Original Article

Training for Scalpel and Suture-based Procedures During Dermatology Residency, and Self-perceived Competencies: A Survey from Türkiye

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Abstract

Aim: The technical skills required for procedural competencies are acquired through skills training. The inclusion of procedural competencies in the core curriculum is relatively recent in Türkiye, highlighting the skills training provided during residency.

Materials and Methods: A 38-item cross-sectional electronic survey designed to assess the training environment and training level for 19 scalpel- and suture-based procedures, self-perceived competence, and professional attitudes regarding dermatologic surgery was distributed to 2000 registered members of the Turkish Society of Dermatology. Two hundred members responded to the survey, and the response rate was 10%.

Results: Forty percent of participants reported that dermatologic surgery was not routinely performed at the institution where they received training. Among the 19 scalpel- and suture-based procedures, the rates of routine institutional practice and independent performance exceeded 75% only for punch biopsy, local anesthesia, and electrocauterization, while both rates were below 25% for local flaps and grafts, Mohs surgery, tumescent and nerve block anesthesia, sclerotherapy, and hair transplantation. 30.5% of participants considered themselves competent in dermatologic surgery, 95.5% expressed a desire to achieve competency, and 89% intended to incorporate dermatologic surgery into clinical practice. Trainers were found to feel similarly incompetent, but were significantly more motivated to achieve competency ($P = 0.045$). Multivariate analysis revealed that routine institutional practice was independently associated with self-perceived competence ($P = 0.001$).

Conclusion: The study demonstrates that the scalpel- and suture-based procedures formally incorporated into the curriculum have not yet been adequately reflected in everyday residency training practice. The finding that trainers, despite feeling similarly incompetent, were significantly more motivated to achieve competency suggests that the first step could be taken through "training the trainers".

Keywords: Dermatologic surgical procedures, education, procedural dermatology, residency training, survey, training the trainer

Introduction

Skin surgery is an essential component of the diagnostic, therapeutic, and cosmetic management of healthy skin and its appendages.[1,2] However, its formal inclusion in the core dermatology residency curriculum is a relatively recent development in Türkiye. In 2015, a comprehensive range of 62 dermatologic procedures was integrated into the core curriculum for the first time. This curriculum is publicly available from the Board of Specialization in Medicine of the Ministry of Health of the Republic of Türkiye under the title TUKMOS Core Curriculum for Dermatology and Venereal Diseases.[3] Because achieving proficiency in these procedures requires technical skill, supervised hands-on training during

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residency is mandatory.[4,5] Teaching dermatologic surgery presents unique challenges because mastery requires the integration of fine motor skills with clinical judgment; as such, the transition from theoretical knowledge to physical execution is often more difficult to facilitate than in non-procedural training.[6-8] Evaluating this proficiency is equally complex, demanding specialized assessment frameworks and specific simulation or observational setups to ensure that a trainee is truly procedure-ready. [9,10]

In the absence of nationwide data on curriculum awareness and training practices, it remains unclear to what extent the 2015 curriculum reform has translated into practice and where efforts toward standardization should be directed. In this context, a survey is a practical first step because it can provide a national picture of training status that is difficult to obtain with more demanding competency assessment tools.

This survey aims to address that gap by generating the first national baseline data on this topic, providing an evidence-based starting point from which future educational strategies can be developed, both within Türkiye and, by extension, in other settings facing similar curricular challenges.

Within procedural dermatology, scalpel- and suture-based surgery may be a particularly informative starting point. In our clinical experience, scalpel- and suture-based dermatologic procedures are frequently deprioritized in many Turkish institutions, likely because other medical specialties manage a significant portion of this workload. Among all interventions in procedural dermatology—including cosmetic and device-based interventions—training in scalpel- and suture-based surgery is most neglected. This gap threatens the specialty's ability to reach its full potential in Türkiye. Furthermore, because scalpel- and suture-based procedures do not typically receive the promotional and financial support that device and cosmeceutical companies provide for other interventions, they may be further underrepresented in the daily routines of residency training programs. Therefore, scalpel- and suture-based procedures may require targeted "positive discrimination" to ensure that learning goals within the core curriculum are met.

Given this concern, we selected 19 procedures that we believe form the core of scalpel- and suture-based procedural dermatology and focused this survey on them. These 19 procedures include skin biopsies using punch, shave, incisional, and superficial techniques; surgical excision and reconstruction of cutaneous defects with flaps and grafts; Mohs micrographic surgery (MMS)/three dimensional (3D) surgery; nail surgery, including nail biopsy, avulsion, and chemical matricectomy; anesthesia techniques, including infiltration, field anesthesia, tumescent anesthesia, and nerve block; cauterization using electrocautery and chemical agents; sclerotherapy; and hair transplantation.

The aims of this survey are: (1) to evaluate awareness of the national dermatology curriculum among dermatology residents and specialists; (2) to assess self-perceived competency and training levels; and (3) to determine professional attitudes toward scalpel- and suture-based surgery. These findings are intended to provide evidence to guide future improvements in skills training in Türkiye.

Materials and Methods

The questionnaire was developed by the study investigators following a review of the literature and of the study objectives. Content validity was established through review by one of the authors (G.E.), who evaluated the relevance, clarity, and comprehensiveness of the questionnaire items. Subsequently, the questionnaire was pilot-tested among 4 dermatologists to assess comprehensibility, wording, and feasibility. Based on feedback from pilot testing, minor revisions were implemented before administering the final electronic survey.

This cross-sectional survey included dermatology residents in their third or fourth year of training and dermatology specialists in Türkiye. Data were collected via an electronic questionnaire distributed by email through the Turkish Society of Dermatology (TDD) to its approximately 2000 members. In order to lower non-response bias, follow-up emails were sent weekly during September 2019.[11] One of the authors (L.H.T.) also personally distributed handouts at one of the national congresses.[12] Informed consent was obtained from all participants.

The survey consisted of 38 items with an estimated completion time of 10 minutes. The survey was structured into 4 primary domains.

Demographic Characteristics

Age, gender, and residency institution data were categorized as state university hospital, private university hospital, or training and research hospital. Experience was classified by residency year as, third or fourth year; or specialist tenure ≤ 5 years or > 5 years. The current workplaces of specialists were categorized as state university hospital, private university hospital, training and research hospital, private hospital, private clinic, or other. Specialists practicing at state universities or training and research hospitals were defined as "educators". Participation in educational courses sponsored by TDD regarding dermatologic surgery, namely the "Procedural Dermatology Skill School" and the "DUSEK Courses" for

specialists, was also recorded. Procedural Dermatology Skill Schools are free, hands-on cadaver workshops specifically designed for residents and are held semiannually. DUSEK courses are designed specifically for the continuing medical education of specialists.

Awareness of the Core Curriculum, Training Levels, and Learning Environment

This section consisted of 19 items evaluating scalpel- and suture-based procedural exposure. For each of the 19 procedures, the respondent was directed to check an 8-statement list and mark the items that correctly reflected their experience with the given procedure, resulting in a total of 152 statements to be checked and ticked.

The 8-statement list was as follows;

• I am aware that the procedure is included in the core curriculum.

• The procedure was routinely practiced during my residency.

• I learned theoretical aspects of the procedure during my residency.

• I performed the procedure under the supervision of an educator during my residency.

• I performed the procedure under the supervision of a senior resident during my residency.

• I performed the procedure independently during my residency.

• I learned to perform the procedure at another institution during my residency.

• I learned to perform the procedure elsewhere after my residency.

Multiple choices were given for the 7th and 8th statements to define the external educational platform where the respondent learned to perform the procedure, such as conferences/ workshops, educational courses sponsored by TDD, international training programs, or self-directed learning using textbooks and/or relevant literature.

Competency and Professional Attitude

In this section, self-perceived clinical proficiency and professional goals were evaluated through six core yes/no questions, three of which included secondary follow-up items to identify underlying drivers or barriers.

Question 1 (Q1) addressed institutional practice. Participants were asked whether dermatologic surgery was actively performed at their training center. If not, they identified contributing factors such as lack of trainers, lack of physical infrastructure, or time constraints as follow-up items to Q1.

Question 2 (Q2) dealt with curricular expectations. Respondents were asked whether all procedures mandated by the core curriculum should be performed at training institutions.

Question 3 (Q3) was about clinical competency. Participants self-rated their competency across the spectrum of scalpel- and suture-based procedures.

Question 4 (Q4) and Question 5 (Q5) dealt with professional goals and integration. Participants reported whether achieving surgical competency was a professional goal (Q4) and whether they intended to incorporate surgery into routine practice (Q5). For those intending to practice, motivations such as interest, financial rewards, or definitive results were recorded as follow-up items. For those not intending to practice, primary barriers such as lack of interest, lack of financial reward, perceived incompetence, and inability to manage complications were identified as follow-up items.

Question 6 (Q6) addressed continuing education and active engagement with current literature, and continuing medical education in dermatologic surgery.

Open-Ended Recommendations

Participants were asked to provide qualitative feedback in response to the following question: “How would you like to modify the dermatologic surgery training during your residency?”

The survey was conducted in Turkish. The article was written in Turkish and translated into English by one of the authors (L.H.T.), and the results section was back-translated into Turkish by the senior author (G.E.) to evaluate the accuracy of the translation.

The study was conducted with the approval of the Non-Interventional Clinical Research Ethics Committee of Hacettepe University Faculty of Medicine (approval number: 2019/26-30, date: 05.11.2019).

Statistical Analysis

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 20.0 (IBM Corp., Armonk, NY, USA) for Windows. Descriptive statistics were presented

as frequencies and percentages for categorical variables and mean ± standard deviation and minimum-maximum values for continuous variables. The normality of the distribution of numerical data was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The difference between the two groups was analyzed using an independent-samples Student's t-test, assuming normally distributed variables. The Mann-Whitney U test was used to compare median values between groups for non-normally distributed variables. Associations between categorical variables were evaluated using the chi-square test when assumptions were met; otherwise, Fisher's exact test was applied. Multivariate analysis was conducted using logistic regression to identify independent predictors associated with the will to actively perform dermatologic surgery (Q5) and with self-perceived competence in surgical procedures (Q3). The variables evaluated in the regression analysis were age, sex, professional status (resident or specialist), type of residency training institution (state university hospital, private university hospital, or training and research hospital), participation in the hands-on Skills Course and the DUSEK Course, and routine practice of dermatologic surgery at the residency training institution. All statistical tests were evaluated at the 95% confidence level, and *P*-values of less than 0.05 were considered statistically significant.

Results

Demographic Characteristics

Invitations were distributed electronically to 2000 members of the TDD, resulting in 200 responses, corresponding to a 10% response rate. The mean age of respondents was 37.05 ± 9.61 years (range: 25–64). The gender distribution was 72% female (n = 144) and 28% male (n = 56). Residents constituted 32.5% (n = 65) of the cohort, of whom 40% (n = 26) were in the third year and 60% (n = 39) were in the fourth year. Specialists accounted for 67.5% (n = 135) of the total; of these specialists, 40% (n = 54) identified as educators. Regarding supplemental surgical education sponsored by TDD, 20% of all respondents (n = 40) attended the hands-on Procedural Dermatology Skill School, while 12% of specialists (n = 24) participated in the DUSEK courses. The types of institutions are provided in Table 1.

Awareness of the Core Curriculum, Training Levels and Learning Environment

Data on 19 scalpel- and suture-based procedures across the 8 evaluative statements (S1-S8) are summarized in Table 2. Awareness of the core curriculum (S1) among respondents was below 75% for all 19 procedures, ranging from 12.5% (n = 25) for hair transplantation to 62.5% (n = 125) for electrocauterization.

Routine institutional practice (S2) exceeded 90% for only three procedures: punch biopsy (96.5%, n = 193), local anesthesia (95%, n = 190), and electrocauterization (95%, n = 190). Conversely, routine institutional practice £accounted for 17% across 7 procedures: local flaps and grafts, MMS/3D surgery, tumescent and nerve-block anesthesia, sclerotherapy, and hair transplantation.

Theoretical knowledge acquisition (S3) was reported to be below 75% for all 19 procedures. Supervised performance by an educator (S4) was reported to be below 75% for all 19 procedures. Performance under senior resident supervision (S5) was above 75% only for electrocauterization.

Independent performance during residency (S6) was reported as 90% (n = 180) for local infiltration anesthesia, 86.5% (n = 173) for electrocauterization, and 86% (n = 172) for punch biopsy. Conversely, independent performance rates were < 5% for local flaps, grafts, Mohs surgery, tumescent anesthesia, hair transplantation, and sclerotherapy.

A Spearman's rank correlation analysis between routine institutional practice (S2) and independent procedural performance (S6) across all 19 procedures demonstrated a correlation coefficient of $r_s = 0.982$ ($P < 0.0001$) and revealed that the availability of a procedure in routine institutional practice (S2) was statistically significantly correlated with independent performance by the residents (S6).

Table 1. Distribution of workplaces and training institutions

	Workplaces of specialists (n = 135)	Residency institutions of all respondents (n = 200)
State university hospital	37 (27.4%)	148 (74%)
Training and research hospitals	17 (12.6%)	49 (24.5%)
State hospitals	32 (23.7%)	-
Private hospitals	25 (18.5%)	-
Private clinics	13 (9.6%)	-
Private university hospitals	10 (7.4%)	3 (1.5%)
Retired	0.7	

Table 2. Data summarizing awareness, training levels, and learning environment for the 19-core scalpel and suture-based surgical procedures

Procedure n (%)		S1	S2	S3	S4	S5	S6	S7	S8
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	
1	Punch biopsy	118 (59)	193 (96.5)	110 (55)	90 (45)	147 (73.5)	172 (86)	16 (8)	7 (3.5)
2	Infiltration anesthesia	94 (47)	190 (95)	92 (46)	75 (37.5)	107 (53.5)	180 (90)	23 (11.5)	13 (6.5)
3	Electrocauterization	125 (62.5)	190 (95)	124 (62)	110 (55)	153 (76.5)	173 (86.5)	12 (6)	1 (0.5)
4	Chemical cauterisation	110 (55)	152 (76)	109 (54.5)	95 (47.5)	122 (61)	128 (64)	20 (10)	9 (4.5)
5	Shave biopsy	115 (57.5)	148 (74)	107 (53.5)	75 (37.5)	103 (51.5)	118 (59)	37 (18.5)	12 (6)
6	Incisional biopsy	111 (55.5)	147 (73.5)	110 (55)	97 (48.5)	108 (54)	120 (60)	45 (22.5)	15 (7.5)
7	Surgical excision	103 (51.5)	134 (67)	101 (50.5)	96 (48)	91 (45.5)	110 (55)	48 (24)	19 (9.5)
8	Superficial skin biopsy	106 (53)	108 (54)	94 (47)	62 (31)	73 (36.5)	84 (42)	26 (13)	28 (14)
9	Chemical matricectomy	90 (45)	106 (53)	82 (41)	74 (37)	84 (42)	80 (40)	40 (20)	33 (16.5)
10	Nail avulsion	77 (38.5)	92 (46)	76 (38)	64 (32)	62 (31)	78 (39)	43 (21.5)	31 (15.5)
11	Nail biopsy	74 (37)	72 (36)	69 (34.5)	52 (26)	37 (18.5)	43 (21.5)	54 (27)	37 (18.5)
12	Field block anesthesia	53 (26.5)	49 (24.5)	51 (25.5)	33 (16.5)	30 (15)	43 (21.5)	40 (20)	21 (10.5)
13	Repair with local flaps	44 (22)	34 (17)	34 (17)	17 (8.5)	6 (3)	6 (3)	30 (15)	19 (9.5)
14	Mohs micrographic surgery	34 (17)	28 (14)	39 (19.5)	13 (6.5)	3 (1.5)	2 (1)	42 (21)	14 (7)
15	Nerve block anesthesia	34 (17)	28 (14)	24 (12)	18 (9)	16 (8)	20 (10)	23 (11.5)	27 (13.5)
16	Repair with grafts	44 (22)	21 (10.5)	28 (14)	9 (4.5)	5 (2.5)	3 (1.5)	23 (11.5)	13 (6.5)
17	Tumescent anesthesia	35 (17.5)	13 (6.5)	24 (12)	10 (5)	6 (3)	6 (3)	22 (11)	24 (12)
18	Sclerotherapy	31 (15.5)	7 (3.5)	15 (7.5)	5 (2.5)	1 (0.5)	0 (0)	12 (6)	11 (5.5)
19	Hair transplantation	25 (12.5)	3 (1.5)	9 (4.5)	2 (1)	1 (0.5)	0 (0)	17 (8.5)	20 (10)

S1: Statement 1: I am aware that the procedure is included in the core curriculum. S2: Statement 2: The procedure was in routine practice during my residency. S3: Statement 3: I learned the theoretical knowledge concerning the procedure during my residency. S4: Statement 4: I performed the procedure under the supervision of an educator during my residency. S5: Statement 5: I performed the procedure under the supervision of a senior resident during my residency. S6: Statement 6: I performed the procedure independently during my residency. S7: Statement 7: I learned to perform the procedure "elsewhere" during my residency. S8: Statement 8: I learned to perform the procedure "elsewhere" after my residency

The top 5 procedures that participants reported learning "elsewhere" during residency (S7) were: nail biopsy (27%, n = 54), surgical excision (24%, n = 48), incisional biopsy (22.5%, n = 45), nail avulsion (21.5%, n = 43), and Mohs surgery (21%, n = 42). Post-residency external training (S8) was reported to be below 20% for all 19 procedures.

Self-Perceived Competences and Attitudes towards Dermatologic Surgery

Responses to the six yes/no questions are presented in Figure 1. Active practice of dermatologic surgery at the respondents' training institutions (Q1) was reported by 60% (n = 120) of respondents, whereas 40% (n = 80) did not report it. The Q1 follow-up item revealed that 65/80 (81.3%) of the respondents cited a shortage of qualified educators as the reason for the lack of active surgical practice, followed by exclusion from the institutional curriculum (n = 35, 43.8%), shortcomings in infrastructure (n = 35, 43.5%), and time constraints (n = 34, 42.5%) (Figure 2). Further analysis revealed no statistically significant difference between institution type and the shortage of qualified educators; the shortage of qualified educators was reported consistently across institution types ($P = 0.260$).

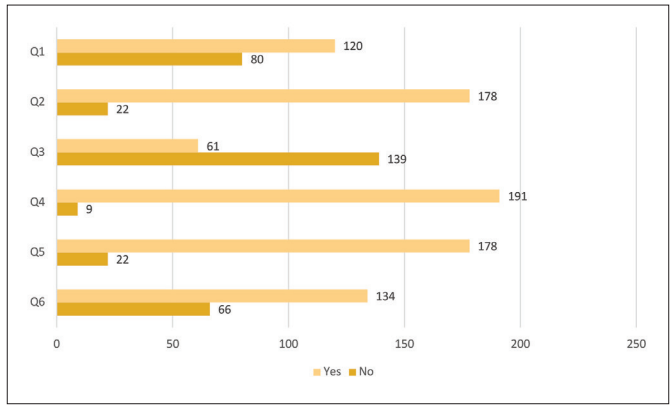


Figure 1. Bar chart demonstration of responses to six core yes/no questions shows clearly the mismatch between motivation toward dermatologic surgery and self-perceived competence. Q1: Is (or was) dermatologic surgery actively performed at your residency training institution? Q2: Should all dermatological surgical procedures be performed at your training institution? Q3: Considering the full spectrum of procedures, do you perceive yourself as clinically competent? Q4: Is achieving comprehensive competency in dermatologic surgery a professional goal for you? Q5: Do you currently incorporate (or intend to incorporate) dermatologic surgery into your routine clinical practice? Q6: Do you actively keep pace with current advancements, literature, or continuing medical education in dermatologic surgery

The desire for comprehensive surgical training during residency (Q2) was reported by 89% (n = 178) of participants, who indicated that all procedures should be actively practiced within their residency programs, whereas 11% (n = 22) indicated that they should not. Self-perceived competence in dermatologic surgical procedures (Q3) was reported by 30.5% (n = 61) of respondents and was not reported by 69.5% (n = 139). Desire to achieve competence in dermatologic surgery (Q4) was present in 95.5% (n = 191) of respondents and absent in 4.5% (n = 9). This self-perception of competency did not vary statistically based on the type of training institution ($P = 0.058$)

Intention to incorporate dermatologic surgery into clinical practice (Q5) was reported by 89% (n = 178) of respondents; 11% (n = 22) did not report this intention. Follow-up items to Q5 revealed that motivations to incorporate were: personal interest (75.8%, n = 135), the rapid and definitive nature of surgical outcomes (75.2%, n = 134), and financial incentives (24.2%, n = 43) (Figure 3). Barriers to incorporation were: lack of interest (n = 12, 54.5%); lack of perceived competence (n = 12**,** 54.5%); time constraints (n = 10, 45.5%); inability to manage complications (n = 6, 27.3%) (Figure 4).

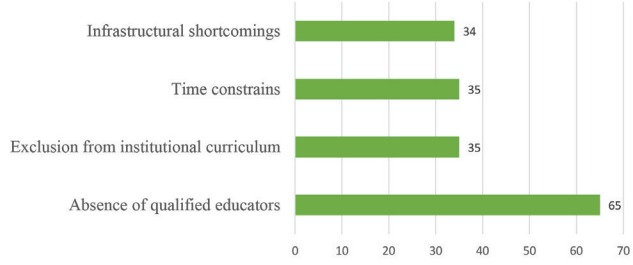


Figure 2. Distribution of the choices selected for the follow-up question to Q1 by those respondents who responded no to Q1 (n = 80). Respondents were able to select more than 1 option for this question

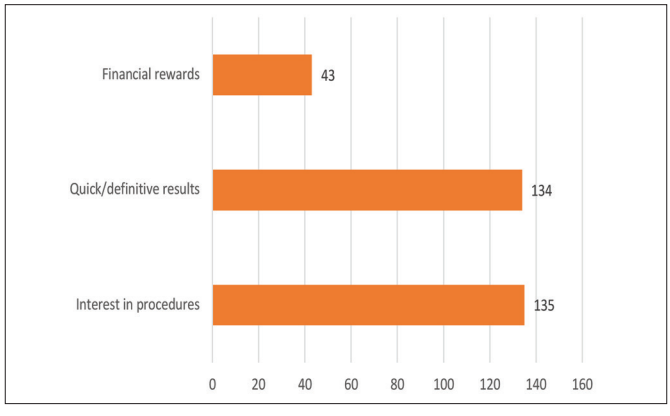


Figure 3. Motivations for practicing surgery (n = 170) as follow-up question to Q5

Engagement with current literature or continuing medical education in dermatologic surgery (Q6) was reported by 67% (n = 134) of respondents and was not reported by 33% (n = 66).

Regression Analysis

Regression analysis revealed that active practice of dermatologic surgery at the respondents' training institutions (Q1) was a significant predictor of willingness to incorporate surgery into clinical practice (Q5) [$P = 0.01$, Exp(B) = 0.285, odds ratio (OR): 0.108–0.747]. Additionally, both the active practice of dermatologic surgery at the training institution (Q1) ($P = 0.001$, Exp(B) = 0.172, OR: 0.077–0.385) and participation in the TDD-sponsored courses ($P = 0.002$, Exp(B) = 0.249, OR: 0.104–0.598) were independently associated with respondents' perceived competence (Q3).

Educator Subgroup Analysis

Among the 54 participants identified as educators, 41 (75.9%) received their residency training at institutions with active surgical programs (Q1). Of the 54 educators, only 16 (29.6%) felt competent in dermatologic surgery (Q3). However, 52 out of 54 (96.3%) educators expressed a desire to be competent (Q4), and 48 out of 54 (88.9%) expressed an intention to incorporate dermatologic surgery into clinical practice (Q5). Four of the 6 educators who did not wish to incorporate surgery cited a lack of competency as the primary reason in the follow-up item.

Subgroup analysis revealed no statistically significant difference in self-perceived clinical competence between educators and non-educators (29.6% vs. 30.8%; $P = 0.898$). However, educators had a significantly higher professional drive to achieve surgical competency than non-educators (96.3% vs. 86.3%; $P = 0.045$).

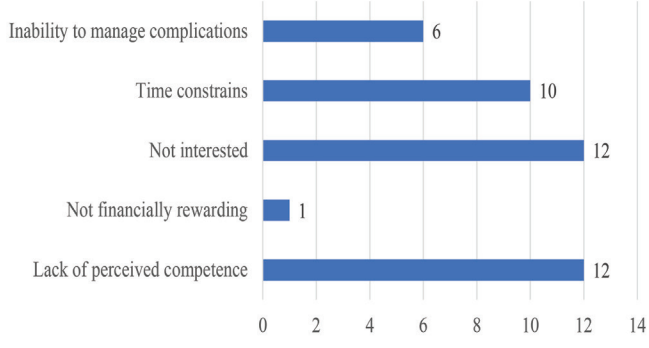


Figure 4. Answers to the follow-up question to Q5 revealed barriers to incorporating dermatologic surgery into clinical practice. (Q5: Do you currently incorporate (or intend to incorporate) dermatologic surgery into your routine clinical practice?)

Open-Ended Question: How Would you Like to Modify Dermatologic Surgery Training During your Residency?

Of the 200 respondents, 19 (9.5%) provided answers to the open-ended query. The mean number of suggestions per participant was one, and a total of seven distinct categories of suggestions were identified. Reported categories included: classifying dermatology as a surgical specialty (n = 2), integrating competencies into associate professorship exams (n = 2), establishing external rotations (n = 2), and creating dermatologic surgery as a recognized subspecialty (n = 2). Four participants cited the presence of qualified and engaged educators as the most critical factor for education quality. Three participants advocated for increased hands-on training.

Discussion

The results showed that awareness of mandated procedures was notably deficient among respondents. This suggests that residents are currently learning from what is available in their clinic rather than following the national curriculum. However, formal curricula are essential because they define the specific milestones that a trainee must reach to attain competence.[3] By using a national curriculum, we ensure that all residents master the same skills, regardless of local institutional or clinical variations. Increasing awareness of this curriculum is important so that we can compare our national training standards with those in Europe and the United States.[13,14]

Regarding training levels and the learning environment, the results revealed that out of 19 procedures, only punch biopsy, local infiltration anesthesia, and electrocauterization were routinely practiced in more than 90% of respondents' residency training institutions. In contrast, 7 of the procedures, namely local flaps/grafts, Mohs surgery, tumescent/nerve block anesthesia, sclerotherapy, and hair transplantation, were routine in fewer than 25% of cases. Similarly, for all the specific milestones of competency, such as theoretical knowledge acquisition, supervised performance by an educator, performance under senior resident supervision, and independent performance, the rates were below 25% for the same 7 procedures. Surgical excision was routinely performed at approximately two-thirds (67%) of respondents' residency training institutions; however, only about half of respondents reported performing this procedure independently during residency. A survey in North America reported that training in surgical excision is routinely incorporated into dermatology residency programs, with residents commonly serving as the primary surgeon during excisional procedures.[15] Another survey of third-year dermatology residents found that 95% had served as the primary surgeon for excisional surgery, whereas only 49% and 18% had served as the primary surgeon for flap and graft reconstruction and MMS, respectively.[16] Our findings suggest that training in basic excision, MMS, and flap and graft reconstruction during dermatology residency is implemented substantially less in Türkiye than in the United States.[16] However, limited exposure to MMS is not unique to Türkiye. In Saudi Arabia, 73.1% of dermatology residents reported that their MMS training was limited to lectures or observation, without any hands-on surgical experience.[17] Our results suggest that Turkish dermatology residency training is currently optimized only for 3 basic procedures and provides limited exposure to more advanced cutaneous surgery. These findings underscore the critical importance of translating the residency curriculum into routine clinical practice, as hands-on procedural experience is essential for developing surgical skills.

Survey results also revealed self-perceived incompetence among respondents. Competence regarding dermatologic surgery was reported by only 30.5% of the respondents. Researchers in another study found that individual skill development was one of the major factors contributing to confidence among surgical trainees.[18] Worldwide, self-perceived confidence in dermatologic surgery procedures appears to be low among novices and junior trainees, but improves after simulation- or workshop-based teaching.[19] In our study, regression analysis identified active institutional practice (P = 0.001) and participation in the hands-on Procedural Dermatology Skill School (P = 0.001) as the two independent predictors of self-perceived competence. Our findings that hands-on courses have a positive effect are consistent with previous survey results showing a favorable impact of these courses on confidence. Sarikaya Solak et al.[20] demonstrated an increase in confidence and self-assessed knowledge in nail surgery after an integrated cadaveric nail surgery course. Since institutional change is slow, hands-on courses serve as a vital bridge. Participation in the Skill School may facilitate residents' acquisition of competency in dermatologic surgery.

When educators were considered separately, another striking emerged. Educators who teach the procedures are generally expected to feel more competent than non-educators. However, results showed that only 29.6% of the educators felt competent, which was similar to the level among non-educators (P = 0.898). This unexpected challenge requires immediate attention and resolution strategies. Adapting the "training the trainer" philosophy to dermatologic surgery in Türkiye could be a reasonable approach.[21] The operational idea behind the "training the trainer" model is to initiate a training cascade, in which initial trainees become trainers who, in turn, transfer skills to others exponentially. To ensure sustainability, training may be required for academic

promotion. Survey respondents in the open-ended question of the current study also suggested using training as an academic promotion. However, we believe that a cautious approach is needed to avoid placing an additional burden on the trainers. Becoming a trainer should be recognized as a valuable career path. Establishing a formal subspecialty training program in dermatologic surgery is the ultimate goal to develop a more qualified pool of educators in this field.

Within the cohort, a clear mismatch existed between self-perceived competencies and motivation for competence. 95.5% of the group expressed willingness to be competent, and 89% reported their willingness to incorporate surgery into their clinical practice. Moreover, it is noteworthy that educators are significantly more motivated to attain surgical competency than non-educators (P = 0.045). Primary motivations reported by respondents for actively incorporating procedures into their clinical practice were personal interest and the perception that these offer rapid and definitive treatment outcomes. Active implementation of such procedures at the respondent's training institution was an independent factor that positively influenced their willingness to perform them in daily practice. Among those who reported reluctance to perform surgical procedures, approximately half cited a lack of knowledge or self-perceived incompetence, while one-third expressed concerns about managing potential complications. These findings point once again to a deficiency in training as the underlying issue. We believe that expanding the number and scope of surgical training opportunities during residency could increase the number of dermatologists who feel competent and who will actively practice dermatologic surgery.

Forty percent of respondents reported the absence of surgical practice at their training institution. The primary reason reported for the lack of dermatologic surgery education was the absence of qualified educators, followed by inadequate incorporation of surgical procedures into the residency curriculum and insufficient time allocated to dermatologic surgery training. Across countries, the principal barriers to adequate dermatologic surgery training during residency have been reported to include a lack of a structured curriculum, limited opportunities for hands-on experience, faculty and institutional constraints, and time and financial limitations.[22] To the best of our knowledge, there are no published data on the shortage of qualified educators in dermatologic surgery. Resident exchange programs between institutions and outsourcing certain procedural training to centers with experienced educators could serve as practical solutions for making better use of limited resources. Encouraging participation in the hands-on Procedural Dermatology Skill School may also facilitate access to experienced educators. Time constraints could be addressed by implementing an efficient referral system, limiting unscheduled patient admissions, and designating specific time slots for interventional procedures within clinical schedules.

Study Limitations

The overall response rate (10%), calculated using the total membership of the TDD, was relatively low and may limit the generalizability of the findings. However, this figure likely underestimates participation among the target population because the survey was limited to third- and fourth-year residents and practicing specialists, while TDD membership also includes first- and second-year residents, retired members, and members not currently engaged in clinical practice. Moreover, given that approximately 300 members attended the TDD general assembly that year, the 200 respondents likely represent a substantial proportion of the active dermatology community in Türkiye. The predominantly female distribution of the sample closely reflects the current TDD membership, supporting its demographic representativeness. Nevertheless, respondents may have had a greater interest in dermatologic surgery or residency education than non-respondents did, thereby introducing potential selection bias. In addition, competency was assessed solely through self-report and may not reflect actual procedural performance. Finally, because the training centers remained anonymous, uneven participation across institutions may have reduced the representativeness of the findings.

Conclusion

This national survey demonstrates that despite the formal inclusion of procedural competencies in the core curriculum since 2015, scalpel- and suture-based dermatologic surgery training remains inconsistently delivered across Turkish residency programs, and self-perceived competence remains low. Notably, trainers reported levels of perceived incompetence similar to those of trainees but were significantly more motivated to achieve competency, suggesting that "training the trainers" may be a practical and high-yield first step toward closing this gap. Institutional commitment to routine, hands-on procedural practice emerged as the strongest correlate of self-perceived competence, underscoring that written curricula alone cannot guarantee competency-based outcomes. These findings offer a benchmark for residency training in Türkiye and a reference point for future international comparisons of procedural dermatology education.

Ethics

Ethics Committee Approval: The study was conducted with the approval of the Non-Interventional Clinical Research Ethics Committee of Hacettepe University Faculty of Medicine (approval number: 2019/26-30, date: 05.11.2019).

Informed Consent: Informed consent was obtained from all participants.

Authorship Contributions

Surgical and Medical Practices: L.H.T., G.E., Concept: L.H.T., G.E., Design: L.H.T., G.E., Data Collection or Processing: L.H.T., G.E., Analysis or Interpretation: L.H.T., G.E., Literature Search: L.H.T., G.E., Writing: L.H.T., G.E.

Footnotes

Conflict of Interest: One of the authors, Gonca Elçin, is a member of the Editorial Board of the Turkish Journal of Dermatology. However, she was not involved in any stage of the editorial decision-making process for this manuscript. The manuscript was evaluated independently by editors from other institutions. The other authors declare no conflicts of interest.

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