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Do Our Colleagues Accurately Know What We Do?

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Introduction: Plastic surgery is a unique field, and its scope is beyond a specific demographic group or anatomic part. The poor understanding and misconception about plastic surgeons' scope of practice has been well-established among the public, especially in Saudi Arabia; but the question is, do healthcare physicians share the same misconception? This study aims to answer this question.
Methods: This study was conducted between September 11, 2021 and November 1, 2021. This is a cross-sectional, survey-based study utilizing a self-structured questionnaire targeting physicians in Saudi Arabia.
Results: A total of 261 medical and surgical physicians participated in this study. Nearly 45% of them demonstrated a poor understanding of plastic surgery and its scope of practice, whereas only 16.1% were sufficiently knowledgeable. Male physicians were more likely to understand the field of plastic surgery when compared with female physicians. More than 80% of the physicians knew that cosmetic operations are done by plastic surgeons, whereas 50% or less knew that reconstructive operations are conducted by plastic surgeons.
Conclusion: This study shows that 44.1% of the participating physicians demonstrate poor knowledge regarding plastic surgery as a field, in addition to a lack of understanding about the scope of practice of plastic surgeons. We recommend enhancing promotional efforts that raise awareness about the nature of plastic surgery as a specialty among healthcare physicians. *(Plast Reconstr Surg Glob Open 2022;10:e4104; doi: 10.1097/GOX.0000000000004104; Published online 28 February 2022.)*

INTRODUCTION

Plastic and reconstructive surgery is a unique field that is not limited to a specific anatomical site, pathological process, or certain patient groups.[1] This field is continuously evolving and contains significant operational overlap with other surgical specialties.[1] Moreover, it has been well-established that the great breadth of the field is not well-understood by the public and by healthcare practitioners in other specialties.[2–9] Furthermore, the areas of the field that were most misunderstood include hand surgery, peripheral nerve surgery, and reconstructive surgery.[10] The misconception regarding the scope of plastic surgery is critical to patients' safety and proper management, as it may delay the management of cases.

A study conducted by Tanna et al[7] affirmed that more awareness and additional education regarding the scope of plastic surgery is needed; however, the study was conducted among primary care physicians only. Furthermore, the previous study showed that 76% of the participating physicians believed that orthopedic surgeons are the experts in hand surgery, 78% believed that oral and maxillofacial (OMF) surgeons are the experts in cleft lip and palate repair, and 88% believed that OMF surgeons are the experts in facial fractures.[7] In another study conducted by Agarwal et al[10] among medical students, they found that a "plastic surgeon" was frequently chosen for rhinoplasty and breast reconstruction and less for hand surgery, peripheral nerve surgery, and reconstructive surgery. In another study conducted by Kidd et al,[11] they found that most students were hugely unaware of plastic surgeons' scope of practice. The previous result was supported by another study conducted by Mortada et al.[12]

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Current literature lacks studies exploring medical and surgical physicians' perception of plastic surgery as a field, as well as estimating their knowledge about plastic surgeons' scope of practice. Hence, this study aims to fill this gap by conducting a nationwide study among physicians in Saudi Arabia, utilizing a self-structured questionnaire based on previously published studies.[1–12]

Takeaways

Question: Do medical and surgical physicians understand the practice scope of plastic surgeons?

Findings: Nearly 45% of participated physicians demonstrated a poor understanding of plastic surgery and its scope of practice. More than 80% of the physicians knew that cosmetic operations are done by a plastic surgeon, whereas 50% or less knew that reconstructive operations are conducted by a plastic surgeon.

Meaning: The poor understanding of plastic surgeons' scope of practice among physicians is worrisome, as it could result in delayed care. We recommend enhancing efforts to promote the specialty among healthcare physicians.

METHODOLOGY

In this cross-sectional study, the authors structured a self-administered questionnaire based on available literature with similar objectives.[1–12] The questionnaire was revised by three academic plastic surgeons to ensure the objectivity of the questions. The single inclusion criterion was being a physician in either a surgical or a medical specialty during the period the study. Any-responses from plastic surgeons have been excluded to prevent any biases in the result.

Apart from the demographic questions, the questionnaire was based on 33 items to assess general knowledge about plastic surgery, 27 of which were clinical scenarios of common plastic surgery procedures. The questionnaire was composed of two sections covering the following aspects: questions that assess general knowledge about plastic surgery and questions in the form of common clinical scenarios managed by plastic surgeons to assess the scope of understanding.

All physicians have been notified that no identifiers will be required. Data were kept safe with authorized access only. The electronic survey (**see figure, Supplemental Digital Content 1**, which shows the plastic surgery assessment questions, **http://links.lww.com/PRSGO/B921**) was distributed to physicians affiliated with major universities in Saudi Arabia (King Abdulaziz University, King Saud bin Abdulaziz University for Health Sciences, and King Saud University) by 29 data collectors. Data collection took place between September 11, 2021, and November 1, 2021.

The data were analyzed using Statistical Packages for Software Sciences version 26 (IBM Corporation, Armonk, N.Y.). The overall knowledge of physicians regarding plastic surgery was assessed by a 33-item questionnaire. The total knowledge score was obtained by adding all 33 items, and a score ranging from 0 to 33 was generated where a higher score indicated deeper understanding of the role of plastic surgeons. By using 50% and 75% as cutoff points to determine the level of knowledge, participants were classified as having poor knowledge if they scored below 50%, whereas participants who scored 50%–75% were considered as having moderate knowledge, and participants who scored above 75% were considered to have a good knowledge level.

For the descriptive analysis, mean ± SD was used for metric variables, whereas numbers and percentages were given for categorical variables. Multiple response patterns were allowed for each clinical scenario; therefore, a total (frequency distribution) was calculated for each specialty. The frequency distribution per "plastic surgeon" was identified as the primary variable of interest. As for comparison, the Mann–Whitney *U*-test and Kruskal–Wallis *H*-test were applied. Normality test was conducted using the Shapiro–Wilk test. Values were considered significant with a confidence level of 95% ($P < 0.05$).

RESULTS

In total, 261 physicians agreed to participate in the study. The most common age group was 30 years old or younger (60.2%), with more than half being females (51%). Surgeons constituted 31.4%, whereas internal medicine physicians constituted 19.2%. Furthermore, the vast majority (93.1%) were of Saudi nationality, with nearly 60% having less than 5 years of practice. The prevalence of physicians who underwent a plastic surgery procedure was 18%, and the prevalence of physicians who frequently managed a patient after a plastic surgery procedure was 17.6%. Further sociodemographic characteristics of the physicians are detailed in Table 1.

In the section containing questions about clinical scenarios, some physicians chose a "plastic surgeon" to perform skin grafting (85.4%), burn deformities (83.5%), liposuction (83.5%), breast reduction or enhancement surgery (83.1%), electrical burns (80.8%), abdominoplasty (77.4%), cuts over the face (77%), deformities of leprosy (74.3%), surgery for facial wrinkles (72%), nonhealing wounds over legs (58.6%), botox (58.2%), cleft lip and palate (51.7%), sex change surgery (50.6%), totally amputated thumb (49.8%), congenital anomalies of ear and nose (48.3%), and tendon injuries of hands (46.4%). On the other hand, some participants chose a "general surgeon" to manage diabetic foot wounds (65.9%) and bedsores (46%), whereas 66.3% and 52.9% thought that it should be a dermatologist who performs vitiligo surgery and hair transplantation. Furthermore, 67.4% and 63.6% of the physicians chose "oral and maxillofacial surgeon" to perform trismus release and jaw and face fractures, respectively. In addition, some indicated that an ENT surgeon should perform rhinoplasties (46.4%); also, some chose orthopedic surgeons for the treatment of hand fractures (62.8%), ophthalmologists for eyelid tears and injuries (52.5%), neurosurgeons for injury to the nerves of the hands and legs (49.8%), and urologists for hypospadias (53.3%). Further details are presented in Table 2.

Table 1. Physicians' Basic Demographic Characteristics (n = 261)

Study Variables	N (%)
Age group, y	
≤30	157 (60.2%)
>30	104 (39.8%)
Gender	
Male	128 (49.0%)
Female	133 (51.0%)
Specialty	
Surgical specialty	82 (31.4%)
Internal medicine specialty	50 (19.2%)
Family medicine specialty	22 (08.4%)
Pediatrics specialty	41 (15.7%)
General practitioners	39 (14.9%)
Other specialties	27 (10.3%)
Nationality	
Saudi	243 (93.1%)
Non-Saudi	18 (06.9%)
Years of practice, y	
<5	148 (56.7%)
5–10	56 (21.5%)
>10	57 (21.8%)
Underwent plastic surgery	
Yes	47 (18.0%)
No	214 (82.0%)
Have you ever had to manage a patient who has had plastic surgery?	
Yes, frequently	46 (17.6%)
Yes, occasionally	97 (37.2%)
No	94 (36.0%)
I do not know	24 (09.2%)

Only around 30% believed that 6 years of training after an MBBS/MD degree is the required duration of training to be a plastic surgeon. Moreover, 53.6% understood the meaning of "plastic surgery," and 77.8% were confident that "a surgeon who performs procedures to restore the form and function of patients" was the correct definition of a plastic surgeon. When asked who is best qualified to perform surgery to improve appearance, 33.7% chose plastic surgeons, and 30.3% chose cosmetic surgeons. In addition, 49.4% were aware of the scope of plastic surgery. Based on the above 33-item questionnaire, the total mean knowledge score was 17.4 (SD 6.98) of 33. Poor, moderate, and good knowledge accounted for 44.1%, 39.8%, and 16.1%, respectively. Further details are presented in Table 3. The total knowledge scores are depicted in Figure 1.

Furthermore, when measuring the differences in the physicians' knowledge score in relation to their sociodemographic characteristics, it was found that the knowledge score of males ($Z = -2.712$; $P = 0.007$) and those who indicated media ($Z = -2.188$; $P = 0.029$), professional training ($Z = -2.725$; $P = 0.006$), personal background ($Z = -2.934$; $P = 0.003$), and discussion with acquaintances ($Z = -2.030$; $P = 0.042$) as their sources of information regarding plastic surgery was significantly higher than their counterparts. Further details are presented in Table 4.

Moreover, it was shown that the most common source of information regarding plastic surgery was professional training (55.6%), followed by personal background (44.8%) and media (28.7%). Further details are depicted in Figure 2.

DISCUSSION

This study aims to investigate physicians' perception of plastic surgery and their depth of understanding regarding the scope of this field. This study is the first in the literature to be conducted among this cohort locally. The data will assist stakeholders to educate medical staff about the scope of plastic surgeons, to improve the dynamics in hospitals and to prevent delay of care to patients.

We have found that nearly 45% (N = 115) of the physicians have a poor overall knowledge of plastic surgery and its scope of practice, whereas only 16.1% (N = 42) were sufficiently knowledgeable regarding the field of plastic

Table 2. Percentages of Physicians Choosing the Surgical Specialties in Each Clinical Scenario

Clinical Scenario	PS (%)	ENT (%)	ORTHO (%)	OMS (%)	OPTH (%)	GS (%)	NS (%)	DERMA (%)	PEDIA (%)	URO (%)
Skin grafting	85.4	0.40	0.80	0.80	0.80	5.7	1.1	4.6	0.40	0
Burn deformities	83.5	0.40	4.6	0.40	0.80	6.1	0.40	2.3	1.5	0
Liposuction	83.5	0	0.80	0.40	0.80	11.1	0	2.7	0.80	0
Breast reduction/enhancement surgery	83.1	1.5	1.1	0	0.80	10.3	1.1	0.40	1.5	0
Electrical burns	80.8	0.40	0	0	0.80	10.7	1.9	4.2	1.1	0
Abdominoplasty	77.4	0	0.80	0.40	0.80	19.2	0	0.40	1.1	0
Cuts over the face	77.0	0.40	0.40	7.7	1.5	6.9	0.80	5.0	0.40	0
Deformities of leprosy	74.3	0.80	3.8	2.3	1.5	8.8	1.1	5.4	0.80	1.1
Surgery for facial wrinkles	72.0	2.7	0	6.1	1.1	3.1	1.1	12.6	1.1	0
Nonhealing wounds over legs	58.6	1.5	2.7	0.80	0.80	28.7	0.40	6.5	0	0
Botox	58.2	0.40	0.80	0	0.40	0.80	1.9	36.8	0	0.80
Cleft lip and palate	51.7	5.0	0.40	19.9	0.40	3.1	0.40	1.1	18.0	0
Gender affirmation surgery	50.6	0.80	0.40	0.40	0.40	4.6	0.40	1.9	3.8	36.8
Totally amputated thumb	49.8	0.40	24.5	0.40	0	21.5	1.1	0.80	1.1	0.40
Congenital anomalies of ear and nose	48.3	34.9	0.80	5.4	1.1	1.1	2.3	0.40	5.0	0.80
Tendon injuries of hands	46.4	0.40	38.7	0.80	1.1	7.7	3.4	0.80	0.80	0
Bed sore	44.4	0.80	0.40	0	0.40	46.0	0	6.5	1.1	0.40
Rhinoplasty	43.3	46.4	1.1	5.0	0.40	0.40	0	3.1	0.40	0
Hair transplantation	42.1	1.1	0	0	0.40	1.9	0.80	52.9	0.80	0
Injury to nerves of hands and legs	34.9	0.40	7.7	0.80	1.1	4.2	49.8	0.40	0	0.80
Eyelid tear and injury	33.0	2.7	1.5	2.3	52.5	2.7	1.1	3.1	0.80	0.40
Fracture of hand	25.7	0.40	62.8	1.1	0.80	6.9	0.80	1.1	0.40	0
Vitiligo	24.9	3.4	0.40	0	0.80	1.1	2.7	66.3	0.40	0
Diabetic foot wound	19.9	0.40	3.1	0	1.1	65.9	0.40	8.4	0.80	0
Hypospadias	14.2	0.40	0.80	0.40	1.5	4.6	0.80	1.1	23.0	53.3
Trismus release	13.4	4.6	2.3	67.4	1.1	2.7	4.6	3.1	0.40	0.40
Fracture of the jaw and face	12.3	3.1	14.2	63.6	0.80	5.0	0.40	0.40	0	0.40

Table 3. Assessment of the Physicians' Knowledge about Plastic Surgery (n = 261)

Statement	N (%)
1. What's the training required to be a plastic surgeon?	
3 y training in general surgery after MBBS/MD followed by 3 y training in PS*	69 (26.4%)
6 y training after MBBS/MD degree*	78 (29.9%)
Both of the above*	56 (21.5%)
Do not know	58 (22.2%)
2. Do you feel plastic surgery and cosmetic surgery are the same?	
Yes	29 (11.1%)
No	59 (22.6%)
Cosmetic surgery is a part of plastic surgery*	156 (59.8%)
Do not know	17 (06.5%)
3. Why do you think plastic surgery is called "plastic" surgery?	
It involves the use of plastic in surgery	15 (05.7%)
After the surgery, the face looks shiny like plastic	18 (06.9%)
Because it means reshaping in Greek*	140 (53.6%)
Do not know	86 (33.0%)
Other reason	02 (0.80%)
4. Which of the following accurately defines a plastic surgeon?	
No difference from other surgeons	17 (06.5%)
A surgeon that performs minor procedures in the hospital	08 (03.1%)
A surgeon that performs procedures to restore the form and function of the patients*	203 (77.8%)
A surgeon that seeks money performing procedures to enhance the appearance of the patients	33 (12.6%)
5. In your opinion, who is best qualified to perform surgery to improve your appearance?	
A cosmetic surgeon*	79 (30.3%)
A plastic surgeon	88 (33.7%)
They are equally qualified	94 (36.0%)
6. Do you think you know what the scope profession of a plastic surgeon is about?	
Yes*	129 (49.4%)
No	132 (50.6%)
Total knowledge score (mean ± SD)	17.4±6.98
Level of knowledge	
Poor	115 (44.1%)
Moderate	104 (39.8%)
Good	42 (16.1%)

*Correct answer.
PS, plastic surgery.

surgery. This conclusion parallels previously published studies, as Tanna et al,[1] Kim et al,[7] Panse et al,[8] and Dunkin et al[9] have affirmed that more education and awareness are needed among physicians regarding the scope of plastic surgery practice. Interestingly, this study shows that a male physician is more likely to understand the scope of plastic surgery practice and have an accurate perception regarding plastic surgery. In contrast, Tanna et al[1] reported that female physicians were more likely to have a deeper understanding of the scope of plastic surgery practice, concluding that they are unable to provide a rational explanation behind this finding.[7] We cannot explain the reason behind the disparity.

When it comes to the clinical scenarios, around 80% of the participating physicians knew that cosmetic operations are done by a plastic surgeon; however, when it comes to reconstructive operations, such as clef/lip and palate, hand injuries, and facial fractures, around 50% knew that a plastic surgeon treats those reconstructive cases. This result goes in line with previously published studies.[1,7–9] This, in large part, could be due to the lack of knowledge about the scope of practice of plastic surgeons. Medical and surgical physicians may lack accurate understanding of the pivotal role that plastic surgeons play in reconstructive operations.

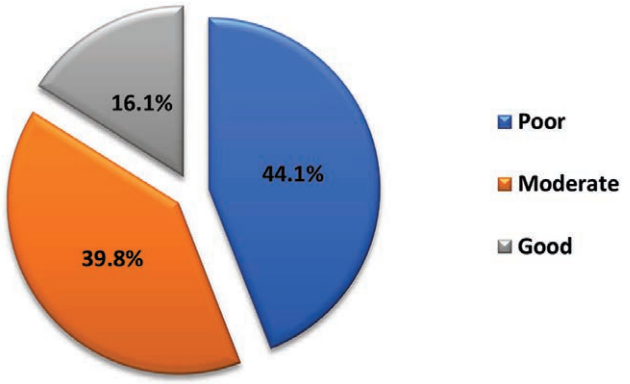

Fig. 1. The level of knowledge toward plastic surgery as a field. The level of knowledge was based on objective questions, and the participants were assessed based on their correct answers. The questions involved clinical scenarios of common plastic surgery procedures, and common definitions of plastic surgery-related concepts.

Table 4. Differences in the Knowledge Score according to the Sociodemographic Characteristics (n = 261)

Factor	Knowledge Score (6) Mean ± SD	U/H-test	*P*
Age group*			
≤30 y	17.6±7.47	U = −0.413	0.679
>30 y	17.1±6.18		
Gender*			
Male	18.5±7.25	U = −2.712	0.007§
Female	16.3±6.55		
Specialty†			
Surgical specialty	18.8±6.95	H = 8.865	0.115
Internal medicine specialty	17.0±8.68		
Family medicine specialty	15.9±5.91		
Pediatrics specialty	15.4±5.57		
General practitioners	17.3±6.50		
Other specialties	18.0±6.52		
Nationality*			
Saudi	17.6±6.96	U = −1.858	0.063
Non-Saudi	14.8±6.89		
Years of practice†			
<5 y	17.3±7.12	H = 1.575	0.455
5–10 y	18.3±7.07		
>10 y	16.5±6.51		
Undergone plastic surgery*			
Yes	16.3±7.19	U = −1.174	0.240
No	17.6±6.93		
Manage a patient who underwent plastic surgery†			
Yes, frequently	18.4±7.97	H = 6.104	0.107
Yes, occasionally	17.9±6.63		
No	16.9±7.15		
I do not know	15.0±5.15		
Sources of information*‡			
Media	16.1±7.26	U = −2.188	0.029§
Professional training	17.9±6.81	U = −2.725	0.006§
Personal research	18.3±6.73	U = −1.876	0.061
Personal background	19.1±7.76	U = −2.931	0.003§
Discussion with acquaintances	18.8±6.26	U = −2.030	0.042§
Others	19.6±6.41	U = −1.383	0.167

**P* has been calculated using Mann–Whitney U-test.
†*P* has been calculated using Kruskal–Wallis H-test.
‡Variables with yes/no response answers.
§Significant at $P < 0.05$ level.

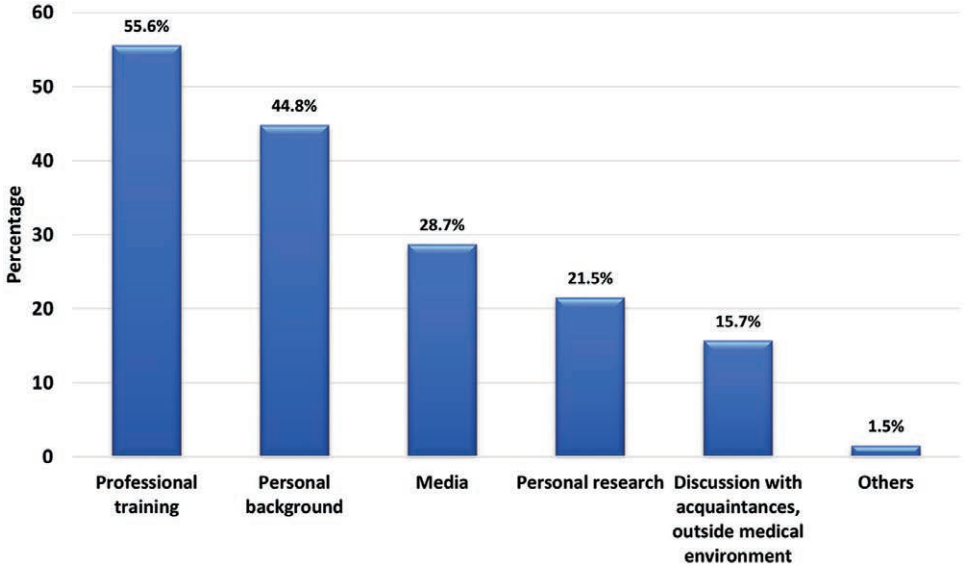

Fig. 2. The sources of information used to derive knowledge regarding plastic surgery as a field.

Comparing the perception of plastic surgeons with studies investigating the perception of other surgeons, namely the perception of OMF surgeons, it has been well-established that more awareness and education are needed.[12–21] Interestingly, a plastic surgeon was mostly preferred for the OMF surgeons' cosmetic operations.[12] Moreover, it has been well-proven that the medical and dental professionals were more aware of OMF surgeon's scope of practice when compared with the public.[16] The previously mentioned finding is, unfortunately, not true when it comes to perception of plastic surgery. Furthermore, Domanski et al[22] have investigated the perceptions otolaryngologists among primary care residents, and they found that the residents were not aware of otolaryngologists' scope of expertise. The previous findings show that plastic surgery is not the only specialty that lacks awareness in the scope of expertise.

The authors believe that the responsibility of educating fellow practitioners falls on the shoulders of stakeholders and, in part, plastic surgeons. Furthermore, the authors recommend that hospital administrators promote educational activities towards improving the accurate referral to plastic surgeons when it comes to reconstructive operations. Moreover, the Saudi Scientific Association of Plastic Surgery and Burns must promote the scope of plastic surgeons' practice, as well as try to correct the misconceptions present among treating physicians. This could be done by regular educational campaigns as well as by increasing the society publications tackling this significant topic. Furthermore, increasing specialty awareness activities of the Saudi Scientific Association of Plastic Surgery and Burns on social media accounts is highly recommended by the authors.

There are a few limitations in our study that must be addressed. First, the descriptive cross-sectional nature and the probability of bias. Second, our study only included physicians affiliated with the major universities in the kingdom, further research that includes a larger pool of physicians is recommended. Third, the basis on which judged the physician's depth of knowledge was arbitrarily constructed. Fourth, given the granularity of specialty descriptions in our survey, there may be an underestimation of the plastic surgeons' scope of practice. Finally, involving specialists with overlapping areas of expertise may bias the result, namely dermatologists, ENT surgeons, and orthopedics. Despite the previously mentioned limitations, the authors believe that this study is of high value when it comes to estimating the knowledge of physicians regarding plastic surgery as a specialty.

CONCLUSIONS

The results of our study showed that 44.1% of physicians demonstrated a poor understanding regarding plastic surgery and its scope of practice. This is alarming, as it could delay patients from proper management. Enhancing the perception of plastic surgery among physicians is needed, and this could be done by educational activities as well as peer-teaching from the plastic surgeons themselves.

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We wish the second author all the best in his future plastic surgery residency application. The authors declare that this study conforms to the Declaration of Helsinki.

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