

An Updated Review of Plastic Surgery-Related Hashtag Utilization on Instagram: Implications for Education and Marketing

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Abstract

Background: The popularity of social media continues to have a significant impact in the plastic surgery industry. Understanding the influence of such platforms and recognizing trends, specifically on Instagram, can reveal significant implications for education and marketing.

Objectives: This study aims to gather updated information on 3 main questions: (1) what plastic surgery-related content is being posted to Instagram; (2) who is posting this content; and (3) what specific hashtags are they using?

Methods: This study analyzed 22 plastic surgery-related hashtags on Instagram. Content analysis was then used to qualitatively evaluate each of the 9 “top” posts associated with each hashtag (198). Any duplicates or posts not relevant to plastic surgery were excluded.

Results: A total of 11,516,969 posts utilized the 22 hashtags sampled. Of the top 198 posts, only 168 met final inclusion criteria (after duplicates and posts irrelevant to plastic surgery were excluded). Plastic surgeons eligible for membership in The Aesthetic Society accounted for only 4.17% of top posts (7 posts), whereas non-eligible physicians accounted for 20.8% (35 posts). Twenty-eight surgeons accounted for the top posts (excluding foreign surgeons); however, only 6 were board certified by either the American Board of Plastic Surgeons or The Royal College of Physicians and Surgeons of Canada.

Conclusions: The Aesthetic Society eligible board-certified plastic surgeons are a minority amongst physicians posting top plastic surgery-related content on Instagram.

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Social media continues to greatly impact the field of plastic surgery. Integrating social media platforms into one’s practice is a necessity for marketing purposes and many surgeons use them for educational purposes as well. Patients also utilize these platforms as a way to make decisions regarding potential future procedures and which surgeon they want to choose. For this reason, it is no surprise that the growth of social media in plastic surgery is growing at a rapid rate.

Instagram (www.instagram.com) is one of the biggest platforms in social media, with over one billion active users

and approximately 120.7 million users in the United States alone as of January 2020. Each day, over 100 million

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photographs and videos are uploaded and it is estimated that 75.3% of US businesses will be on this platform in 2020.¹ This platform is not only popular among patients but also among surgeons; in a 2018 study that analyzed 300 posts related to plastic surgery across 3 social media platforms, approximately 63% of the posts on Instagram originated with plastic surgeons, compared with 18% on Facebook and only 13% on YouTube ($P < 0.01$).² Instagram's natural visual aesthetic makes it an appealing marketing tool for those in the plastic surgery industry—an industry that is uniquely visual. Instagram has also shown to impact a patient's desire to undergo treatment with research showing that users look at cosmetic surgery in a more desirable light after viewing images of other females who have undergone treatment. These users tend to spend a lot of time on social media and, by no surprise, are influenced by the many accounts they follow.³ Instagram utilizes a special feature called a hashtag. Hashtags are used on other sites, such as Twitter and Facebook, but the use of hashtags on Instagram can not only allow users to find specific content but it can also boost engagement. Posts that utilize at least 1 hashtag have a 12.6% increase in engagement in comparison to those without any.⁴ Hashtags give accounts the chance to put their content directly in front of their target audience while also connecting them to brand new users.

Although the influence of social media in the field of plastic surgery is inevitable, it is still not fully understood—especially as trends continue to change and social media usage grows. Despite its rising influence, specifically evaluating plastic surgery-related content on Instagram to date has not been thoroughly investigated and it is not well indicated which users are responsible for the top posts in plastic surgery on this platform. The purpose of this study was to get updated answers on the following questions: (1) what plastic surgery-related content is being posted to Instagram; (2) who is posting this content; and (3) what specific hashtags are they using?⁵ In answering these questions, we can address a crucial gap in the literature.

METHODS

Data from Instagram was obtained manually on February 5, 2020. Using the American Society of Plastic Surgeons Statistics Report, the most popular plastic surgery procedures were gathered and one author (N.J.G.) queried hashtags using the medical and lay person terminology for each. These hashtags included: (1) #plasticsurgery; (2) #cosmeticsurgery; (3) #aestheticsurgery; (4) #plasticsurgeon; (5) #cosmeticsurgeon; (6) #aestheticsurgeon; (7) #breastlift; (8) #mastopexy; (9) #breastaugmentation; (10) #boobjob; (11) #breastimplant; (12) #nosejob; (13) #rhinoplasty; (14) #rhytidectomy; (15) #facelift; (16) #tummytuck;

(17) #abdominoplasty; (18) #brazilianbuttlift; (19) #buttockaugmentation; (20) #bodycontouring; (21) #liposuction; and (22) #plasticsurgerybeforeandafter.

The total number of posts for each hashtag was recorded. Each of the 9 “top” posts associated with a specific hashtag was qualitatively evaluated (198). We limited our analysis to only 9 posts of each hashtag category in order to specifically highlight the “top posts” associated with each hashtag. This is because these 9 posts are the most seen by users and appear on the forefront of a hashtag search, thus making these posts quite influential to users. Any duplicates or posts not relevant to social media were not included in content analysis. We analyzed how many posts utilized more than 1 of the 22 plastic surgery-related hashtags queried. We also tracked the “type” of post (educational, self-promotional, inspirational/blog, shout-out, or personal photograph on professional account) and whether it was a photograph or short video.

We then further recorded data on who did the actual post by analyzing the Instagram profile and specifying whether it was from a patient, a medical group, other nonmedical accounts (hair salon, medical spas, satirical page), a foreign surgeon, or a surgeon board certified by either the American Board of Plastic Surgeons (ABPS) or The Royal College of Physicians and Surgeons of Canada (RCPSC)—both which are included in the membership criteria for The Aesthetic Society.⁶ For all posts done by foreign physicians, the country of origin was also noted.

Both RCPSC and ABPS board certification are included in the membership criteria for The Aesthetic Society.

RESULTS

A total of 11,516,969 posts utilized the 22 hashtags sampled. Among these hashtags, #plasticsurgery had the greatest amount of posts associated with it (3,202,780). This was greater than the next 3 most popular hashtags combined (#cosmeticsurgery with 1,071,445, #facelift with 992,726, and #plasticsurgeon with 970,452). Compared with #plasticsurgery, with 3,202,780 posts, #cosmeticsurgery had 1,071,445 posts and #aestheticsurgery had the least with 178,592. Similarly, #plasticsurgeon had the most posts (970,452), in comparison to #cosmeticsurgeon (174,667) and #aestheticsurgeon (32,892).

For most procedures evaluated in this study, hashtags using lay person terminology for the procedure had more posts associated with it than hashtags using the proper medical terminology (Table 1). For example, #breastlift (212,991) was more popular than #mastopexy (48,784 posts). The hashtag #facelift had 992,726 posts associated with it, as opposed to #rhytidectomy with 3122 posts. Abdominal (#tummytuck with 610,422 posts vs #abdominoplasty with 201,497 posts) and gluteal procedures (#brazilianbuttlift

Table 1. The 22 Hashtags Analyzed and the Number of Posts Associated With Each One

Hashtag	Total no. of posts
#plasticsurgery	3,202,780
#cosmeticsurgery	1,071,445
#facelift	992,726
#plasticsurgeon	970,452
#rhinoplasty	873,087
#liposuction	803,526
#tummytuck	610,422
#nosejob	587,540
#breastaugmentation	551,665
#bodycontouring	475,344
#brazilianbuttlift	267,401
#breastlift	212,991
#abdominoplasty	201,497
#boobjob	198,406
#aestheticsurgery	178,592
#cosmeticsurgeon	174,667
#mastopexy	48,784
#breastimplant	37,096
#aestheticsurgeon	32,892
#buttockaugmentation	14,181
#plasticsurgerybeforeandafter	8353
#rhytidectomy	3122

The hashtags in [Table 1](#) are presented in descending order according to the total number of posts associated with each. Hashtags using the more common terminology for the procedure generally had more posts associated with it than hashtags using the proper medical terminology. Notable exceptions included #rhinoplasty and #liposuction.

with 267,401 posts vs #buttockaugmentation with 14,181 posts) followed this trend as well. Although this was typically the case for the hashtags, there were some exceptions. Unlike the statistics presented in the 2017 paper by Dorfman et al,⁵ the hashtag #breastaugmentation (551,665) had more posts than the lay terminology #boobjob (198,406). The hashtag #rhinoplasty had 873,087 posts associated with it, whereas #nosejob had 587,540 posts. Likewise, 803,526 posts used #liposuction in contrast to 475,344 posts using #bodycontouring.

[Figure 1](#) shows an increase in the number of posts associated with each hashtag between 2017 (blue) and 2020 (orange). The drastic change in the number of posts for every hashtag gives evidence of the continuous growth of social media in the field of plastic surgery. [Table 2](#) shows the percentage increase for posts associated with each hashtag between the 2 years.

After duplicates and posts not relevant to plastic surgery were removed, 168 of the top 198 posts met inclusion criteria (166 photographs and 2 short videos). Of the top 168 posts analyzed, 116 posts (69%) utilized more than 1 of the 22 hashtags queried; 35.3% of these 116 posts used 2 hashtags, 18.1% used 3 hashtags, 22.4% used 4 hashtags, 7.8% utilized 5 hashtags, 11.2% used 6 hashtags, 1.7% used a combination of 7 hashtags, 0% of the posts used 8 hashtags, and 0.86% of the posts used either 9, 10, 11, or 12 hashtags. [Figure 2](#) shows this breakdown.

Among the top 168 posts analyzed, the majority of posts came from foreign surgeons (77 posts; 45.83%). These posts came from the following countries: United Arab Emirates, Morocco, Netherlands, Portugal, Denmark, Dominican Republic, Singapore, Uzbekistan, Italy, Bulgaria, India, Chile, and Canada (all 1 post each); the United Kingdom, Russia, and Poland (2 posts each); Mexico, Iran, and Australia (3 posts each); France (4 posts); Germany (5 posts); Japan (6 posts); Brazil (12 posts); and Turkey (22 posts).

From the 168 posts sampled, 42 were posted by surgeons in the United States. These 42 posts were distributed across 28 non-foreign surgeons' accounts (due to multiple photographs from 1 surgeon's account being featured). Out of these 28 surgeons, only 6 were ABPS and RCPSC board-certified plastic surgeons. These plastic surgeons accounted for only 4.17% of top posts (7 posts), whereas those not board certified by ABPS or RCPSC accounted for 20.83% (35 posts). [Figure 3](#) shows how the "top" plastic surgery-related posts on Instagram were distributed among foreign surgeons, non-The Aesthetic Society eligible physicians, The Aesthetic Society eligible physicians, patients, medical interest groups, and other accounts (hair salon, recovery houses, medical spas, and a satirical page).

Of the top posts, most were self-promotional (50; 29.8%) as opposed to educational (8; 4.76%). Thirty posts were inspirational posted on personal blogs (17.9%). All other posts did not fall into any of these categories.

DISCUSSION

In this digital age, it is not surprising that many modern-day consumers have become concentrated on social media platforms. For this reason, social media has naturally become a central marketing tool. It not only provides a space for interaction

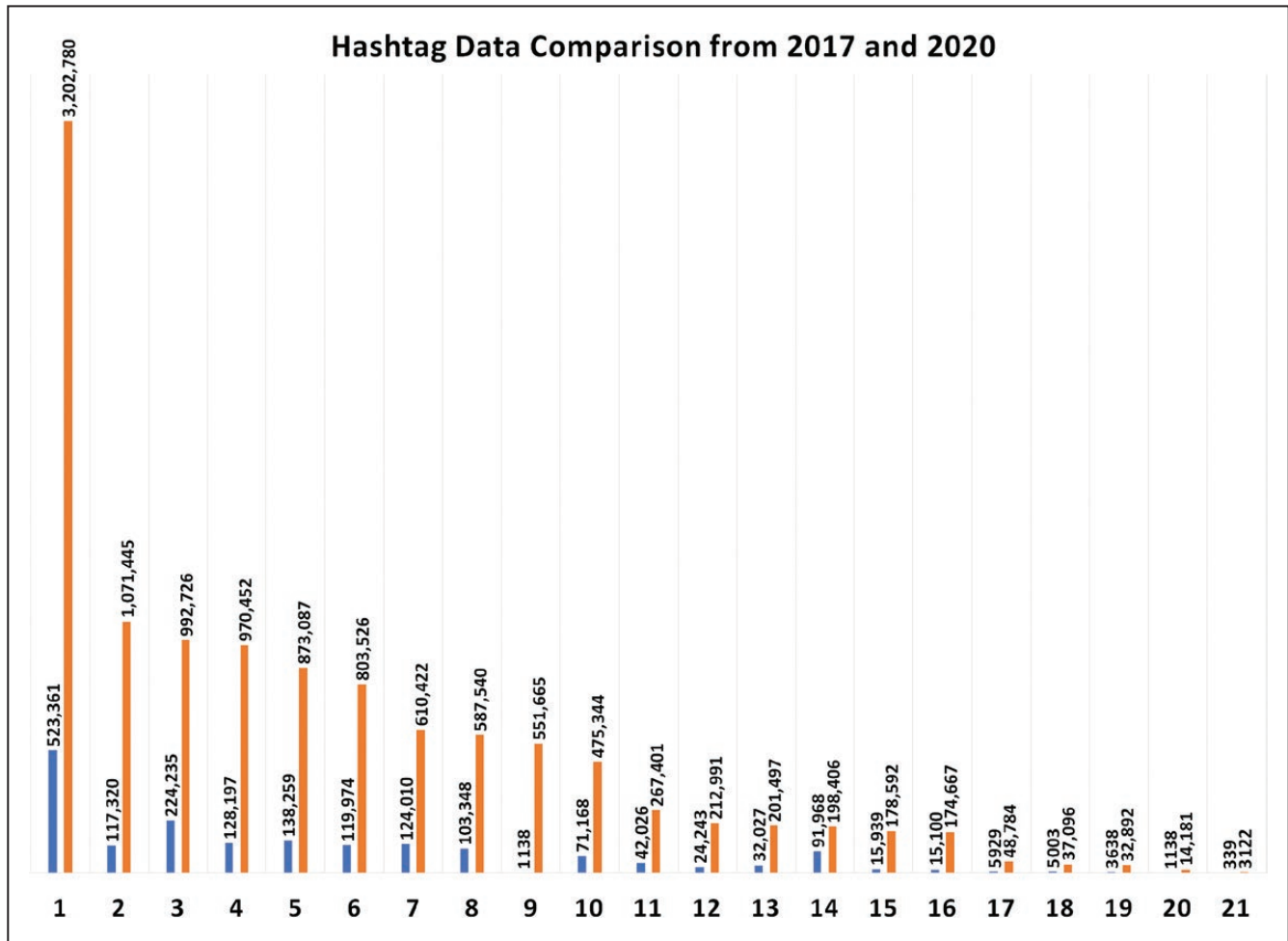


Figure 1. A graph showing an increase in the number of posts associated with each hashtag between 2017 (blue) and 2020 (orange), providing evidence for the drastic growth in social media use in plastic surgery.

between the consumer and producer, but it can also serve as an educational tool. In plastic surgery, patients can use social media as a way to research surgeons and procedures of interests, thus becoming a favorable and easy tool to use in their decision-making process. One research study found that almost all patients surveyed (95%) used the internet to collect information before their consultation, with 68% of them using it as their primary search method. Approximately, 40% of the patients admitted that social media influenced which doctor they ultimately chose.⁷

Although Twitter is another major social media site that specifically utilizes hashtags in its platform, Instagram has a larger audience, with over one billion monthly active users, in comparison to Twitter which has approximately 330 million.⁸ Additionally, a central part of Instagram's platform is their reliance on aesthetically pleasing images and videos—thus creating a desirable space for users who want to advertise their services and market their brands. A 2015 study by Forrester analyzed more than 3 million user interactions with

approximately 2500 brand posts to research engagement trends. Based on per-follower engagement rates, it was found that Instagram delivered brands 120 times more engagement [per follower] than Twitter.⁹

Our study found that the top plastic surgery-related content mostly came from foreign surgeons (45.83% or 77 posts). This statistic was similar to our 2017 study that showed 41.7% of posts (68) coming from foreign surgeons. Additionally, physicians not board certified by ABPS or RCPSC accounted for 26.4% (43) of total posts in 2017 and 20.833% (35) of total posts in 2020. No foreign surgeons were board certified by ABPS or RCPSC. Consequently, half of US surgeons sampled were not board certified. Although these numbers were similar, our other findings were vastly different from our study 3 years earlier. In 2017, 21.5% of top posts (35) were short videos. In our 2020 search, only 1.2% (2) posts were videos. Due to the rapid growth of social media over the years, it is not surprising to see a vast increase in the number of posts associated with each of the 21 hashtags. Since this is the case, then why did ABPS and

Table 2. The Percentage Increase in Number of Posts Associated With the Plastic Surgery-Related Hashtags From 2017 and 2020

Hashtag	Percentage increase in no. of posts between 2017 and 2020 (%)
#breastaugmentation	48,377
#buttockaugmentation	1146
#cosmeticsurgeon	1057
#aestheticsurgery	1020
#rhytidectomy	821
#cosmeticsurgery	813
#aestheticsurgeon	804
#breastlift	779
#mastopexy	723
#plasticsurgeon	657
#breastimplant	641
#liposuction	570
#bodycontouring	568
#brazilianbuttlift	536
#rhinoplasty	531
#abdominoplasty	529
#plasticsurgery	512
#nosejob	469
#tummytuck	392
#facelift	343
#boobjob	116

RCPSC board-certified plastic surgeons account for only 7 of the top 168 posts (4.17%), compared with our 2017 study where they accounted for 29 of the 163 posts (17.8%) sampled?

A lot of top posts on Instagram are ones that are claimed to be the most popular associated with trending hashtags. The “top” 9 posts associated with a certain hashtag are chosen based on an algorithm that takes several factors into account: number of likes and comments, tagged location, timing of post, quality of post, type/number of hashtags used, and how quickly people are engaging with the post. For these reasons, the top posts are not always from the biggest accounts and some claim that there are ways to “beat” the constantly changing algorithm. The top posts really reflect what is trending, not necessarily the most popular. For example, a post that receives 500 likes, but in the course of 30 minutes, has a greater chance of being

featured among the top posts for a certain hashtag than a photograph that receives 5000 likes over 24 hours.¹⁰ This can be one reason why not as many board-certified surgeons are being featured among the top posts for the 21 hashtags studied. Another potential reason can be to a hashtag-related feature that was not introduced when the 2017 version of this study was conducted (January 2017). In December 2017, Instagram introduced a feature that allowed users to follow a certain hashtag. Before, users had to either click on a hashtag through a photograph or search for a specific hashtag, but after this feature was introduced users follow a hashtag and all its related posts the same way as any other account. Instagram’s algorithm, which tries to create a customized experience for all users based on their interests, likes, etc., then surfaces certain pictures from that hashtag’s collection to surface on your feed.¹¹

Another service that users can utilize to gain popularity on posts are “Instagram bots.” These accounts are computer generated (ie, there is not a real user behind the account) that allow companies and platforms to acquire a large number of followers. Instagram bots can also leave comments and like posts to increase engagement. Although it would be interesting to include the number of likes and comments generated by these “Instagram bots,” it is not possible to do so without some type of tracking technology that has a recognition software that can identify such accounts. For this reason, these data are not included in our analysis.

Similar to the findings by Siegel et al,¹² our study shows that a lot of top posts can mislead patients who may turn to social media as a main source of referral and decision making. As Siegel et al¹² discussed, those users unaware of interdisciplinary training differences may be confused, especially when it comes to board certification as our study discusses. These findings are troublesome, not only because ABPS and RCPSC board-certified plastic surgeons are already underrepresented amongst those posting top plastic surgery-related content to Instagram but also because patients are increasingly relying on social media when choosing a provider.

Limitations

This study analyzed the top 9 posts associated with each hashtag. One limitation surrounding this study is that foreign surgeons again accounted for the greatest amount of posts. Since 69% of the posts analyzed used more than 1 of our 21 queried hashtags, many of the top posts were duplicates. Additionally, as mentioned in the discussion, the top posts are constantly changing which can skew data on a daily basis. Future studies should use advanced tracking technology to gather more accurate data on plastic surgery-related trending hashtags. Having specific

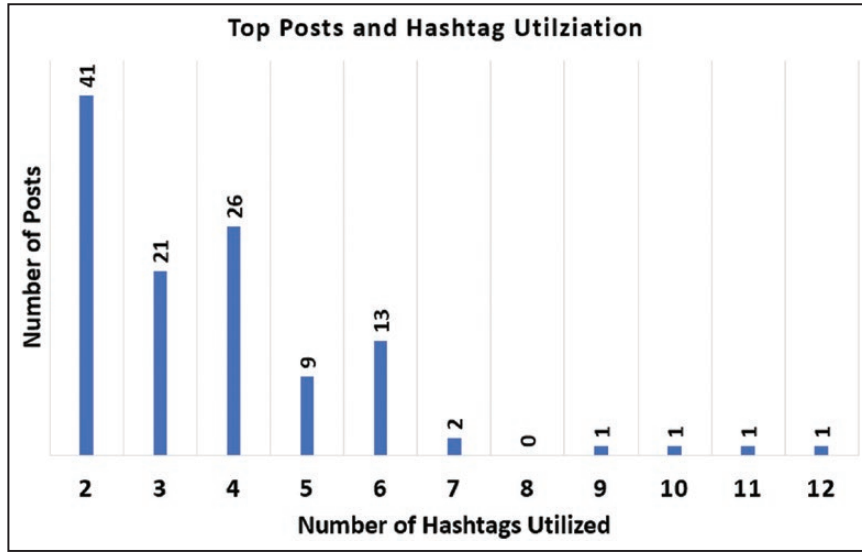


Figure 2. Top posts and hashtag utilization. More specifically, it shows how many posts utilized more than 1 of the top 22 hashtags analyzed. For instance, 41 used 2 hashtags, 21 used 3 hashtags, 26 used 4, and so on.

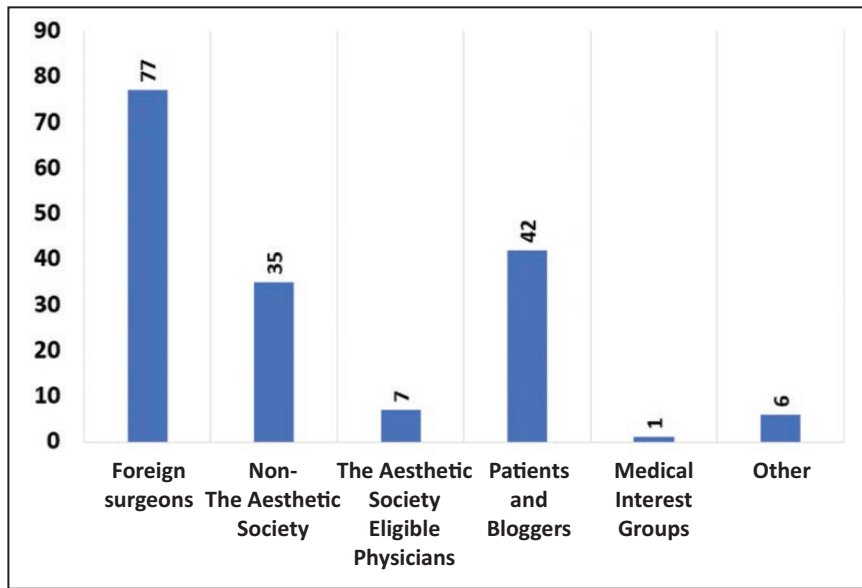


Figure 3. A graph showing how many top posts came from foreign surgeons, non-The Aesthetic Society eligible physicians, The Aesthetic Society eligible physicians, patients/bloggers, medical interest groups, or others. Excluding foreign surgeons, The Aesthetic Society-eligible board-certified plastic surgeons are underrepresented amongst those posting top plastic surgery-related content to Instagram.

information on a hashtag’s metrics can provide greater insights into the role social media plays in plastic surgery.

CONCLUSIONS

It is evident that ABPS and RCPSC board-certified plastic surgeons continue to be underrepresented amongst those posting top plastic surgery-related content to Instagram.

A majority of the top posts were used for self-promotion over education. Since a greater majority of physician’s posting are non-board certified, patients who use social media to find a potential provider are taking on risks surrounding their safety and the outcome of their procedure’s results. It is important that board-certified surgeons work to establish a stronger presence on social media since these platforms are, and will continue to be, an unavoidable aspect of plastic surgery.

DISCLOSURES

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REFERENCES

1. Systrom K. Instagram by the numbers: stats, demographics & fun facts. OMNICORE Agency. <https://www.omnicoreagency.com/instagram-statistics/>. Accessed February 7, 2020.
2. Ben Naftali Y, Duek OS, Rafaeli S, Ullmann Y. Plastic surgery faces the web: analysis of the popular social media for plastic surgeons. *Plast Reconstr Surg Glob Open*. 2018;6(12):e1958.
3. Walker CE, Krumhuber EG, Dayan S, Furnham A. Effects of social media use on desire for cosmetic surgery among young women. *Curr Psychol*. 2019;39(1).
4. Smith K. Incredible Instagram statistics you need to know. Brandwatch. Updated February 9, 2020. <https://www.brandwatch.com/blog/instagram-stats>. Accessed February 10, 2020.
5. Dorfman RG, Vaca EE, Mahmood E, Fine NA, Schierle CF. Plastic surgery-related hashtag utilization on Instagram: implications for education and marketing. *Aesthet Surg J*. 2018;38(3):332-338.
6. *The Aesthetic Society*. Requirements for active member—U.S. and Canadian application process. <http://www.surgery.org/professionals/membership/active-membership>. Accessed April 29, 2017.
7. Montemurro P, Porcnik A, Hedén P, Otte M. The influence of social media and easily accessible online information on the aesthetic plastic surgery practice: literature review and our own experience. *Aesthetic Plast Surg*. 2015;39(2):270-277.
8. Clement J. Number of monthly active Twitter users in the United States from 1st quarter 2010 to 1st quarter 2019. Updated August 9, 2019. <https://www.statista.com/statistics/274564/monthly-active-twitter-users-in-the-united-states>. Accessed February 10, 2020.
9. Elliott N. Instagram is the king of social engagement. Forrester. Updated July 15, 2017. https://go.forrester.com/blogs/14-04-29-instagram_is_the_king_of_social_engagement. Accessed February 10, 2020.
10. Benjamin C. Trending Instagram hashtags: 4 ways to get your post featured. Later Blog. Updated November 13, 2018. <https://later.com/blog/trending-instagram-hashtags>. Accessed February 10, 2020.
11. Popper B. Instagram now gets more #Interesting. Updated December 12, 2017. <https://www.theverge.com/2017/12/12/16763502/instagram-hashtag-follow-new-feature-announced>. Accessed February 10, 2020.
12. Siegel N, Jenny H, Chopra K, Yang R. What does it mean to be a #plasticsurgeon? Analyzing plastic surgery hashtag utilization in social media. *Aesthet Surg J*. 2020;40(4):NP213-NP218.