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Original Article

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

Hüseynova Terzi and Elçin. Scalpel, Suture-based Procedures Training in Dermatology

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Abstract

Objectives

The technical skills required for procedural competencies are acquired through skills training. The inclusion of procedural competencies in the core curriculum is relatively new in Türkiye, and there is a need to evaluate the skills training provided during residency.

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 through the Turkish Society of Dermatology (TDD). 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. Regarding the 19 scalpel- and suture-based procedures, the rate 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".

Key words: Procedural dermatology, residency training, survey, education, training the trainer, dermatologic surgical procedures

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 through the Ministry of Health of the Republic of Türkiye, Board of Specialization in Medicine, under the title *TUKMOS Core Curriculum for Dermatology and Venereal Diseases*.³ Because achieving proficiency in these procedures demands technical skill, hands-on training under supervision during 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.^{6,7,8} Evaluating this proficiency is equally complex, demanding specialized assessment frameworks and specific simulation or observational setups to ensure a trainee is truly procedure-ready.^{9,10} In the absence of nationwide data on curriculum awareness and training practice, it remains unclear to what extent the 2015 curriculum reform has translated into real life, and where efforts toward standardization should be directed. In this context, a survey is a practical first step, as it can show a national picture of training status that is harder to obtain using more demanding competency-assessment tools.

This survey study 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 often manage a significant portion of this workload. Among all interventions in procedural dermatology—including cosmetic and device-based interventions—training for scalpel- and suture-based surgery is the most neglected. This gap represents a threat to the specialty's ability to reach its full potential in Türkiye. Furthermore, because scalpel- and suture-based procedures do not typically benefit from the promotional and financial support that device and cosmeceutical companies provide for other interventions, they may be further underrepresented in the daily routine of residency training programs. Therefore, scalpel- and suture-based procedures may require targeted "positive discrimination" to ensure learning goals are met within the core curriculum.

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 with punch, shave, incisional and superficial biopsy techniques; surgical excision, reconstruction of cutaneous defects with flaps, and grafts, Mohs Micrographic surgery (MMS)/3D surgery; nail surgery including nail biopsy, avulsion and chemical matricectomy; anesthesia with infiltration, field anesthesia, tumescent anesthesia and nerve block; cauterization with electrocautery and chemicals; sclerotherapy; and hair transplantation.

The aim of this survey is: 1. to evaluate awareness of 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 the study's 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 study included dermatology residents in their third or fourth year of training, and dermatology specialists in Türkiye. Data collection was conducted 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 periodically once weekly for a month in September, 2019.¹¹ One of the authors (LHT) also personally distributed hand-outs during one of the national congresses.¹²

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

1. Demographic characteristics

Age, gender, residency institution data 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. Current workplaces for specialists were categorized as state university hospital, private university hospital, training and research hospital, private hospital, private clinic, or other. Specialists

practicing in state university 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, held semiannually. DUSEK courses are designed specifically for the continuing medical education of specialists.

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

This section consisted of a set of 19 items to evaluate 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, making a total of 152 statements to check and mark with a tick.

The 8-statement list was as follows;

- S1. I am aware that the procedure is included in the core curriculum.
- S2. The procedure was in routine practice during my residency.
- S3. I learned the theoretical knowledge of the procedure during my residency.
- S4. I performed the procedure under the supervision of an educator during my residency.
- S5. I performed the procedure under the supervision of a senior resident during my residency.
- S6. I performed the procedure independently during my residency.
- S7. I learned to perform the procedure elsewhere during my residency.
- S8. 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.

3. 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) dealt with institutional practice. Participants were asked if dermatologic surgery was actively performed at their training center. If not, they identified contributing factors such as lack of trainers, physical infrastructure, or time constraints as a follow-up item to Q1.

Question 2 (Q2) dealt with curricular expectations. Respondents assessed 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 if they intended to incorporate surgery into routine practice (Q5). For those intending to practice, motivations like interest, financial rewards, or definitive results were recorded as a follow-up item. As well as for those not intending to practice, primary barriers such as lack of interest, lack of financial reward, perceived incompetence, or inability to manage complications were identified as a follow-up item.

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

4. Open-ended recommendations

Participants were asked to give direct qualitative feedback regarding the specific question: "How would you like to modify the dermatologic surgery training during your residency?".

The survey was conducted in the Turkish language. The article was written in Turkish, then translated into English by one of the authors (LHT), and the results section was back-translated by the senior author (GE) into Turkish to evaluate the translation's accuracy.

The study was conducted with the approval of the Non-Interventional Clinical Research Ethics Committee of Hacettepe University Faculty of Medicine (Approval Number: GO 19/26-30).

Statistical Analysis

Statistical data analysis was performed using the *Statistical Package for the Social Sciences* (SPSS) version 20.0 for Windows. Descriptive statistics were presented as frequencies and percentages for categorical variables and mean $\pm$ standard deviation and minimum–maximum values for continuous variables. The normality of distribution for numerical data was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The difference between the two groups was analyzed using a Student's t-test for independent, 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 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, participation in the DUSEK Course, and the 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

1. *Demographic Characteristics*

Invitations were electronically distributed to 2000 members of the TDD, resulting in 200 responses with 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 comprised 32.5% (n=65) of the cohort, with 40% (n=26) in third year and 60% (n=39) in fourth year. Specialists accounted for 67.5% (n=135) of the total, of whom 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. Type of institutions are provided in **Table 1**.

2. *Awareness of the Core Curriculum, Training Levels and Learning Environment*

Data regarding 19 scalpel and suture-based procedures across the 8 evaluative statements (S1-S8) are summarized in **Table 2**. Awareness of core curriculum (S1) among respondents for all 19 procedures was below 75% and ranged between 12.5% (n=25) for hair transplantation and 62.5% (n=125) for electrocauterization. Routine institutional practice (S2) exceeded 90% only for three procedures; namely, punch biopsy (96.5%, n=193), local anesthesia (95%, n=190), and electrocauterization (95%, n=190). Conversely, routine institutional practice was $\leq 17\%$ for 7 procedures; namely, local flaps and grafts, Mohs micrographic surgery/3D surgery, tumescent and nerve block anesthesia, sclerotherapy, and hair transplantation.

Theoretical knowledge acquisition (S3) was reported below 75% for all 19 procedures. Supervised performance by an educator (S4) was reported 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).

The top 5 procedures that participants reported learning "elsewhere" during residency (S7) was 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 below 20% for all 19 procedures.

3. *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 and not reported by 40% (n=80). Q1 follow-up item revealed that 65/80 (81.3%) of the respondents cited 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 statistical analysis revealed no statistically significant difference between the type of institution and the shortage of qualified educators; shortage of educators was reported consistently among all institution types ($p=0.260$).

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 should not. Self-perceived competence in dermatologic surgery procedures (Q3) was reported by 30.5% (n=61) of respondents and 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 and not reported by 11% (n=22). 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 incorporate 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**).

Engagement with current literature or continuing medical education in dermatologic surgery (Q6) was reported by 67% (n=134) of respondents and 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) ($p = 0.01$, $\text{Exp}(B) = 0.285$, OR: 0.108–0.747). Additionally, both the active practice of dermatologic surgery at the training institution (Q1) ($p = 0.001$, $\text{Exp}(B) = 0.172$, OR: 0.077–0.385) and participation in the TDD-sponsored courses ($p = 0.002$, $\text{Exp}(B) = 0.249$, 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 in institutions with active surgical programs (Q1). Of 54 educators only 16 (29.6%) felt competent in dermatologic surgery (Q3). However, 52 out of 54 (96.3%) educators expressed desire to be competent (Q4), and 48 out of 54 (88.9%) expressed intention to incorporate dermatologic surgery into clinical practice (Q5). Four out of 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 that there was no statistically significant difference between educators and non-educators in terms of self-perceived clinical competence (29.6% vs 30.8%; $p = 0.898$). However, educators had a statistically significantly higher professional drive to achieve surgical competency compared to non-educators (96.3% vs 86.3%; $p = 0.045$).

4. Open-ended Question: How would you like to modify dermatologic surgery training during your residency?

Of the 200 total respondents, 19 (9.5%) provided answers to the open-ended query. The mean number of suggestions per participant was one, with a total of seven distinct categories of suggestions 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 in ($n=2$). 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

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 a trainee must reach to become competent.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 learning environment, results revealed that out of 19 procedures, only punch biopsy, local infiltration anesthesia, and electrocauterization were in routine practice 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%. 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, were below 25% for the same 7 procedures. Surgical excision was routinely performed in approximately two-thirds (67%) of respondents' residency training institutions, whereas only about half of the respondents reported performing this procedure independently during residency. Survey from North America reported that surgical excision training is routinely incorporated into dermatology residency programs, with residents commonly serving as the primary surgeon during excisional procedures.¹⁵ Furthermore, another survey of third-year dermatology residents found that 95% had acted as the primary surgeon for excisional surgery, whereas only 49% and 18% had served as the primary surgeon during flap and graft reconstruction and MMS, respectively.¹⁶ Our findings suggest that the implementation of training in basic excision, MMS, and flap and graft reconstruction during dermatology residency is substantially lower 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 with 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 uncovered self-perceived competence failure 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 and 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 concerning the positive effect of hands-on courses are consistent with previous survey results, showing the favorable impact of hands-on courses on confidence. Solak et al. demonstrated an increase in confidence and self-assessed knowledge in nail surgery after an integrated cadaveric nail surgery course.²⁰ Since institutional change is slow, hands-on courses serve as a vital bridge. Enabling residents to participate in the Skill School may facilitate the acquisition of competency in dermatologic surgery.

When educators were taken into consideration separately, another very striking finding was uncovered. It is usually expected that educators who teach the procedures feel more competent in comparison to those who are not educators. However, results showed that only 29.6% of the educators feel competent; which was similar to the non-educators' level ($p=0.898$). This unexpected challenge requires immediate attention and resolution strategies. Adapting the "Training the Trainer" philosophy into dermatologic surgery in Türkiye could be a reasonable approach.²¹ The basic operational idea behind the "Training the Trainer" model is to initiate a training cascade where initial trainees become trainers to transfer skills to others exponentially. To ensure sustainability, training may be used as a requirement for academic promotion. To use training as an academic promotion was also expressed as a suggestion by survey respondents in the open-ended question in the current study. 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. Establishment of a formal subspecialty training program in dermatologic surgery is the ultimate goal for developing a more qualified pool of educators in this field. Fortunately, there was a clear mismatch in the cohort between self-perceived competencies and motivation for competency. Willingness to be competent was expressed by 95.5% of the group, and 89% reported their will to incorporate surgery into their clinical practice. Moreover, it is inspiring to realize that educators are significantly more motivated for surgical competency than non-educators ($p=0.045$). Primary motivations respondents reported for actively incorporating procedures into their clinical practice were personal interest and the perception that these offer rapid and definitive treatment outcomes. The active implementation of such procedures in the respondent's training institution was an independent factor positively influencing 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 will actively practice dermatologic surgery.

Forty percent of respondents reported the absence of surgical practice at their training institution. The number one reason for the lack of dermatologic surgery education was reported as 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 potentially be addressed by implementing an efficient referral system, limiting unscheduled patient admissions, and designating specific time slots for interventional procedures within clinical schedules.

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 actual target population, since the survey was limited to third- and fourth-year residents and practicing specialists, whereas 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 female-predominant gender distribution of the sample also 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,

introducing potential selection bias. In addition, competency was assessed solely through self-report and may not reflect actual procedural performance. Finally, because 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 similar levels of perceived incompetence as 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.

References

1. García-Lozano, JA, Cuellar-Barboza A, Garza-Rodríguez V, Vázquez-Martínez O, Ocampo-Candiani J. Dermatologic surgery training during the COVID-19 era. *JEADV*. 2020;34:e370–e372.
2. Mehta N, Sharma A, Sindhuja T, Dudani P, Sahni K, Khanna N, Gupta S. Procedural dermatology and its unmet need. *Indian J Dermatol Venereol Leprol*. 2023;89(6):807-818.
3. Tıpta Uzmanlık Kurulu Müfredat Oluşturma ve Standart Belirleme Sistemi: Deri ve Zührevi Hastalıkları Uzmanlık Eğitimi Çekirdek Müfredatı. Available at: <https://turkdermatoloji.org.tr/public/media/files/file/cekirdek-mufredat-2019.pdf>
4. Souchik A, Estupinan B, Desai S, Mafee M. Characterizing Dermatology Trainee Confidence in Management of Surgery Complications: A Survey Study. *Dermatol Surg*. 2024;50:386-388.
5. Hanke CW, Moy RL, Roenigk RK, Roenigk HH Jr, Spencer JM, Tierney EP, Bartus CL, Bernstein RM, Brown MD, Busso M, Carruthers A, Carruthers J, Ibrahim OA, Kauvar AN, Kent KM, Krueger N, Landau M, Leonard AL, Mandy SH, Rohrer TE, Sadick NS, Wiest LG. Current status of surgery in dermatology. *J Am Acad Dermatol*. 2013;69: 972–1001.
6. Liu KJ, Tkachenko E, Waldman A, Boskovski MT, Hartman RI, Levin AA, Nguyen BM, Ruiz ES, Sharon VR, Sowerby L, Tiger J, Yang FC, Mostaghimi A. A video-based, flipped classroom, simulation curriculum for dermatologic surgery: A prospective, multi-institution study. *J Am Acad Dermatol*. 2019;81(6):1271-1276.
7. Kordowicz AGR, Gough MJ. The challenges of implementing a simulation-based surgical training curriculum. *BJS* 2014;101:441-443.
8. Hasan O, Ayaz A, Jessar M, Docherty C, Hashmi P. The need for simulation in surgical education in developing countries. The wind of change. *J Pak Med Assoc*. 2019;69 (Suppl.):S62-S68.
9. Darzi A, Mackay S. Assessment of surgical competence. *Quality in Health Care* 2001;10 (Suppl 2):ii64-ii69.
10. Reichel JL, Peirson R P, Berg D. Teaching and evaluation of surgical skills in dermatology. *Arch Dermatol*. 2004;140:1365–1369.
11. Booker QS, Austin JD, Balasubramanian BA. Survey strategies to increase participant response rates in primary care research studies. *Fam Pract*. 2021;38:699-702.
12. Shiyab W, Ferguson C, Rolls K, Halcomb E. Solutions to address low response rates in online surveys. *Eur J Cardiovasc Nurs*. 2023;22:441-444.
13. European Training Requirements for Dermato-venereology 2017. Available at: <https://www.uems-ebdv.org/web/index.php/downloads/category/45-uems-uems-ebdv-documents>
14. ACGME Program Requirements for Graduate Medical Education in Micrographic Surgery and Dermatologic Oncology. Available at: https://www.acgme.org/globalassets/pfassets/programrequirements/2025-reformatted-requirements/081_micrographicsurgerydermatologiconcology_2025_reformatted.pdf
15. Todd M. M, Miller J. J, Ammirati C. T. Dermatologic surgery training in residency. *Dermatol Surg*. 2002;28:547–550.
16. Lee E. H, Nehal K. S, Dusza S. W, Hale E. K, Levine, V. J. Procedural dermatology training during dermatology residency: A survey of third-year dermatology residents. *J Am Acad Dermatol*. 2011;64:475-483, 483.e1-5.
17. Alsubait N, Mitwalli H. Dermatologic Surgery Training in Dermatology Residency Programs in Saudi Arabia: A Cross-Sectional Survey. *J Dermatol Dermatol Surg*. 2021;25: 87–94.
18. Lees M C, Zheng B, Daniels L M, White J S. Factors Affecting the Development of Confidence Among Surgical Trainees. *J Surg Educ*. 2019;76:674–683.

19. Dando E, Guerrero A, Collins M. K, James A. J. Virtual medical student dermatologic surgery workshop increases confidence in suturing and skin biopsy skills in the era of COVID-19. *SKIN J Cutan Med.* 2021;5:656–659.
20. Solak S S, Karakas A. A, Sindel M, Atis G, Gunes P, Goktay F. Integrated Cadaveric Nail Surgery Course Improves Self-Assessed Knowledge and Competency of Dermatologists. *Skin Appendage Disord.* 2021;7:460-467.
21. Mormina M, Pinder S. A conceptual framework for training of trainers (ToT) interventions in global health. *Global Health.* 2018;14(1):100.
22. Burnett M E, Lee E H. Key Issues in Surgical Training of Residents and Fellows. *Curr Dermatol Rep* 2015;4:134–139.

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 (16%)	-
Private Hospitals	25 (12.5%)	-
Private Clinics	13 (6.5%)	-
Private University Hospitals	10 (7.4%)	3 (1.5%)
Retired	1	

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

Procedure		S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8
		n (%)	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	Electrocauterisation	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.

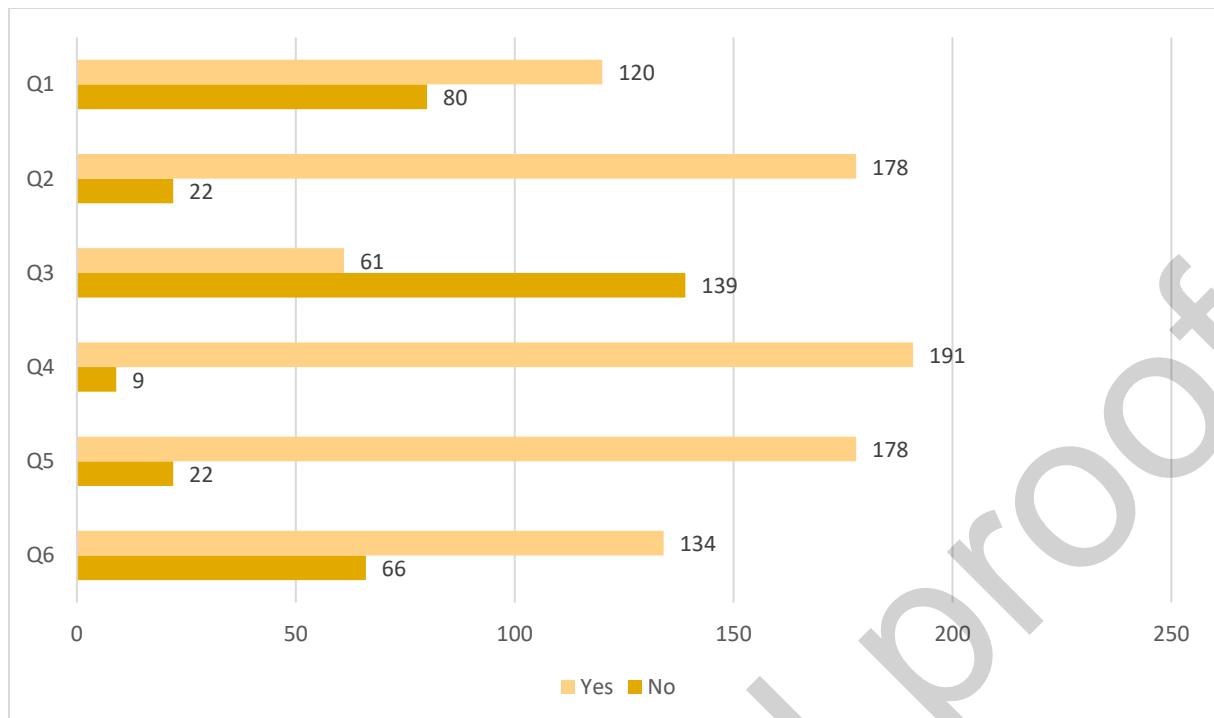


Figure 1. Bar chart demonstration of responses to six core yes/no questions shows clearly the mismatch between motivation toward dermatologic surgery and self-perceived competence.

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?*

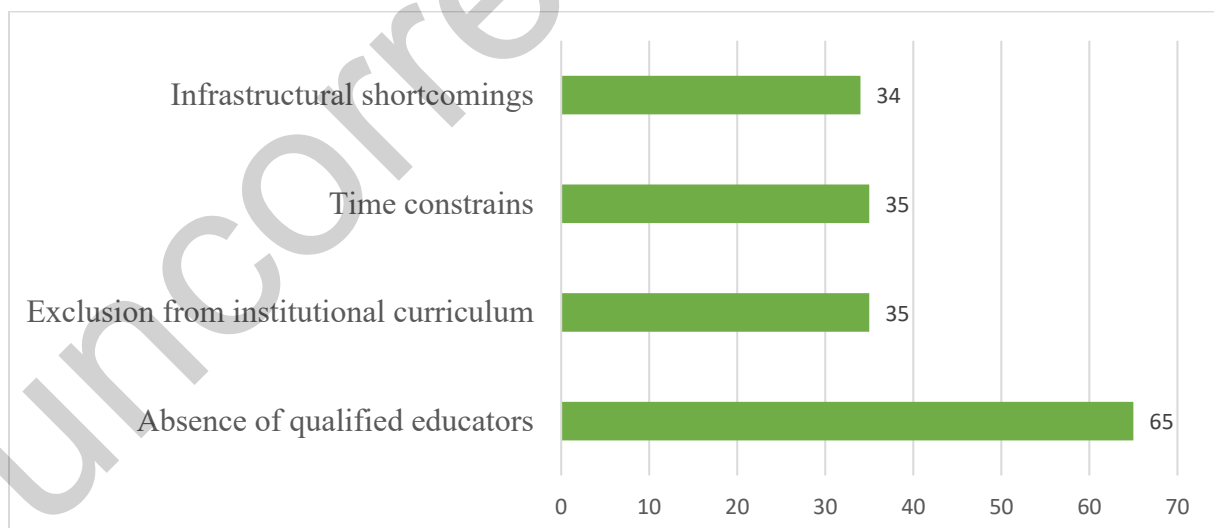


Figure 2. Distribution of the choices selected for the follow-up question to Q1 by those respondents who responded No to Q1 (n=80). Respondents were able to select more than 1 option for this question.

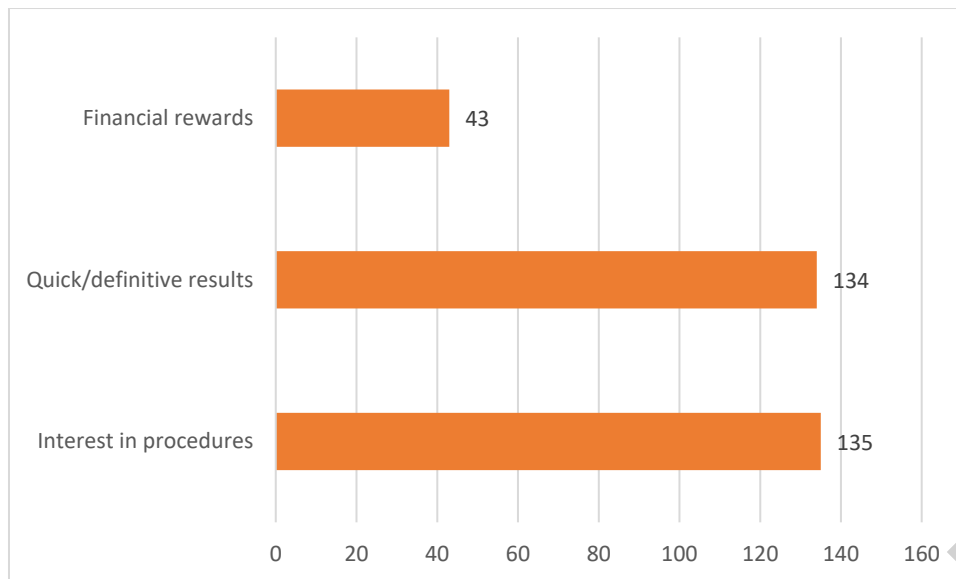


Figure 3. Motivations for practicing surgery (n=170) as follow-up question to Q5.

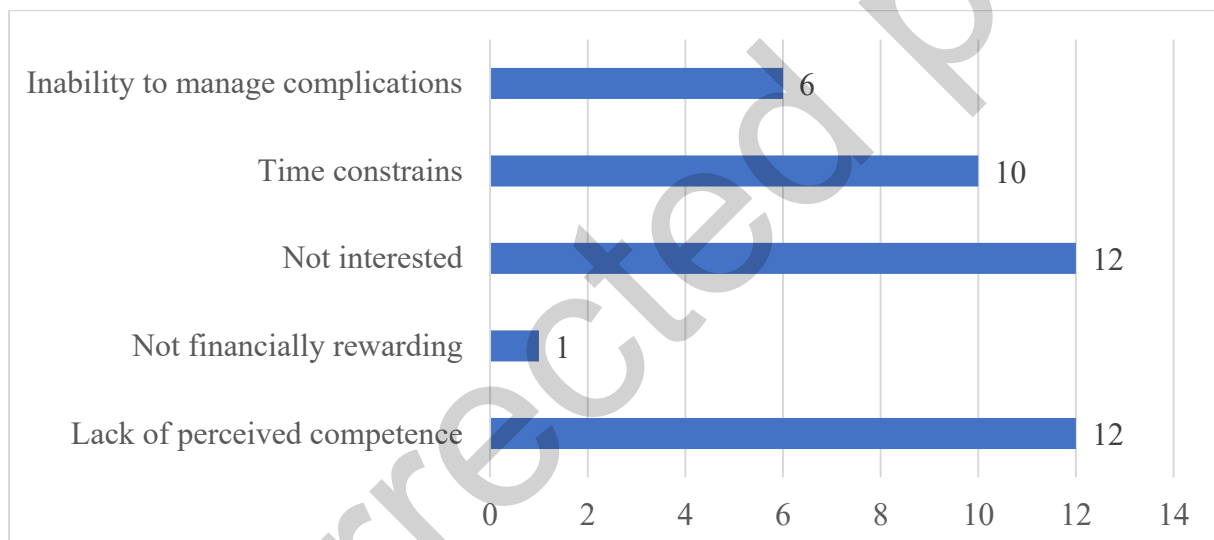


Figure 4. Answers to the follow-up question to Q5 revealed barriers to incorporating dermatologic surgery into clinical practice. (Q5: Do you currently incorporate (or intend to incorporate) dermatologic surgery into your routine clinical practice?)