

# Perceptions and Attitudes of Primary Care Physicians Toward Dermatologic Surgery

Nuha A Alfurayh<sup>1</sup>, Mishary Z Almishary<sup>2</sup>, Khalid M Alghamdi<sup>1,3</sup>

<sup>1</sup>Department of Dermatology, College of Medicine, King Saud University, Riyadh, Saudi Arabia; <sup>2</sup>Primary Health Care Directorate, Ministry of Health, Riyadh, Saudi Arabia; <sup>3</sup>Vitiligo Research Chair, College of Medicine, King Saud University, Riyadh, Saudi Arabia

Correspondence: Khalid M Alghamdi, Department of Dermatology, Vitiligo Research Chair, College of Medicine, King Saud University, Riyadh, Saudi Arabia, Email kmgderm@gmail.com

**Purpose:** Dermatologic surgery is a well-established subspecialty in dermatology that involves various therapeutic and esthetic procedures. To date, perceptions of primary care physicians (PCPs) regarding dermatologic surgery are poorly understood. This study aimed to assess the perception and attitude of PCPs toward dermatologic surgery and explore the factors that might affect their perception and attitude toward it.

**Patients and Methods:** This cross-sectional study used an online survey. The survey was distributed among PCPs working in various regions of Saudi Arabia and contained questions about demographics, medical training information, participants' awareness of dermatologic surgery, and a list of 10 cutaneous procedures to select the most qualified physician performing these procedures. Univariate and multivariate analyses were performed.  $P \leq 0.05$  was considered statistically significant.

**Results:** In total, 440 PCPs participated in this study. Overall, 70% of the PCPs had heard about dermatologic surgery, whereas 30% had never heard about it. PCPs reported that dermatologic surgeons were the most qualified physicians to perform laser procedures (60.5%), hair transplantation (60.5%), excision of small benign and malignant skin tumors (46.1%), excision of small melanocytic nevi (55.7%), filler injection (44.8%), and injection of botulinum toxin (48.9%); 64.5% considered plastic surgeons to be the most qualified for liposuction. Both physicians were equally selected for performing cyst excision, procedures involving the fingernails and toenails, and scar correction. Multivariate analysis showed that female physicians had heard significantly more about dermatologic surgery ( $P=0.047$ , OR: 1.57, 95% CI: 1.006–2.45) and reported that dermatologic surgeons were the most qualified physicians ( $P=0.042$ , OR: 1.51, 95% CI: 1.016–2.25) than male physicians. PCPs working at secondary and tertiary health care hospitals heard more about dermatologic surgery ( $P=0.015$ , OR: 2.36, 95% CI: 1.18–4.71) than those working at primary health care centers.

**Conclusion:** Most PCPs were aware of dermatologic surgery and recognized dermatologic surgeons as the most qualified physicians to perform most cutaneous procedures.

**Keywords:** dermatosurgery, cutaneous surgery, skin surgery, dermatologic surgeons, primary care physicians, family medicine

## Introduction

Dermatologic surgery is “a branch of dermatology that deals with the diagnosis and treatment of medically necessary and cosmetic conditions of the skin, hair, nails, superficial veins, mucous membranes, and adjacent tissues by various surgical, reconstructive, cosmetic and nonsurgical methods”.<sup>1</sup> Dermatologic surgery aims to treat skin diseases as well as to enhance the function and appearance of the skin.<sup>1</sup> There is a worldwide rise in the demand for cosmetic and noncosmetic dermatological procedures.<sup>2,3</sup> For instance, according to the American Society of Dermatologic Surgery, more than 11 million procedures in 2017, 12.5 million in 2018, and >13 million in 2019 were performed by dermatologists in the United States.<sup>3</sup> Over the past few decades, the overlap between dermatologic surgery, plastic surgery, and, to a lesser extent, other specialties, such as ophthalmology and otolaryngology, has increased.<sup>4</sup>

Worldwide, primary care physicians (PCPs) are the first to encounter patients with complaints and refer them to the appropriate specialty. PCPs also serve as an important source of information for their patients regarding the services offered by other specialties, including dermatologic surgery.<sup>4</sup> However, the extent of knowledge among

PCPs about this specialty remains unknown. Few studies have been conducted to assess the public perception of dermatologic surgery.<sup>5–8</sup> A single study published in 2012 was conducted among primary care training residents to evaluate their perception of expertise in cutaneous surgery.<sup>9</sup> This study was limited to training residents and lacked the perception of primary care attending physicians and general practitioners. Nevertheless, Ibrahim et al's study compared dermatologists, rather than dermatologic surgeons, with other surgical specialties.<sup>9</sup>

We believe that the perceptions of PCPs regarding the current role of dermatologic surgeons in patient care have not yet been fully evaluated. This study assessed the perceptions and attitudes of PCPs toward dermatologic surgery and dermatologic surgeons.

## Materials and Methods

A cross-sectional study was conducted using an online survey. After reviewing the previous literature, an initial version of the survey was created. The survey was discussed with three family medicine physicians through personal interviews to assess their understanding of the questions. Modifications were made based on their valuable comments. This was followed by a pilot study involving 40 PCPs. After analyzing the results of the pilot study, further modifications were made to obtain the final version of the survey ([Supplementary 1](#)). The results of the pilot study are not included. After obtaining the necessary approval from the Institutional Review Board of King Saud University, the survey was distributed to PCPs working in various regions of Saudi Arabia. A link to the survey was distributed via e-mail and messages from May to August 2023. The survey responses were kept anonymous. All participants provided informed consent before participating in the survey.

The survey comprised two parts. The first section included questions about basic demographic and medical training information, namely, age, gender, level of practice (general practitioner, resident, specialist/fellow, or consultant), region of current practice (north, south, east, west, or center of Saudi Arabia), field of practice (family medicine or general practice), and medical care level (primary, secondary, or tertiary health care facility).

The second section included questions to assess the participants' awareness of dermatologic surgery. Respondents were initially asked if they had heard about dermatologic surgery as an existing subspecialty of dermatology. Subsequently, they were asked to select the most qualified physician for performing a variety of cutaneous procedures, namely, 1) removal of skin cysts; 2) excision of small (<5 cm) skin tumors, which include malignant and benign skin tumors; 3) excision of small melanocytic nevi (<5 cm); 4) esthetic filler injections for the face; 5) injection of botulinum toxin for facial wrinkles and localized hyperhidrosis of axilla, palms, or soles; 6) nail surgeries; 7) laser procedure for vascular and pigmentary lesions; 8) correction of traumatic, surgical, and acne scars; 9) hair transplantation; and 10) liposuction. Due to the rarity of malignant skin tumors in Saudi Arabia, we combined the excision of benign and malignant skin tumors into one question. The answer choices presented for each question were "dermatologic surgeon", "plastic surgeon", "both are equal", and "others". Subjects who chose "others" were asked to indicate the relevant specialty. The respondents were allowed to select only one choice per question. The total score of the answers to the 10 questions was calculated to determine the most qualified specialist for each respondent. When the respondent chose "dermatologic surgeon", it was coded as 10 points. Selecting "both are equal" was coded as 5 points. However, if "plastic surgeon" or "others" were selected, it was coded as 0 points. We considered those who scored  $\geq 60$  of 100 as subjects who considered dermatologic surgeons to be the most qualified physicians. Finally, the respondents were asked about any previous rotations in dermatology clinics.

Data were entered and statistically analyzed using the Statistical Package of the Social Science Software program, version 25 (IBM SPSS Statistics for Windows, Version 25.0; Armonk, NY: IBM Corp.) and are presented using frequencies and percentages for qualitative variables. Comparisons between the groups were performed using the chi-square test. Multivariate logistic regression models were used to explore outcome variables.  $P \leq 0.05$  was considered statistically significant.

## Results

In total, 440 PCPs completed the survey. The most dominant age group was 31–40 years (36.4%), followed by those aged  $\leq 30$  years (28.6%). Males were slightly more common (51.6%) than females (48.4%). Most participants (81.8%) were non-board-certified PCPs (general practitioners and training residents). Almost half (48.9%) of the participants were from

the central region of Saudi Arabia. A total of 83.6% of the participating physicians were working in primary health care centers. Almost two-thirds of the participants (59.5%) specialized in family medicine, and 58.9% underwent training in Saudi Arabia (Table 1).

Most participating PCPs (71.1%) reported hearing about dermatologic surgery as a subspecialty in dermatology. Similarly, most participants (73.9%) reported having a rotation in dermatology clinics (Figure 1). Ten different cutaneous and esthetic procedures were assessed to investigate PCPs' perceptions and attitudes toward dermatologic surgeons in comparison with plastic surgeons and other surgeons (Figure 2). Almost two-thirds of the participating PCPs reported dermatologic surgeons as the most qualified physicians to perform laser procedures for vascular and pigmentary lesions (60.5%) and hair transplantation. Approximately half of the participating PCPs believed that dermatologic surgeons were the most qualified physicians for the excision of small benign and malignant skin tumors (46.1%), excision of small melanocytic nevi (55.7%), filler injection for facial esthetics (44.8%), and injection of botulinum toxin (48.9%). Thirty-eight percent of the participating PCPs reported that dermatologic and plastic surgeons performed equally well in terms of removing cutaneous cysts. Regarding nail surgery, 35.5% selected dermatologic surgeons and 35% selected plastic surgeons. Similarly, regarding the correction of traumatic

**Table 1** Demographic Characteristics of the 440 Participants

Variables	Description n (%)
<b>Age</b>	
≤ 30 years	126 (28.6)
31–40 years	160 (36.4)
41–50 years	106 (24.1)
> 50 years	48 (10.9)
<b>Gender</b>	
Male	227 (51.6)
Female	213 (48.4)
<b>Level of practice</b>	
General practitioner / Resident	360 (81.8)
Specialist	11 (2.5)
Consultant	69 (15.7)
<b>Region of current practice in Saudi Arabia</b> (alphabetical order)	
Center	215 (48.9)
East	34 (7.7)
North	21 (4.8)
South	107 (24.3)
West	63 (14.3)
<b>Level of health care</b>	
Primary	368 (83.6)
Secondary	21 (4.8)
Tertiary	51 (11.6)
<b>Practice</b>	
Family medicine	262 (59.5)
General practice	144 (32.7)
Others	34 (7.7)
<b>Place of training (residency)</b>	
Saudi Arabia	259 (58.9)
Outside Saudi Arabia	176 (40)
No training	5 (1.1)

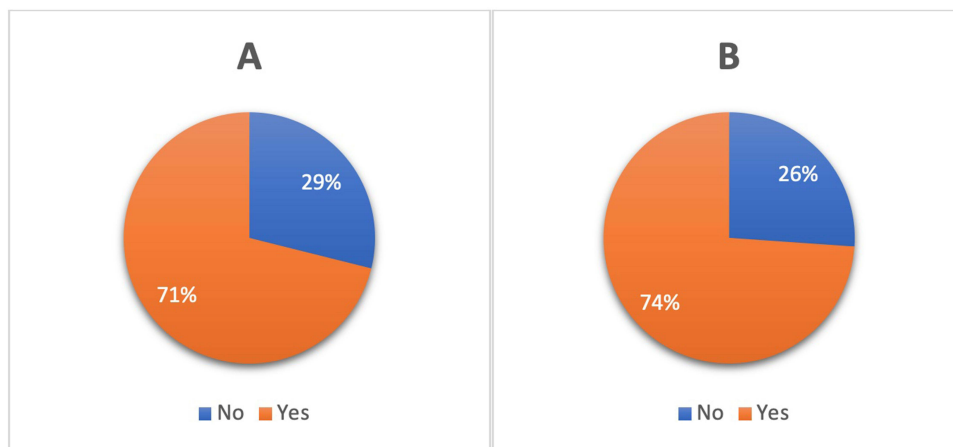


Figure 1 Percentage of primary care physicians who (A) Were aware of dermatologic surgery and (B) Had a rotation in dermatology clinics.

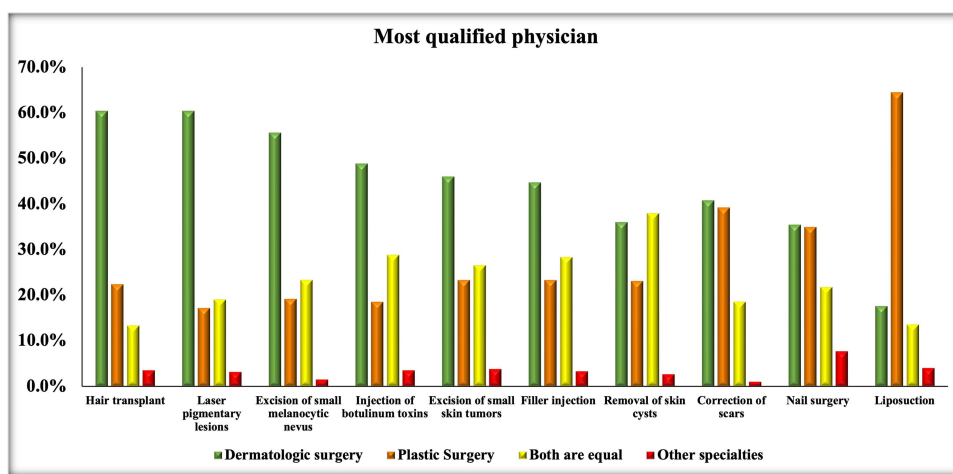


Figure 2 Primary care physicians' perception of the most qualified physician to perform selected cutaneous surgical and esthetic procedures.

surgical and acne scars, 40.9% selected dermatologic surgeons, and 39.3% selected plastic surgeons. In contrast, 64.5% considered plastic surgeons to be the most qualified physicians for liposuction. Overall, 57% of the participants reported that dermatologic surgeons were the most qualified personnel to perform the evaluated cutaneous and cosmetic procedures.

Univariate analysis regarding hearing about dermatologic surgery as a subspecialty of dermatology showed a significant correlation with gender ( $P=0.04$ ). A higher proportion of females (51.4%) had heard of dermatologic surgery, whereas 59.1% of males had not (Table 2). Multivariate analysis showed an odds ratio of 1.57 for gender (95% CI: 1.006–2.45,  $P=0.047$ ), where females had a more than one-fold (1.57) probability of hearing about dermatologic surgery as a subspecialty. An odds ratio of 2.36 was found for the level of health care (95% CI: 1.18–4.71,  $P=0.015$ ), whereby the participants who worked at secondary and tertiary health care centers had a more than two-fold probability of hearing about dermatologic surgery as a subspecialty (Table 3).

The perception of dermatologic surgeons as the most qualified to perform cutaneous procedures was also significantly affected by gender ( $P=0.027$ ). Females were significantly more inclined to consider dermatologic surgeons as the most qualified (53%) (Table 4). Multivariate analysis regarding the perception of considering dermatologic surgeons as the most qualified showed an odds ratio of 1.51 for gender (95% CI: 1.016–2.25,  $P=0.042$ ). Female PCPs had a significantly higher probability of considering dermatologic surgeons as the most qualified than male PCPs (Table 5).

**Table 2** Univariate Analysis Regarding Hearing About Dermatologic Surgery as a Subspecialty of Dermatology Among the 440 Participants

	Have You Ever Heard About Dermatologic Surgery as a Subspecialty of Dermatology?		P value
	Yes n (%)	No n (%)	
<b>Age</b>			
≤ 30 years	80 (25.6)	46 (36.2)	0.150
31–40 years	117 (37.4)	43 (33.9)	
41–50 years	79 (25.2)	27 (21.3)	
> 50 years	37 (11.8)	11 (8.7)	
<b>Gender</b>			
Male	152 (48.6)	75 (59.1)	0.046*
Female	161 (51.4)	52 (40.9)	
<b>Level of practice</b>			
General practitioner / Resident	253 (80.8)	107 (84.3)	0.690
Specialist	8 (2.6)	3 (2.4)	
Consultant	52 (16.6)	17 (13.4)	
<b>Region of current practice in Saudi Arabia</b> (alphabetical order)			
Center	150 (47.9)	65 (51.2)	0.335
East	21 (6.7)	13 (10.2)	
North	18 (5.8)	3 (2.4)	
South	80 (25.6)	27 (21.3)	
West	44 (14.1)	19 (15)	
<b>Level of health care</b>			
Primary	256 (81.8)	112 (88.2)	0.084
Secondary	14 (4.5)	7 (5.5)	
Tertiary	43 (13.7)	8 (6.3)	
<b>Practice</b>			
Family medicine	182 (58.1)	80 (63)	0.644
General practice	106 (33.9)	38 (29.9)	
Others	25 (8)	9 (7.1)	
<b>During your training, have you had a rotation in dermatology clinics?</b>			
Yes	238 (76)	87 (68.5)	0.103
No	75 (24)	40 (31.5)	
<b>Place of training (residency)</b>			
Saudi Arabia	177 (56.5)	82 (64.6)	0.139
Outside Saudi Arabia	131 (41.9)	45 (35.4)	
No training	5 (1.6)	0 (0)	
<b>Dermatologists as the most qualified</b>			
Yes	183 (58.5)	68 (53.5)	0.344
No	130 (41.5)	59 (46.5)	

**Note:** \*Indicates statistically significant.

## Discussion

Overall, the perceptions and attitudes of medical professionals toward dermatologic surgery have not been well studied. PCPs are usually the first to consult, treat, or direct patients to the appropriate specialty. Therefore, this study aimed to assess the perceptions and attitudes of PCPs toward dermatologic surgeries. In this study, most PCPs were aware of dermatologic surgery as a subspecialty of dermatology. Although the number of dermatologic surgeons in Saudi Arabia is

**Table 3** Multivariate Analysis Regarding Hearing About Dermatologic Surgery as a Subspecialty of Dermatology Among the 440 Participants

	P value	OR	95% CI for OR
Age (40 or less vs > 40 years)	0.299	0.754	0.442–1.285
Gender (Female vs Male)	0.047*	1.570	1.006–2.450
Practice level (Specialist or Consultant vs General practitioner or Resident)	0.226	1.472	0.787–2.755
Region (Center vs other regions)	0.816	0.943	0.574–1.548
Level of health care (Secondary or tertiary vs Primary)	0.015*	2.361	1.183–4.713
Practice (Family medicine vs other practices)	0.189	0.711	0.427–1.183
Place of training (Saudi Arabia vs other places)	0.347	0.760	0.429–1.347
Having a rotation in dermatology clinics	0.378	1.267	0.749–2.143

Note: \*Indicates statistically significant.

Abbreviations: CI, Confidence Interval; OR, Odds ratio.

**Table 4** Univariate Analysis Regarding Considering Dermatologic Surgeons as the Most Qualified Among the 440 Participants

	Dermatologic Surgeons are the Most Qualified		P value
	Yes n (%)	No n (%)	
<b>Age</b>			0.415
≤ 30 years	78 (31.1)	48 (25.4)	
31–40 years	92 (36.7)	68 (36)	
41–50 years	54 (21.5)	52 (27.5)	
> 50 years	27 (10.8)	21 (11.1)	
<b>Gender</b>			0.027*
Male	118 (47)	109 (57.7)	
Female	133 (53)	80 (42.3)	
<b>Level of practice</b>			0.421
General practitioner / Resident	201 (80.1)	159 (84.1)	
Specialist	8 (3.2)	3 (1.6)	
Consultant	42 (16.7)	27 (14.3)	
<b>Region of current practice in Saudi Arabia</b> (alphabetical order)			0.265
Center	134 (53.4)	81 (42.9)	
East	16 (6.4)	18 (9.5)	
North	11 (4.4)	10 (5.3)	
South	56 (22.3)	51 (27)	
West	34 (13.5)	29 (15.3)	
<b>Level of health care</b>			0.592
Primary	206 (82.1)	162 (85.7)	
Secondary	13 (5.2)	8 (4.2)	
Tertiary	32 (12.7)	19 (10.1)	
<b>Practice</b>			0.873
Family medicine	151 (60.2)	111 (58.7)	
General practice	82 (32.7)	62 (32.8)	
Others	18 (7.2)	16 (8.5)	

(Continued)

**Table 4** (Continued).

	Dermatologic Surgeons are the Most Qualified		P value
	Yes n (%)	No n (%)	
<b>During your training, have you had a rotation in dermatology clinics?</b>			
Yes	187 (74.5)	138 (73)	0.725
No	64 (25.5)	51 (27)	
<b>Place of your training (residency)</b>			
Saudi Arabia	157 (62.5)	102 (54)	0.181
Outside Saudi Arabia	91 (36.3)	85 (45)	
No training	3 (1.2)	2 (1.1)	
<b>Have you ever heard about dermatologic surgery as a subspecialty of dermatology?</b>			
Yes	183 (72.9)	130 (68.8)	0.344
No	68 (27.1)	59 (31.2)	

**Note:** \*Indicates statistically significant.

**Table 5** Multivariate Analysis Regarding Considering Dermatologic Surgeons as the Most Qualified Among the 440 Participants

	P value	OR	95% CI for OR
Age (40 or less vs > 40 years)	0.744	1.081	0.676–1.730
Gender (Female vs Male)	0.042*	1.512	1.016–2.250
Practice level (Specialist or Consultant vs General practitioner or Resident)	0.331	1.306	0.762–2.235
Region (Center vs other regions)	0.145	1.389	0.893–2.162
Level of health care (Secondary or tertiary vs Primary)	0.902	1.036	0.587–1.830
Practice (Family medicine vs other practices)	0.352	0.810	0.519–1.263
Place of training (Saudi Arabia vs other places)	0.466	1.209	0.726–2.013
Having a rotation in dermatology clinics	0.785	0.935	0.576–1.517

**Note:** \*Indicates statistically significant.

**Abbreviations:** CI, Confidence Interval; OR, Odds ratio.

limited, most PCPs (70%) had heard about dermatologic surgery, while 30% had never heard about it. A study among health care workers published in 2019 found that they were aware of cosmetic dermatological procedures performed by dermatologists.<sup>10</sup> Another study involving primary care residents found that they were aware of the esthetic and dermatological surgeries evaluated.<sup>9</sup> However, to our knowledge, no comparative study has investigated the subspecialty of dermatologic surgery. Responses from the PCPs in our study showed that most participants had a rotation in dermatology clinics. In our opinion, this might have had an impact on the hearing about dermatologic surgery.

Moreover, our results showed that PCPs believe that dermatologic surgeons are more qualified to perform the most common cutaneous procedures, including excision of small benign and malignant skin tumors, excision of small melanocytic nevi, filler injection for facial esthetics, injection of botulinum toxin, laser treatment, and hair transplantation procedures, than other specialists. Ibrahim et al<sup>9</sup> reported similar results: PCPs in training selected dermatologists as better qualified than plastic surgeons, otolaryngologists, and ophthalmologists to evaluate and biopsy a worrisome lesion,

perform skin cancer surgery, inject botulinum toxin and fillers, and perform laser procedures. However, regarding the physicians most qualified to perform hair transplantation, PCPs in training selected plastic surgeons to be the most qualified than dermatologists. Our findings are also consistent with those of a study in the plastic surgery literature, in which most PCPs (89.4%) selected dermatologists as expert specialists for skin cancer of the face, followed by plastic surgeons (36%), oral maxillofacial surgeons (9%), and otolaryngologists (8%).<sup>4</sup>

On the other hand, responses from PCPs indicate that dermatologic surgeons are not considered the primary physicians to perform liposuction; indeed, PCPs recognized plastic surgeons as the most qualified physicians for liposuction procedures. These findings are in line with those of a previously published study, in which plastic surgeons were considered the most qualified physicians to perform liposuction surgery.<sup>9</sup> We did not investigate the rationale for this selection. Although dermatologic surgeons have been performing liposuction for decades, during the last year, local rules have restricted the practice of liposuction to plastic surgeons, which may have affected PCP selection.

Of the 10 procedures studied, nail surgery, scar correction, and removal of cutaneous cysts were all considered by PCPs and performed by plastic or dermatologic surgeons. Despite the differences between dermatologic and plastic surgeons' approaches to treating scars and nail diseases, we believe that these questions are too general. Further studies are needed to identify the types of scars, such as acne, hypertrophic, and atrophic scars. The field of nail surgery is wide, ranging from nail biopsy to complete nail avulsion with matricectomy. A study investigating the public perception of dermatologic surgery revealed that 88% selected dermatologic surgeons as the preferred specialists for acne scar treatment, and 47% selected them as the preferred specialists for ingrown toenail procedures.<sup>7</sup>

When investigating participants' age, gender, level of practice, geographic location, and place of training, gender was the only factor influencing the respondents' selection. Female respondents were more likely to be aware of dermatologic surgery. In addition, females were more likely to choose dermatologic surgeons as the best experts. The authors are unable to offer a rational explanation for the differences between the genders.

This study is the first to investigate the perception of PCPs in dermatologic surgery as a distinct subspecialty of dermatology and to include all levels of PCP practice, including general practitioners, residents, specialists, and consultants. To the best of our knowledge, only one study, which was published a decade ago, attempted to investigate the perception of PCPs toward dermatologists, in general, to perform cutaneous procedures. Moreover, the study's participants were residents.<sup>9</sup>

Although we found that most PCPs recognized the scope of dermatologic surgery practice, approximately one-third had never heard about dermatologic surgery. Efforts should be made to increase the level of awareness of PCPs worldwide for all entities of dermatologic surgery. This can be achieved by many means, including greater engagement of dermatologic surgeons in the annual conferences of family medicine physicians, increasing the exposure of medical students and training physicians to dermatologic surgery clinics, using the power of social media channels by posting educational materials, and increasing the number of publications and review articles on the practice of dermatologic surgery.

A few limitations of this study should be considered. Although using an online self-administered survey helps to reach a large targeted sample, the response rate to online surveys is usually low. Additionally, self-administered surveys require less time for data collection than in-person interviews; however, reporting bias cannot be avoided. To overcome these limitations, we recommend that further international studies be conducted to assess the perception of PCPs toward dermatologic surgery worldwide through in-person interviews.

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## Author Contributions

All authors contributed to data analysis, drafting or revising the article, have agreed on the journal to which the article will be submitted, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.



## Disclosure

The authors report no conflicts of interest in this work.

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