

Plastic Surgery: Beware the Candle Burning at Both Ends

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Background: Plastic surgery dates back to 800 BC, where forehead flaps were used to reconstruct noses in India. Today, it is one of the most romanticized fields in medicine. Due to the influence of social media, there has never been a larger spotlight. Ironically, this spotlight brings a narrowed perception of the scope of plastic surgery. This study aimed to assess the scope through the eyes of the average American to identify gaps in knowledge to better represent the field.

Methods: A series of questions were developed under survey methodologists and administered by Qualtrics. Responses were gathered, and data were analyzed to assess the public's knowledge of plastic surgery's scope.

Results: Two thousand five hundred responses were obtained, balanced across demographics similar to that of the United States. The US population has a poor understanding of the scope of plastic surgery and how to obtain board certification.

Conclusions: This survey demonstrates a gap in awareness of plastic surgery as a field and the scope outside aesthetic procedures dramatized by the media. There remains no clear understanding of the qualifications of plastic surgeons or the provider makeup of the field of cosmetic surgery. Subspecialties proved to be overlooked, and knowledge of board certification was sparse. Further effort is needed to educate both the public and patients of the scope of plastic surgery, so that they might seek and gain access to appropriate treatment in the most efficient manner to optimize outcomes regarding the form and function of the body. (*Plast Reconstr Surg Glob Open* 2023; 11:e5495; doi: [10.1097/GOX.0000000000005495](https://doi.org/10.1097/GOX.0000000000005495); Published online 22 December 2023.)

INTRODUCTION

The profession of plastic surgery dates back to ~600 BC when Sushruta used forehead flaps for nasal reconstruction.¹ Today, plastic surgery is one the most expansive fields in medicine, with an enormous breadth of practice, including reconstructive and aesthetic surgery. Reconstructive surgery covers all areas of the body from craniomaxillofacial and hand surgery to breast reconstruction, burn surgery, extremity coverage, and microsurgery. Aesthetic surgery encompasses all of these same areas.

In 2020, the Plastic Surgery Statistic Report estimated that 6.8 million reconstructive procedures were performed by American Board of Plastic Surgery (ABPS) surgeons—three times more than the 2.3 million aesthetic procedures performed.² This expertise can be confusing to those in fields outside plastic surgery. In addition, romanticization in the media presents plastic surgery as only aesthetics, excluding the significant work in reconstruction.³ More concerning is that the absence of scope of practice regulation has allowed providers to take advantage of this lack of knowledge for personal gain, frequently marketing themselves as “cosmetic” specialists while practicing outside their field of training.^{4,5} This combination of the public's ignorance and the failure of legislative/regulatory bodies to protect the well-being of patients by limiting providers from practicing outside their field frequently leads to delays in referral and ultimately worsened outcomes.^{6–11}

A 2010 study demonstrated that the majority of primary care physicians had a poor understanding of plastic

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surgery, oftentimes considering other subspecialties as experts in procedures fundamental to plastic surgery, like cleft palate repair and breast reduction.¹² Studies from France exposed a misconception amongst nurses and physical therapists, many of whom reported their only exposure to plastic surgery being the media.^{13,14} Similar findings have been reported by medical students—even students with rotational exposure to plastic surgery.¹⁵ With such a deficit within the medical community, we hypothesized that an even more profound disconnect exists within the public.

Achieving board-certification from ABPS is a long process preceded by completion of a minimum 6 years in a American Council for Graduate Medical Education (ACGME) accredited program. Each year, plastic surgery remains the most competitive specialty in the match. In 2021, there were 329 applicants for 187 positions. To put that into perspective, there were 13,787 internal medicine applicants for 9024 positions.¹⁶

The match is followed by training during which minimums in surgical cases must be achieved to meet ACGME standards. The culmination of these years concludes with a written board examination. After passing this examination, board-eligible surgeons must catalog their cases for 9+ months in preparation for a rigorous oral examination. As doctors and practitioners in other specialties, such as general surgery; otolaryngology; ophthalmology; oral surgery; obstetrics/gynecology; orthopaedic surgery; and even those in nonsurgical specialties such as dermatology, internal and family medicine, and pediatrics, increase their scope to include procedures traditionally performed by plastic surgeons, this gap will continue to widen.⁴ As more fellowships unrecognized by the American Board of Medical Specialties (ABMS) emerge [the most deceiving being the American Board of Cosmetic Surgery (ABCS)] enabling nonplastic surgeons to advertise themselves as “board-certified,” the value and purpose of board-certification becomes diluted, muddying the waters that patients must navigate to assure their safety.^{4,5}

A 2020 review of board-certification amongst physicians and nonphysician providers advertising themselves as “cosmetic surgeons” discovered that a significant majority of ABCS-certified physicians, mostly general surgeons and gynecologists (both of which have zero cosmetic procedures as requirements of their primary board-certification), are practicing well beyond the scope of their ACGME training.⁴ In a stark contrast to the arduous requirements set forth and maintained to become a board-certified plastic surgeon, to receive a certificate from the unvalidated ABCS, one must complete a single year of training, usually taking place in private-practice, unaccredited settings.

Additionally, the ABCS website grossly misrepresents the training required to become a board-certified plastic surgeon, discounting the 6+ years of training to a small pie chart.¹⁷ Another of these problematic, widely-variable and non-ACGME accredited fellowships grants “board certification” in facial plastic and reconstructive surgery, thereby prompting otolaryngologists to market themselves as plastic surgeons.

Takeaways

Question: How has nonplastic surgeons advertising themselves affected trends among laypeople?

Findings: The US population has a poor understanding of the scope of plastic surgery. There is a lack of knowledge of reconstructive surgery and a grave misconception by patients seeking the security and quality of a board-certified plastic surgeon that all providers marketing themselves as cosmetic surgeons are fully trained plastic surgeons.

Meaning: This survey has highlighted two loss of domains for plastic surgeons: (1) the perception of “cosmetic surgeons” as legitimate diluting our specialty and (2) the lack of association of plastic surgeons with reconstructive procedures, causing further dilution. The candle is burning at both ends—what can we do to stop it?

Although there have been many studies assessing the perception of plastic surgery within healthcare, similar data are limited with regard to the general public. Although a few limited studies have been published on perception of plastic surgery in Brazil, Ireland, Saudi Arabia, Germany, Australia, and New York City, no such data analyzing the perception of plastic surgery across the United States has been published to date.^{18–23} The objective of this study was to assess the scope of plastic surgery as seen through the eyes of the average American to identify gaps in public knowledge, which need to be addressed to better represent the field as a whole.

MATERIALS AND METHODS

A 46-question survey developed under faculty survey methodologists was administered by Qualtrics, with attention to represent the demographic diversity of the American public. Qualtrics is an online survey platform that administers online surveys to volunteers who are compensated by the platform. A total of 2500 responses were gathered over a period of 1 week, and data were analyzed to assess the public’s knowledge of the scope and board-certification requirements of plastic surgery. Respondents were asked general demographic questions, followed by questions regarding the procedural breadth of plastic surgery and training requirements.

The first questions consisted of “select all that apply” formatting, in which respondents were presented with a list of answer choices (listed alphabetically) and instructed to select the specialists that they would feel comfortable performing the given procedure on themselves and/or a loved one (Table 1). The procedures listed included both reconstructive and aesthetic procedures frequently performed by both academic and community plastic surgeons, are considered index procedures in the field, and are all fundamental to the practice and training of a plastic surgeon.

Respondents were also asked questions regarding the primary subspecialty of oculoplastic, facial plastic, plastic, and cosmetic surgeons, as well as the length of training

Table 1. List of Procedures Respondents Were Asked about and Potential Answer Choices in Alphabetical Order

Which of the following would you feel comfortable performing "X" on you or a loved one? Select all that apply.	
Cleft lip/palate repair	Botox injections or lip fillers
Fixing a broken jaw/rebuilding a jaw after cancer	Repairing a broken nose
Repair of burn wound	Abdominoplasty ("tummy tuck")
Pressure ulcer repair	Rhinoplasty ("nose job")
Breast reduction	Eyelid surgery
Removal of skin cancer/melanoma	Facelift
Correct chronic swelling of arms or legs	Hair transplant
Potential answer choices	
Breast surgeon	Cosmetic surgeon
Dermatologist	General surgeon
OB/Gyn	Ophthalmologist
Oral surgeon	Orthopedic surgeon
Otolaryngologist (ear nose throat/ENT)	Plastic surgeon

required to graduate from an ACGME-accredited program. Respondents were then asked about their individual exposure to plastic surgery and medicine.

After each subset of questions, a break in survey flow was placed to prevent respondents from changing previous answers based on information provided by subsequent questions. A time check was put in place to discard surveys completed faster than 1.83 minutes (half the median completion time based on a soft launch). Three attention check questions were placed throughout the survey, and failure to correctly answer them resulted in termination.

Results were reported using descriptive statistics with percentages and discrete variables given for categorical data. For comparison of demographics, a chi-squared analysis with confidence interval of 99% was utilized. Due to the "select all that apply" nature of the questions, overall percentiles add to more than 100%, and responses total more than 2500. A two-way frequency table was used to calculate the expected count for respondents who are healthcare workers or had exposure to plastic surgery compared with respondents without any healthcare/plastic surgical exposure. A chi-squared analysis was used to examine the statistical significance between the two groups. Data were analyzed using the Statistical Product and Service Solutions Statistics 28 (Armonk, New York, N.Y.).

RESULTS

A total of 2500 people completed this survey. Incomplete surveys, surveys completed faster than the time check, respondents younger than 18 years of age, and those who answered attention check questions incorrectly were excluded. Of the respondents, 1475 (57%) were women and 1075 (43%) were men. Detailed demographic distribution on sex, age, ethnicity, and geographic region can be seen in Table 2. The demographic distribution of

survey respondents was not statistically different from that of the US population.²⁴⁻²⁶

Of the six aesthetic procedures presented, survey respondents reported feeling comfortable with a plastic surgeon an average of 55.35% of the time and a "cosmetic surgeon" 64.53% of the time. Of these procedures, plastic surgeon was the selected provider the most frequently for facelifts (67.83%) and least frequently for hair transplant (39.58%). For the eight reconstructive procedures presented, respondents selected a plastic surgeon only 24.24% of the time (less than half of the 55.35% of respondents selecting plastic surgeon for aesthetic procedures). Of these procedures, plastic surgery was chosen most frequently for repair of burn wounds (45.26%) and least frequently for lymphedema surgery (5.36%).

Of the 14 procedures presented, plastic surgeons were considered as most preferred for only four: cleft lip/palate, burns, abdominoplasty, and rhinoplasty. For the remaining procedures, another provider was selected in the survey more frequently than plastic surgeons; these included broken jaw/jaw reconstruction, pressure ulcer, breast reduction, skin cancer, injectables, broken nose, lymphedema, blepharoplasty, face lift, and hair transplant. A detailed breakdown by number can be visualized in Supplemental Digital Content 1. [See graph, Supplemental Digital Content 1, which displays answer distribution by number when respondents were asked "Which of the following would you feel comfortable performing "x" on you or a loved one? (A) cleft lip/palate repair, (B) broken jaw/rebuild jaw, (C) repair of pressure wound, (D) repair of burn wound, (E) breast reduction, (F) skin cancer removal, (G) repair of broken nose, (H) botox injection/lip filler, (I) lymphedema surgery, (J) rhinoplasty, (K) Abdominoplasty, (L) facelift, (M) eyelid surgery, (N) hair transplant. <http://links.lww.com/PRSGO/C957>.]

Respondents demonstrated poor awareness of the diversity of the field, with fewer than 30% recognizing the subspecialties of craniofacial, hand, skin cancer, and microsurgery as a part of the scope of plastic surgery (Fig. 1). For the next subset of questions, respondents were asked about board certification and length of training for plastic, cosmetic, oculoplastic, and facial plastic surgery. This set of questions indicates that although 96.84% of respondents consider it important for their surgeon to possess board-certification, there is a significant knowledge gap in the definition of "board-certified," with less than 50% of respondents demonstrating knowledge of (1) which specialties are eligible for an ABCS certificate and (2) that the primary specialty of ABPS certified surgeons is plastic surgery (Fig. 2). Additionally, half of respondents (49.94%) stated that all "cosmetic surgeons" are board-certified plastic surgeons, when in fact only 3.42% of those providers identifying with the nonaccredited ABCS are trained plastic surgeons.⁴ Only 29.21% of respondents correctly identified that the ABCS is unrecognized by the ABMS, a distressing statistic for patient safety.

Similar to previous studies, this survey demonstrates that a majority (81.51%) of respondents believe that it is required to complete a plastic surgery residency to legally

Table 2. Demographic Distribution Data of Survey Compared with That of the United States Population on the Basis of Sex, Age, Race, and Geographic Location

Sex	Percentage of Respondents	United States Demographics ²⁴	<i>P</i> (<i>P</i> < 0.01)
Female	57% (<i>n</i> = 1475)	50.80%	0.64
Male	43% (<i>n</i> = 1075)	49.20%	0.61
Age	Percentage of Respondents	United States Demographics ²⁴	<i>P</i> (<i>P</i> < 0.01)
18-34	34.60% (<i>n</i> = 865)	26.64%	0.37
35-54	36.44% (<i>n</i> = 911)	25.2%	0.22
55+	28.96% (<i>n</i> = 724)	29.41%	1.0
Race	Percentage of Respondents	United States Demographics ²⁵	<i>P</i> (<i>P</i> < 0.01)
White	66.72% (<i>n</i> = 1668)	60.3%	0.63
Black	16.48% (<i>n</i> = 412)	13.4%	0.60
Hispanic	8.24% (<i>n</i> = 206)	18.5%	0.06
Asian	5.76% (<i>n</i> = 144)	5.8%	1.0
Other	2.80% (<i>n</i> = 70)	2.0%	0.66
Location	Percentage of Respondents	United States Demographics ²⁶	<i>P</i> (<i>P</i> < 0.01)
South	41.68% (<i>n</i> = 1042)	38.3%	0.71
Midwest	21.20% (<i>n</i> = 530)	20.7%	1.0
Northeast	20.72% (<i>n</i> = 518)	17%	0.55
West	16.40% (<i>n</i> = 410)	23.7%	0.25

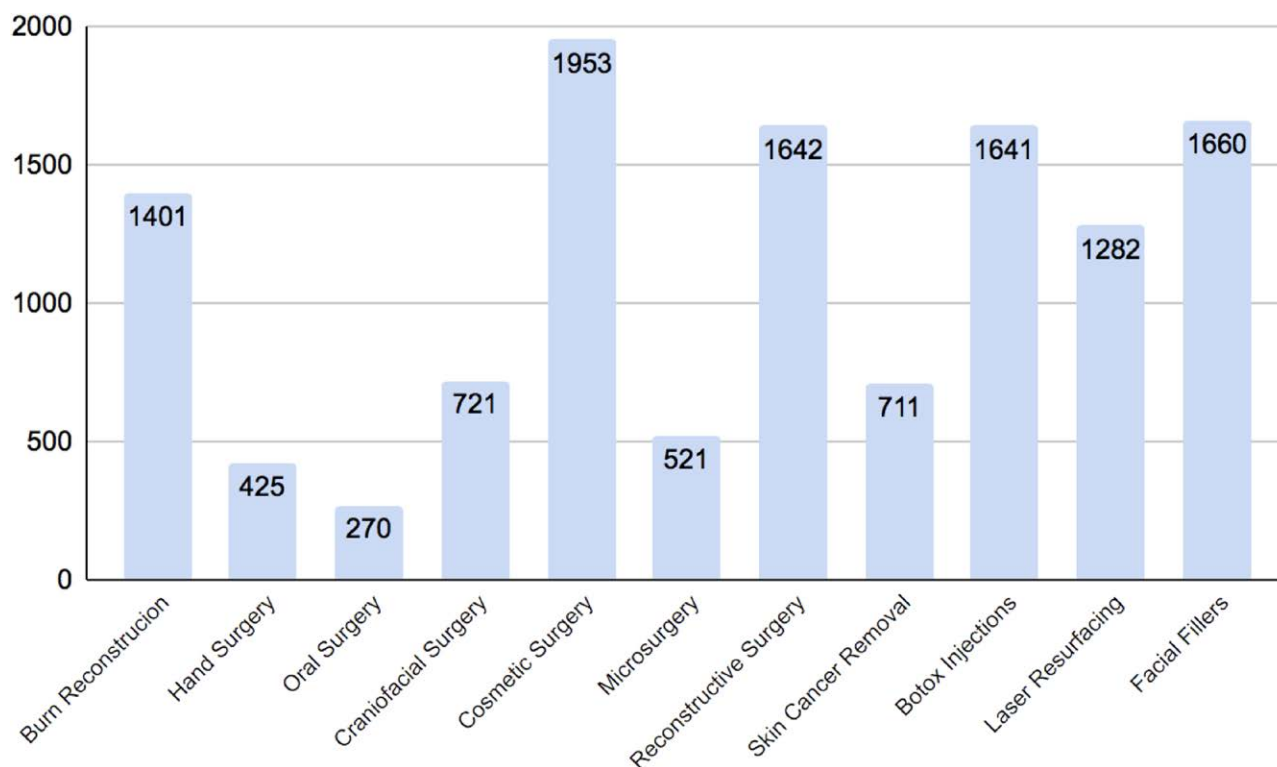


Fig. 1. What type of procedures do you believe plastic surgeons perform? Select all that apply.

perform cosmetic surgery, with 75.95% believing that non-plastic surgeons should not be legally allowed to perform cosmetic surgery, and 59.66% believing nonplastic surgeons should not be able to legally perform nonsurgical cosmetic procedures.

Respondents demonstrate further confusion when polled about the provider makeup of facial plastic and oculoplastic surgery (Fig. 3). A nod to successful marketing efforts on behalf of our ENT colleagues, 57.9% of respondents believe the primary specialty of facial plastic surgeons

is plastic surgery, with only 1.7% of respondents correctly choosing otolaryngology. This statistic alone should be a sufficient argument for legislative/regulatory barriers on false advertising and lack of transparency. Additionally, 67.39%, 64.41%, and 62.38%, respectively incorrectly over-estimated the length of subspecialty-specific oculoplastic, facial plastic, and cosmetic surgery training, believing that they all require 4+ years to complete, in contrast to the single year required to achieve designations. In the cases of oculoplastic and facial plastic surgery, there is an

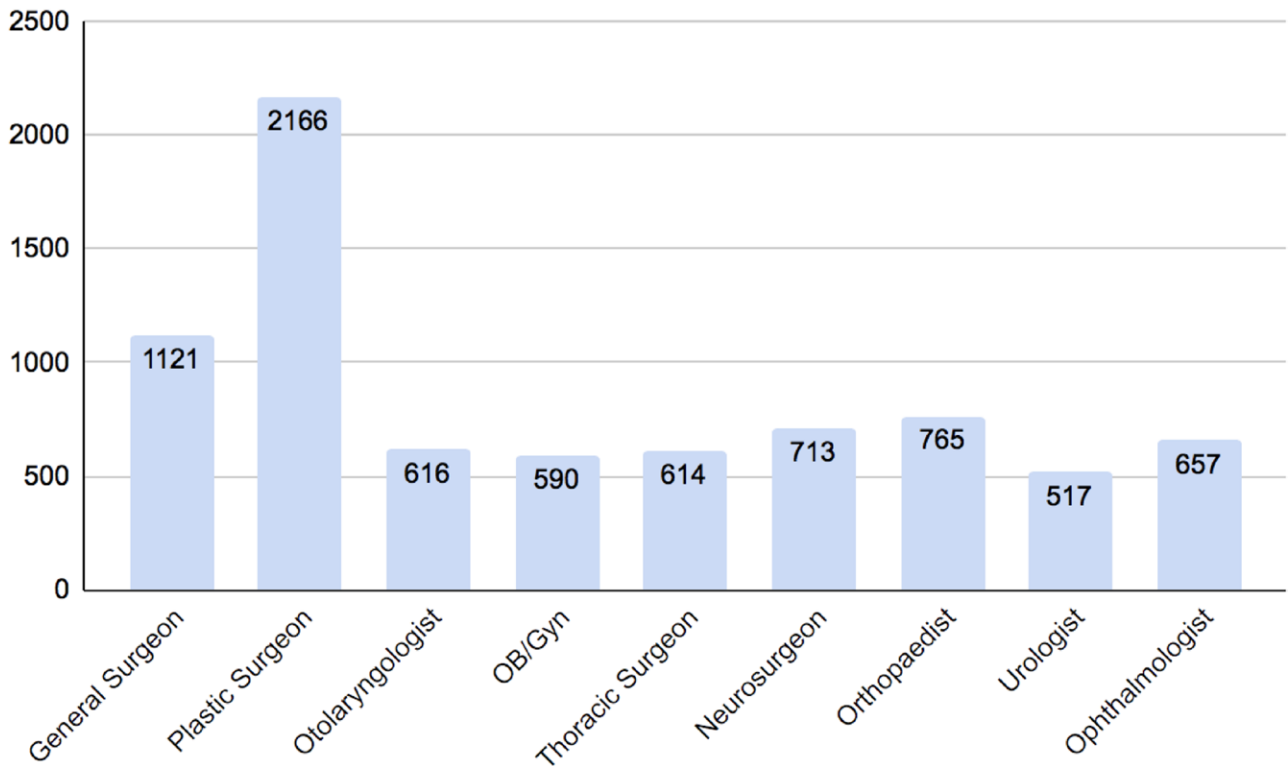


Fig. 2. Which of the following types of training are eligible to be certified by the ABCS? Select all that apply.

argument to be made in favor of this training as a supplement to prolonged exposure to the surgical anatomy in reconstructive efforts; however, no such exposure requirement exists for the designation of “cosmetic surgeons” by the ABCS. Similarly, a majority underestimated the length of time required to become a board-certified plastic surgeon, believing the pathway to be 4–6 years in total.

Of the 2500 respondents, 244 are healthcare workers, accounting for 9.8% of the study population. Ten percent report that they personally know a plastic surgeon, and 8.32% work with or know someone who works with plastic surgeons. Twenty-five percent answered that someone close to them has had plastic surgery and 6.48% have personally had plastic surgery. Although respondents in this category have an overall increased knowledge regarding field diversity ($P < 0.001$), they still considered other fields as experts in procedures fundamentally performed by plastic surgeons (Table 3).

DISCUSSION

Although several studies have assessed the general public’s knowledge and perception of plastic surgery, no such study has been performed across the entire United States.^{5,12–15,18–23,27} Thus, the goal of this study aimed to fill this gap and assess the scope of plastic surgery as perceived by the general public. The results demonstrate that similar to other countries, the United States has a poor understanding of the scope of plastic surgery. We found that oftentimes, plastic surgeons were not considered as

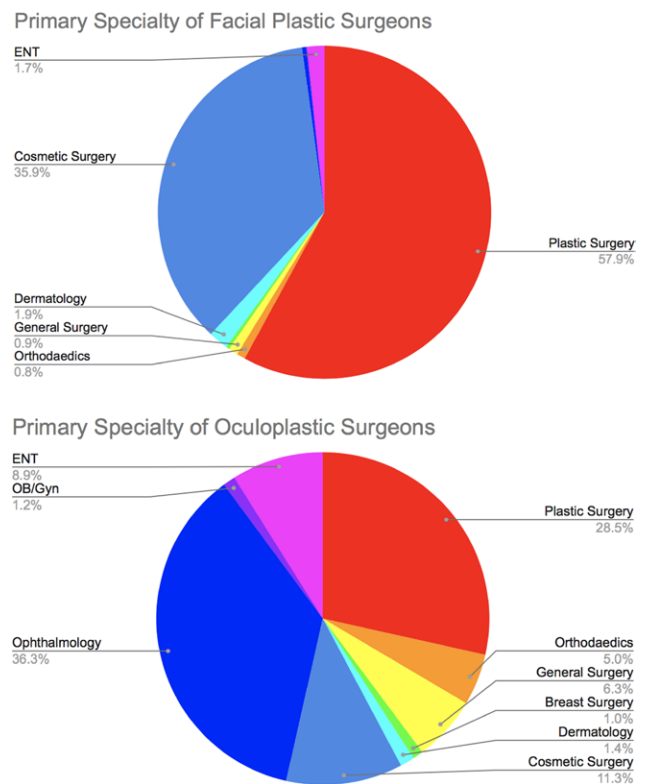


Fig. 3. Which of the following subspecialties are primary provider makeup of (A) facial plastic surgeons and (B) oculoplastic surgeons?

Table 3. Percentage of Respondents with and without PRS/Healthcare Exposure Who Correctly Identified “Plastic Surgeon” as Correct

	PRS/Healthcare Exposure	No Exposure	P
Across all categories	-	-	<0.001
Cleft lip/palate repair	464 (51.6%)	806 (50.4%)	0.552
Broken jaw repair/rebuilding jaw	305 (33.9%)	482 (30.1%)	0.05
Repair of pressure wound	111 (12.3%)	105 (6.6%)	<0.001
Repair of burn wound	431 (47.9%)	700 (43.8%)	0.043
Breast reduction	417 (46.3%)	572 (35.8%)	<0.001
Removal of skin cancer/melanoma	209 (23.2%)	255 (15.9%)	<0.001
Repair of broken nose	353 (39.2%)	497 (31.1%)	<0.001
Botox injection/lip filler	463 (51.4%)	781 (48.8%)	<0.001
Lymphedema surgery	63 (7.0%)	71 (4.4%)	0.006
Rhinoplasty	550 (61.1%)	891 (55.7%)	0.008
Abdominoplasty	598 (66.4%)	985 (61.6%)	0.014
Facelift	622 (69.1%)	1073 (67.1%)	0.275
Eyelid surgery	505 (56.1%)	842 (52.6%)	0.088
Hair transplant	394 (43.8%)	595 (37.2%)	0.001

Total respondents with PRS exposure or healthcare occupation: 900.

Total respondents with no PRS exposure: 1600.

the primary specialty for procedures that are fundamental to the field. There seems to be a strict association of plastic and aesthetic surgery, with respondents believing they are equivocal rather than aesthetic surgery being a significant but not all-encompassing slice of the field. This can likely be attributed and directly related to the media’s focus on cosmetic surgery.^{3,27–29}

In 2018, Kalandar reported that the majority of Twitter posts regarding plastic surgery were in reference to cosmetic surgery and most were inaccurate.²⁷ The strict association between plastic and cosmetic surgeons is demonstrated in this study when respondents were asked about rhinoplasty, rhytidectomy, blepharoplasty, injectables, and hair transplants, with more respondents identifying cosmetic over plastic surgeon. This indicates that the public equates or considers cosmetic surgeons to be more qualified than plastic surgeons, evidence of successful media and marketing campaigns and failure of regulatory bodies/legislators to protect patients. Interestingly, on these same measures, general surgeons, otolaryngologists, oral surgeons, and gynecologists were rarely chosen, yet these are the practitioners who make up the provider base of cosmetic surgeons and advertise as board certified.⁴

A 2014 study found that the majority of nonplastic surgeons performing cosmetic surgery are practicing outside their scope, as defined by the ACGME.^{30,31} If healthcare providers are ignorant on the scope of plastic surgery as a field,¹² how can we expect the layperson to comb through glamorous websites and misleading advertisements to find a surgeon who was safely/diligently trained. Although the ABPS and American Society of Plastic Surgeons have made efforts to combat this issue with their “Do Your Homework” campaign, and PlastyPAC has made pushes for the legislature to institute truth in advertising laws, little has been done to prevent marketing malfeasance of noncore providers selling themselves to patients as plastic surgeons.³²

At present, there are 24 boards recognized by the ABMS, with the ABPS being the only one

issuing board-certification in plastic surgery.³³ Studies have consistently shown that non-ABMS certified physicians are more commonly revoked of their licenses and provide lower quality of care when compared with ABMS-recognized board-certified physicians, hence the importance and value lent to board-certification.^{30,31,34,35} The value of board-certification as a concept is acknowledged by the vast majority of respondents in this survey; unfortunately, the ability to create and title an unaccredited “board-certification” has allowed others to take advantage of the trust built by the establishment of the ABMS, at the same time bypassing their oversight. Additionally, the news is filled with reports of postcosmetic-surgery horror stories due to non-ABPS certified surgeons performing cosmetic procedures.^{6–11,35} With a high percentage of participants in this study demonstrating a significant gap in knowledge regarding the scope of plastic surgery and an even larger gap in understanding the pathways leading to board certification, there is potential for confusion as patients seek the care of plastic surgeons, not knowing whether the providers they identify are in fact true plastic surgeons.

Additionally, the impact of COVID-19 regarding access has led to increased wait times and delay in both aesthetic and reconstructive surgery.^{36–38} This likely contributes to patients seeking “quicker,” less quality care elsewhere in those who advertise but are not trained as plastic surgeons.

Limitations include cross-sectional nature of data collection and use limitations of Qualtrics. Because respondents are compensated, there exists a temptation to provide nonthoughtful answers and instead click through to completion. Although security measures against this were in place, there is no way to ensure that all nonmeaningful responses were filtered out.

CONCLUSIONS

The US population has a poor understanding of the scope of plastic surgery. There is an unfortunate lack

of knowledge of the plastic surgeon's role in reconstructive surgery and a grave misconception by patients seeking the security and quality of a board-certified plastic surgeon that all providers marketing themselves as cosmetic surgeons are fully trained plastic surgeons. Similar to studies in other countries and domestic regional studies of primary care physicians and medical students, there is a strict association of plastic surgery with cosmetic surgery. This is likely multifactorial due to the influence of social media and scope creep. As subspecialization increases and nonplastic surgeons performing cosmetic surgery advertise themselves as plastic surgeons, this confusion will likely continue to increase. A huge effort is needed to educate those in the medical community and the general population on (1) the definition of a plastic surgeon, (2) the training pathway to becoming an ABPS-certified plastic surgeon, (3) the broad scope of plastic surgery for both aesthetic and reconstructive needs, and (4) how to identify the training qualifications of physicians in other fields presenting themselves as plastic or cosmetic surgeons. How many more disfigurements and deaths must be counted before regulatory bodies and legislators acknowledge that the lack of scope of practice and marketing regulations is harming the public?

It is alarming that marketing malfeasance and wordsmanship of providers using the nonaccredited designation of "cosmetic surgeon" has been a success in the public perception of the scope of plastic surgery. Although the ABCS might consider this an opportunity for celebration, the fact that the regulatory bodies have not stepped in to protect the public is disappointing. The findings in this report should serve as a call to action for plastic surgeons and the organizations, societies, and political action committees that represent the field to more forcefully pursue mechanisms to protect both the patients and the specialty. These efforts are needed so that patients may receive the best care from appropriately trained physicians who have completed rigorous ACGME programs and endured the scrutiny of their seniors/peers through the board certification processes. This problem facing plastic surgeons in the United States and around the globe is a crisis that only seems to be worsening to the detriment of patient care.

This survey has highlighted two major loss of domains for plastic surgeons: (1) the public perception of "cosmetic surgeons" as legitimate, which dilutes our specialty on that end of the spectrum, and (2) the lack of association of plastic surgeons with reconstructive procedures causing further dilution. The candle is burning at both ends—what can we do to stop it?

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DISCLOSURE

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

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