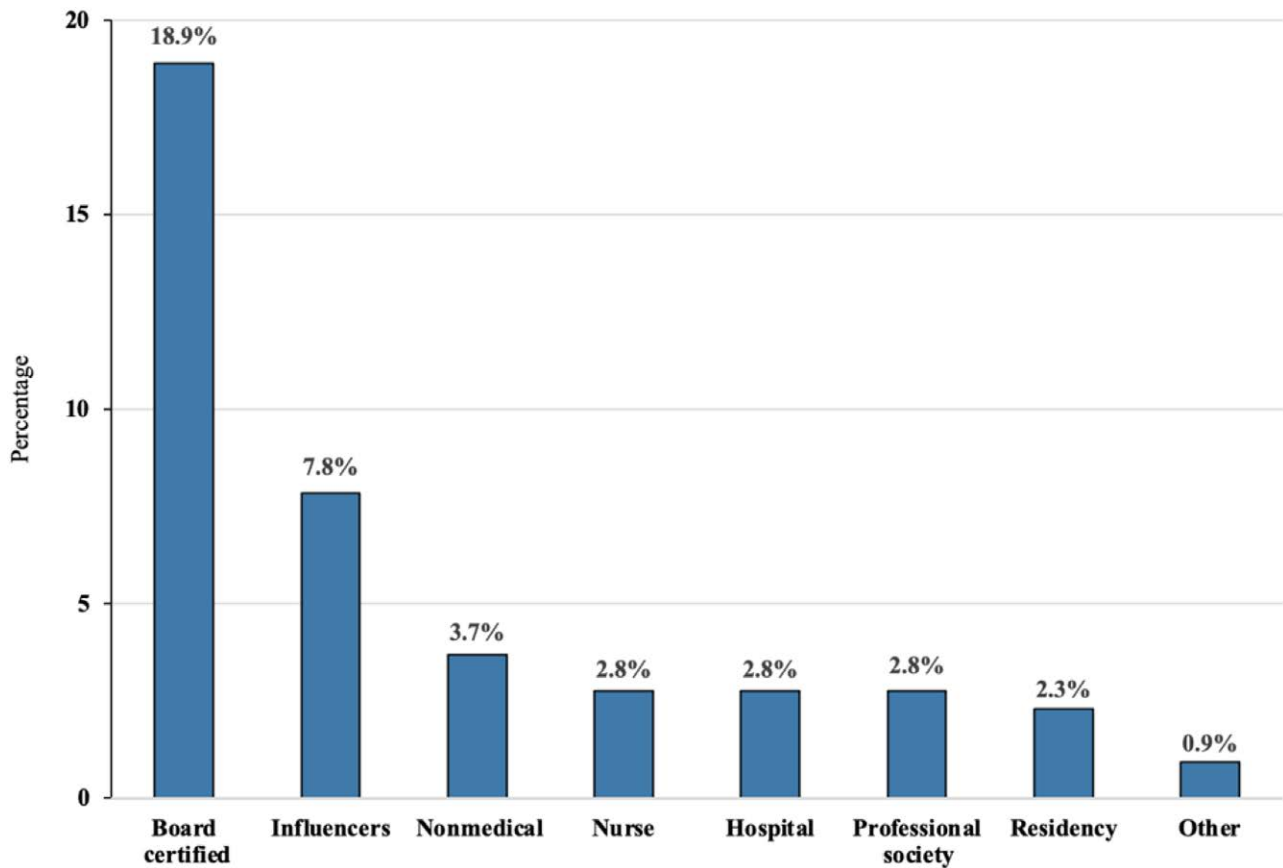


Fig. 5. Owner of social media accounts followed by medical students across all platforms. In the survey, respondents were directed to select all that apply.

Table 2. Medical Student-free Responses to Optional Question “Have Your Experiences with Social Media Affected How You Perceive the Specialty of Plastic Surgery?”

Positive Experiences	Negative Experiences
“Learned more about the reconstructive elements of plastic surgery.”	“You typically only see the cosmetic side of plastics and not the reconstructive.”
“The accounts I follow for medical interest showed the breadth of the specialty.”	“I think their profession is really cool—I just think social media does them a disservice”
“At first when I only followed the cosmetic accounts it gave me the idea that plastics was only about Botox or breast augmentation. I know better now!”	“I see that social media focuses on the aesthetic aspect of plastic surgery (eg, breast implants, rhinoplasty, etc).”
“I feel like I have gotten more exposure to what plastic surgery actually entails from my social media pages than my actual medical school—especially reconstructive techniques.”	“I think that the non-medical content I have come across about cosmetic plastic surgery has worsened my perception of the specialty, even knowing how many really interesting aspects there are to plastic surgery.”
“[Social media] has provided me with more information about the specialty than my current medical school does.”	“Social media has mostly only shown me the cosmetic side of plastic surgery, so I never knew there was a reconstructive side to plastic surgery until way later.”
“YouTube definitely broadens my perspective of all subjects, including plastic surgery. It helps debunk some stereotypes about the specialty and educates me on the diversity & medical benefits within the field.”	“I occasionally see advertisements for cosmetic procedures that would be performed by an aesthetician, not a board-certified plastic surgeon. I think this can be problematic and potentially confusing for the general public.”

Collectively, these findings illustrate how medical students engage with plastic surgery online and highlight shifting dynamics in social media use among the next generation of physicians. It is important to note that medical students consume plastic surgery content with different motives than the general public.^{19,20,22,23} In 2023, Shiah et

al²⁴ reported that the general public was most responsive to IG and FB posts containing before and after results, patient testimonials, and details on postoperative recovery. Here, medical students were more drawn to IG posts about cosmetic and reconstructive surgery and educational material (Fig. 4). Additionally, popularity of social

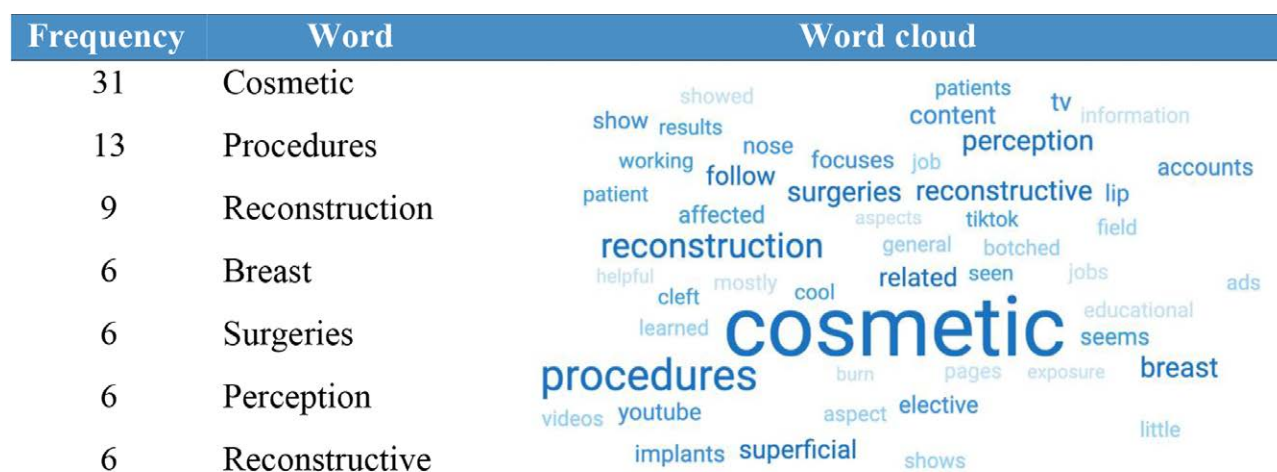


Fig. 6. Word cloud representing most used words when students responded to the following free-response question: “Have your experiences with social media affected how you perceive the specialty of plastic surgery?” Filler words and terms relating to “plastic surgery” and “social media” were excluded.

media platforms appears to be shifting. Previous studies evaluating plastic surgery content accessible on social media predominantly report findings from Tw.^{19,20,23,25–28} More recently, IG^{17,29,30} and TT^{31–33} have received increasing attention in the literature. This shift is noted in medical student tendencies in this study, as students most frequently encountered plastic surgery content on IG and TT (Fig. 3).

This study provides insight into how social media exposure is a key driver of student perceptions of plastic surgery. Combined with scant formal medical training on the field, the high rate of aesthetic surgery content on social media may skew students’ perceptions about the full scope of plastic surgery. This is significant, as it may impact what referrals are sent to a plastic surgeon versus other surgical specialties with a more clearly defined scope. We hypothesize that the cultural shift toward social media and the disparate focus on aesthetic surgery play a role in the scope of practice creep that is endemic within plastic surgery. The recent surgical society focus on social media engagement by board-certified plastic surgeons is encouraging, but specific attention should be directed to increase content from all plastic surgery disciplines. Unfortunately, institutional barriers frequently restrict the ability of academic surgeons to participate in social media, create educational content, and champion the breadth of plastic and reconstructive surgery.

LIMITATIONS

There were limitations to this study. First, there is an obvious potential for recall bias in how students perceive their social media use. However, this also allowed us to assess their perception of plastic surgery content they encounter on social media. Second, participants surveyed in this study are from a single geographic area; therefore, results are not generalizable to all United States medical students. Finally, social media is a continuously evolving landscape, and trends will likely shift again in the years to come.

CONCLUSIONS

The growing presence of social media has increased medical students’ exposure to plastic surgery, although a skewed representation of cosmetic and aesthetic content exists, creating potential bias in medical students’ understanding of the full scope of plastic surgery. Students are more likely to see posts from influencers than board-certified plastic surgeons, furthering this risk. It was encouraging that students following a board-certified plastic surgeon correlated with an increased understanding of the breadth of the specialty. Finally, increased clinical experience was an important driver of perception. Increasing access to plastic surgery clinical experiences in medical school may correct misconceptions about the specialty.

James D. Vargo, MD

Division of Craniofacial/Pediatric Plastic Surgery
Children’s Nebraska; and
Division of Plastic Surgery
University of Nebraska Medical Center
8200 Dodge St
Omaha, NE 68114
E-mail: jvargo@childrensnebraska.org

DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

REFERENCES

- Katz M, Nandi N. Social media and medical education in the context of the COVID-19 pandemic: scoping review. *JMIR Med Educ.* 2021;7:e25892.
- Coman C, Mesesan-Schmitz L, Tiru LG, et al. Dear student, what should I write on my wall? A case study on academic uses of Facebook and Instagram during the pandemic. *PLoS One.* 2021;16:e0257729.
- Fraser SJ, Al Youha S, Rasmussen PJ, et al. Medical student perception of plastic surgery and the impact of mainstream media. *Plast Surg (Oakv).* 2017;25:48–53.

4. Dunkin CSJ, Pleat JM, Jones SAM, et al. Perception and reality-a study of public and professional perceptions of plastic surgery. *Br J Plast Surg*. 2003;56:437–443.
5. Alyahya T, Zakaria OM, Al Jabr FA, et al. Plastic and aesthetic surgery among medical students: a cross-sectional study. *SAGE Open Med*. 2021;9:205031212110543.
6. Agarwal JP, Mendenhall SD, Moran LA, et al. Medical student perceptions of the scope of plastic and reconstructive surgery. *Ann Plast Surg*. 2013;70:343–349.
7. Kling RE, Nayar HS, Harhay MO, et al. The scope of plastic surgery according to 2434 allopathic medical students in the United States. *Plast Reconstr Surg*. 2014;133:947–956.
8. Alghamdi A, Shash H, Almarzouq S. Perception of plastic surgery among medical students. *Plast Reconstr Surg Glob Open*. 2023;11:29–30.
9. Jabaiti S, Hamdan-Mansour AM, Isleem UN, et al. Impact of plastic surgery medical training on medical students' knowledge, attitudes, preferences, and perceived benefits: comparative study. *J Public Health Res*. 2021;10:1927.
10. Aykan A, Kurt E, Avsar S, et al. The effect of educational internships on medical students' perceptions of plastic surgery. *J Pak Med Assoc*. 2017;67:66–72.
11. Reghunathan M, Segal RM, Reid CM, et al. The plastic surgery learning module: improving plastic surgery education for medical students. *Plast Reconstr Surg Glob Open*. 2021;9:e3980.
12. Wade RG, Moses MA, Henderson J. Teaching plastic surgery to undergraduates. *J Plast Reconstr Aesthet Surg*. 2009;62:267.
13. Mortada HH, Alqahtani YA, Seraj HZ, et al. Perception of plastic surgery and the role of media among medical students: cross-sectional study. *Interact J Med Res*. 2019;8:e12999.
14. Vardanian AJ, Kusnezov N, Im DD, et al. Social media use and impact on plastic surgery practice. *Plast Reconstr Surg*. 2013;131:1184–1193.
15. Economides JM, Fan KL, Pittman TA. An analysis of plastic surgeons' social media use and perceptions. *Aesthet Surg J*. 2019;39:794–802.
16. Ben Naftali Y, Duek OS, Rafaeli S, et al. Plastic surgery faces the web: analysis of the popular social media for plastic surgeons. *Plast Reconstr Surg Glob Open*. 2018;6:e1958.
17. Braun SE, O'Connor MK, Hornick MM, et al. Global trends in plastic surgery on social media: analysis of 2 million posts. *Aesthet Surg J*. 2021;41:1323–1332.
18. Almarghoub MA, Alghareeb MA, Alhammad AK, et al. Plastic surgery on YouTube. *Plast Reconstr Surg Glob Open*. 2020;8:e2586.
19. Kalandar A, Al-Youha S, Al-Halabi B, et al. What does the public think? examining plastic surgery perceptions through the Twitterverse. *Plast Reconstr Surg*. 2018;142:265–274.
20. Branford OA, Kamali P, Rohrich RJ, et al. #PlasticSurgery. *Plast Reconstr Surg*. 2016;138:1354–1365.
21. Dorfman RG, Vaca EE, Mahmood E, et al. Plastic surgery-related hashtag utilization on Instagram: implications for education and marketing. *Aesthet Surg J*. 2018;38:332–338.
22. Weber L, Khosravani N. Connecting with the next generation: a medical student's perspective on social media use and plastic surgery. *Plast Reconstr Surg*. 2018;142:247e–248e.
23. Mullens CL, McCulloch IL. The social media scrub-in. *Plast Reconstr Surg*. 2017;140:838e–839e.
24. Shiah E, Weidman AA, Valentine L, et al. Capitalizing on social media: an evaluation of the public's preferences for plastic surgery social media content. *J Plast Reconstr Aesthet Surg*. 2023;83:308–317.
25. Chopan M, Sayadi L, Clark EM, et al. Plastic surgery and social media: examining perceptions. *Plast Reconstr Surg*. 2019;143:1259–1265.
26. Chen AD, Ruan QZ, Bucknor A, et al. Social media: is the message reaching the plastic surgery audience? *Plast Reconstr Surg*. 2019;144:773–781.
27. Asyyed Z, McGuire C, Samargandi O, et al. The use of Twitter by plastic surgery journals. *Plast Reconstr Surg*. 2019;143:1092e–1098e.
28. Bellaire CP, Rutland JW, Melamed E. Evolving landscape of social media within plastic surgery: an analysis of Twitter trends in hand surgery. *Plast Reconstr Surg*. 2022;149:354e–356e.
29. Basa K, Spiegel JH. Facial plastic surgery on Instagram: what is trending? What is working? *Aesthet Surg J*. 2021;41:846–851.
30. Sultan DL, Nazarian SS, Furnas HJ, et al. Cross-sectional analysis of Instagram use in American plastic surgery practices. *Plast Reconstr Surg*. 2022;150:1368–1374.
31. Ravikumar V, Kapadia K, Dalena M, et al. Is TikTok the new Instagram? Analysis of plastic surgeons on social media. *Plast Reconstr Surg*. 2021;147:920e–922e.
32. Long EA, Shiah E, Lin SJ. TikTok: is it time to start trending with #PlasticSurgery? *Plast Reconstr Surg*. 2023;151:1043e–1050e.
33. Das RK, Drolet BC. Plastic surgeons in TikTok: top influencers, most recent posts, and user engagement. *Plast Reconstr Surg*. 2021;148:1094e–1097e.