

# The Importance of Scar Cosmesis across the Surgical Specialties: Factors, Perceptions, and Predispositions

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**Background:** Existing disparities in the perception of scars between patients and practitioners can translate into undesirable physical and psychological outcomes. An understanding of the determinants of surgeons' perceptions on the importance of scar cosmesis is a first step toward bridging this gap.

**Methods:** In an online survey, surgeons were asked about the extent to which various patient and technical factors affect the importance of scar cosmesis. Additional data were obtained on surgeon characteristics, including their specialty, gender, years of experience, and work sector to investigate potential relationships.

**Results:** A total of 303 responses were obtained from surgeons across six specialties. Based on the survey, the importance of scar cosmesis was rated highest among plastic surgeons and obstetricians and gynecologists, and lowest among orthopedic and vascular surgeons. Compared with surgeons in private practice, publicly employed surgeons' rating of the importance of cosmesis was lower. The patient's request for a cosmetic outcome was the most highly rated factor. Regarding the influence of patient demographics on surgeons' attitudes, scar cosmesis in young and female patients was favored in comparison with older and male patients. Factors that reduced the importance of cosmesis were emergency and late-night surgeries followed by lengthy procedures, large incisions, and busy operative lists.

**Conclusions:** These initial findings highlight a need to investigate means of fostering a more holistic, impartial approach toward scar cosmesis, as well as addressing potential workplace barriers that may prevent surgeons from seeking a more cosmetic result. Greater alignment between the priorities of surgeons and patients may manifest in objective and subjective improvements in patient's scars and well-being. (*Plast Reconstr Surg Glob Open* 2022;10:e4219; doi: [10.1097/GOX.0000000000004219](https://doi.org/10.1097/GOX.0000000000004219); Published online 22 March 2022.)

## INTRODUCTION

The appearance of a surgical scar is either a primary concern of a cosmetic procedure or an inevitable secondary outcome of surgery otherwise. For the patient, it often constitutes the only externally visible evidence of a major

life event, the prospect of which may even discourage patients from undergoing significant elective procedures.<sup>1</sup> Nevertheless, there is a tendency among practitioners to underestimate the impact of scarring, as indicated by the minimal correlation between objective and subjective scar satisfaction scales,<sup>2</sup> and the higher levels of concern among patients regarding postsurgical scarring than their surgeons.<sup>3</sup> As such, the surgeons' preoccupation with functional outcomes on the one hand may contend with the inadvertent physical and psychological outcomes of patients on the other.

While it is conceivable that these potential discrepancies reflect a prioritization of technical and operative factors as a concern for safety and efficiency, a heuristic approach to scar cosmesis may perilously extend into the

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level of patient factors, forming predispositions based on their demographics. For instance, despite reports of higher rates of scarring and greater perceptions of a displeasing cosmetic outcome among men,<sup>4</sup> scars in men are viewed as almost twice as acceptable as those in women.<sup>3</sup> Indeed, unexpressed partialities toward or against certain patient characteristics among healthcare professionals have been documented in the literature as a reflection of the wider population.<sup>5</sup> These in turn have demonstrated a relationship with reductions in the quality of care.

In addition, there is the question of whether the conceived notions on the importance of scar cosmesis are intrinsic to individual practitioners, or arise from conditioning and experience within the respective specialty. As such, variations in attitudes across surgeons of various specialties are of interest. Differences have previously been shown with regard to a measure of patient-centeredness, with surgeons being the least patient-centered among the sampled specialties.<sup>6</sup>

Given the ever increasing patient expectations on the outcomes of surgical management,<sup>7</sup> as well as the paucity of data on surgeons' perspectives, this study aimed to shed light on the factors underlying any differences in attitudes toward scar cosmesis. In the pursuit of reducing the burden of cutaneous scarring and improving both the physical and psychological outcomes of patients, the findings may serve as a preliminary step toward achieving greater alignment between patient and surgeon priorities.

## METHODOLOGY

### Survey Development

A multidisciplinary team of surgeons was involved in determining the key factors that may affect attitudes toward scar cosmesis. In light of the scarcity of previous resources, questions broadly formulated into three main sections: (1) Surgeon characteristics, such as specialty, years of practice, and work sector; (2) Patient factors, including rating and ranking scales of the perceived importance of scar cosmesis according to patient age, gender, cosmetic requests, and visibility of body parts; and (3) Technical factors, including rating of surgical factors that may reduce the importance of scar cosmesis such as emergency and trauma surgery, large incisions, lengthy procedures, late-night or on-call surgery, and a busy operative list. The questionnaire framed responses using scales (0–10) for all rating questions. Finally, responders were permitted to share any further perspectives or comments.

### Pretesting and Validity Assessments

The survey was administered to a pilot of 10 surgeons across different specialties. This was performed to optimize content validity. Participants answered the questions and commented on two aspects: the clarity and comprehensiveness of the survey, and whether the questions adequately addressed the pertinent topics at hand. No major content changes were made after the pilot study. To maximize genuine self-reporting, data collection was entirely anonymous. Further, questions were formulated to reduce the risk of acquiescence bias, social desirability

## Takeaways

**Question:** What factors affect the perceived importance of scar cosmesis across the surgical specialties?

**Findings:** In a multispecialty survey, the importance of scar cosmesis rated highest among plastic surgeons and lowest among orthopedic and vascular surgeons. Scar cosmesis was favored among young and female patients in comparison with older and male patients. However, the patient's request for a cosmetic outcome was the highest rated factor. Emergency and trauma surgery, along with late-night, lengthy procedures reduced the importance of cosmesis.

**Meaning:** These initial findings highlight surgeon's perspectives toward scar cosmesis across specialties along with the effect of patient demographics and surgical factors.

bias, extreme responses, and moderacy bias. This was done by the use of neutral questioning, complex questions, and using forced-choice questions in the form of ranking tasks. Further, the order of all questions in both the rating and ranking categories was automatically randomized in each questionnaire to eliminate order bias.

### Survey Administration

Surgeons across different specialties in the State of Kuwait were sent the electronic survey through a web-based platform (SurveyMonkey Inc, San Mateo, Calif.). The snowball/chain sampling method was used for response acquisition to maximize responses. Survey electronic links were sent in specialty-specific Whatsapp (Whatsapp, Meta Inc.) groups, the most common form of inter-worker communication in our region. Responders were encouraged to further disseminate the survey amongst their networks. All responses were voluntary, and no incentives were offered for participation in the survey.

### Statistical Analysis

Statistical analysis was performed using R (version 3.6.3). Counts and percentages were used to summarize the distribution of categorical variables. The mean  $\pm$  SD and the median/interquartile range were used to summarize the distribution of continuous normal and nonnormal variables, respectively. One-way ANOVA with post-hoc Tukey correction was used to compare the perceived average importance and rank scores based on specialty. Linear mixed modeling with post-hoc pairwise paired comparisons was used to compare the importance and ranking of different scar cosmesis attributes. Multivariate analysis was performed using linear regression analysis. Linear regression was used to assess factors associated with the average rating for various aspects of attitudes toward scar cosmesis. Independent variables include age, experience, specialty, gender, and sector. Error plots were used to visualize the analysis results. The mean and 95% confidence intervals were plotted to facilitate hypothesis testing. Means with nonoverlapping confidence intervals were statistically significant at the 0.05 level. Hypothesis testing was performed at 5% level of significance. Power analysis was performed

using “G\* Power version 3.1” based on a linear multiple regression model. The sample size of 303 achieved 99% power to detect a moderate effect size of 0.15 with nine predictors and  $\alpha = 0.05$ .

## RESULTS

### Participants

The study sample included 303 surgeons (77.6% men and 22.4% women). The average age and experience years were  $36.4 \pm 7.92$  and  $11.5 \pm 7.52$ , respectively. More than three-quarters of the respondents were working exclusively in the public sector (80.5%). Characteristics of our study sample are displayed in [Table 1](#).

### Patient Factors

Results showed that the average perceived importance of cosmesis among surgeons in general was highest for patients requesting cosmetic outcomes ( $M = 9.12$ ) ([Fig. 1](#)). (See [table 1, Supplemental Digital Content 1](#), which shows the overall perceived importance and ranking of patient factors in scar cosmesis. <http://links.lww.com/PRSGO/B976>.) This was significantly higher than all other patient factors as indicated by post-hoc pairwise comparisons ( $P < 0.05$ ). (See [table 2, Supplemental Digital Content 2](#), which shows the post-hoc pairwise comparison of patient factors affecting the importance of scar cosmesis (1–10 scale). <http://links.lww.com/PRSGO/B977>.) Older age was the lowest rated factor ( $M = 5.59$  ( $P < 0.05$ )). The average importance score was not significantly different between the following situations: younger age ( $M = 8.55$ ), visible body parts ( $M = 8.67$ ), and women ( $M = 8.79$ ). Similar results were observed when the ranking was used instead of the rating ([Fig. 2](#)). The patient request for a cosmetic outcome ranked first with an average rank of 1.87 and was significantly better than the ranking for any other option ( $P < 0.05$ ). Older age was the worst ranking category ( $M = 5.48$ ), followed by men ( $M = 5.16$ ), and the difference was statistically significant ( $\Delta = 0.3$ ,  $P < 0.05$ ).

A linear regression model was performed to assess surgeon factors (gender, years of experience, specialty, and work sector) as predictors of the perceived importance

of scar cosmesis in each patient characteristic. (See [table 3, Supplemental Digital Content 3](#), which shows the post-hoc pairwise comparison of ranking patient factors in the importance of scar cosmesis (1–6). <http://links.lww.com/PRSGO/B978>.) Results showed that the male surgeons were associated with a higher importance rating for female patients ( $B = 0.52$ ,  $P < 0.05$ ) and a lower rating for male patients ( $B = -0.85$ ,  $P < 0.01$ ). (See [table 4, Supplemental Digital Content 4](#), which shows the association between characteristics of the included respondents and the rating (1–10) of various categories. <http://links.lww.com/PRSGO/B979>.) Regarding specialty, Obstetricians and gynecologists rated old age, visible body parts, patients who request cosmesis, younger patients, and female patients higher than general surgeons ([Fig. 3](#)). The average rating provided by orthopedics was significantly lower than that of general surgeons in all situations except female patients and patients requiring a cosmetic outcome. Plastic surgeons provided a higher average importance rating for all patient factors ( $P < 0.01$ ). The average rating provided by urologists for old age and female patients was significantly lower than that provided by general surgeons. The average score provided by vascular surgeons was significantly lower than that provided by general surgeons in all six situations. Across all patient factors, additional years of experience were associated with a significant reduction in the importance of scar cosmesis ( $P < 0.05$ ). The average rating provided by surgeons working in the private sector and both sectors was higher than surgeons working exclusively in the public sector ( $P < 0.05$  in all situations).

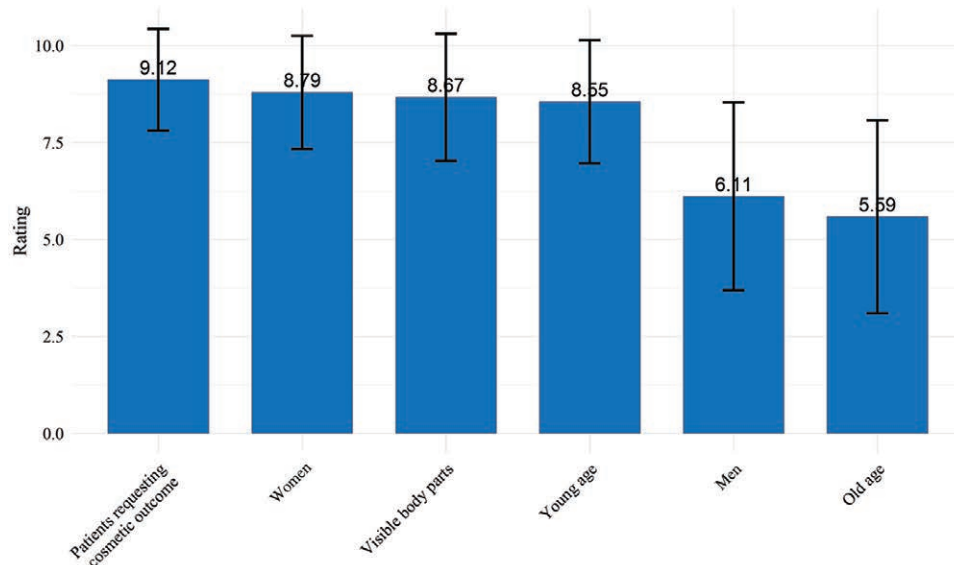
The overall scar cosmesis importance scores ([Fig. 4](#)) provided by obstetricians and gynecologists and plastic surgeons were higher than any other specialty ( $M = 9.44$  and  $9.78$ , respectively,  $P = 0.91$ ). (See [table 5, Supplemental Digital Content 5](#), which shows the importance of scar cosmesis by specialty. <http://links.lww.com/PRSGO/B980>.) The lowest importance scores were reported by vascular surgeons ( $M = 4.91$ ) and orthopedic surgeons ( $M = 5.71$ ), and the difference between these two groups was not statistically significant ( $P = 0.17$ ).

### Technical Factors

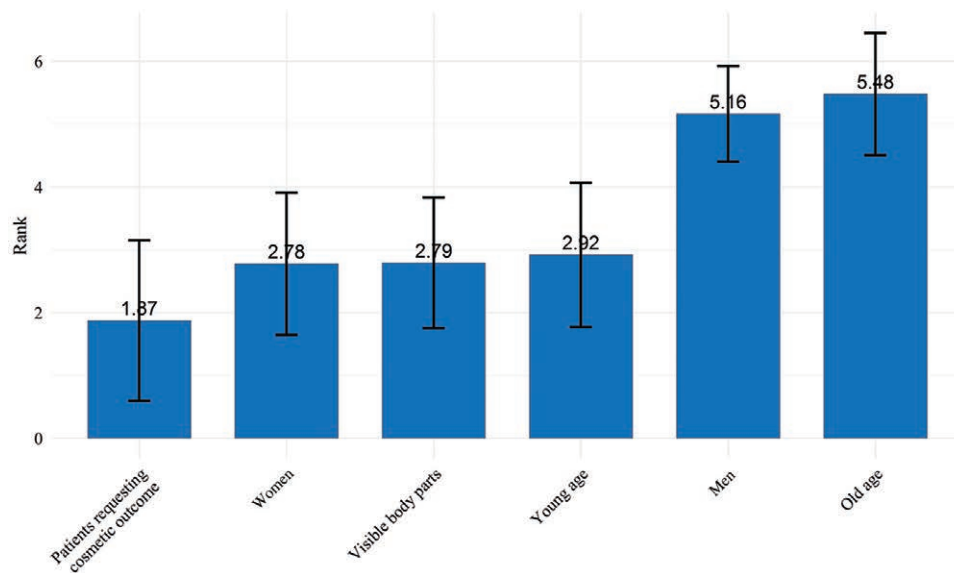
Surgeons were asked about the extent to which several factors reduce the importance of scar cosmesis ([Fig. 5](#)). Results showed that the importance of scar cosmesis is reduced the most in emergency/trauma surgeries, followed by lengthy procedures and late-night on-call surgeries. Busy operative lists and large incisions were the factors with the least perceived reduction in the importance of scar cosmesis ([Fig. 6](#)). Post-hoc pairwise comparisons of reduction in the importance of scar cosmesis are shown in [Supplemental Digital Content 6](#). (See [table, Supplemental Digital Content 6](#), which shows the factors that reduce the importance of scar cosmesis. <http://links.lww.com/PRSGO/B981>.) These trends were consistent across the specialties, with vascular and orthopedic surgeons reporting the highest overall reductions in the importance of scar cosmesis in response to the different variables, while plastic surgeons reported the lowest ([Fig. 6](#)). (See [table 7, Supplemental Digital Content 7](#), which shows the factors

**Table 1. Descriptive Statistics of the Study Sample**

Variable	[ALL] N = 303	N
Age, mean (SD)	36.4 (7.92)	303
Gender		303
Women	68 (22.4%)	
Men	235 (77.6%)	
Specialty		303
General surgery	68 (22.4%)	
Obstetrics and gynecology	48 (15.8%)	
Orthopedic surgery	73 (24.1%)	
Plastic surgery	46 (15.2%)	
Urology	35 (11.6%)	
Vascular surgery	33 (10.9%)	
Experience years, mean (SD)	11.5 (7.52)	303
Work sector		303
Both	40 (13.2%)	
Private	19 (6.27%)	
Public	244 (80.5%)	



**Fig. 1.** Bar plot for importance rating (mean  $\pm$  SD).



**Fig. 2.** Bar plot for importance ranking (mean  $\pm$  SD).

associated with the reduction of the importance of scar cosmesis. <http://links.lww.com/PRSGO/B982>.)

## DISCUSSION

The findings of this first investigation into the factors that drive the attitudes of surgeons toward scar cosmesis can be summarized in three ways. Firstly, although previously unquantified, preconceptions were uncovered against the male and elderly patient demographics. Interestingly, when compared with female surgeons, male surgeons perceived scar cosmesis as less important in male patients and more important in female patients. Similarly, years of experience were associated with a lower scar importance rating for elderly patients. Nevertheless, the patient's explicit request for a more

cosmetic outcome was held in the highest consideration across all specialties. While the ranking of patient demographics was intended to reveal potentially hidden influences, the agreement in responses between the two types of scales used in this study suggests a more explicit bias than previously foreseen. This is directly counterproductive especially when considered in light of the previously identified determinants of poor psychosocial outcomes after cosmetic surgery, which include being masculine, for instance.<sup>8</sup> However, it is unknown whether potential biases in perception can translate into objective or subjective differences in scar outcomes as a limitation of our study.

Secondly, although the specialties differ in the magnitude of their responses toward factors affecting their



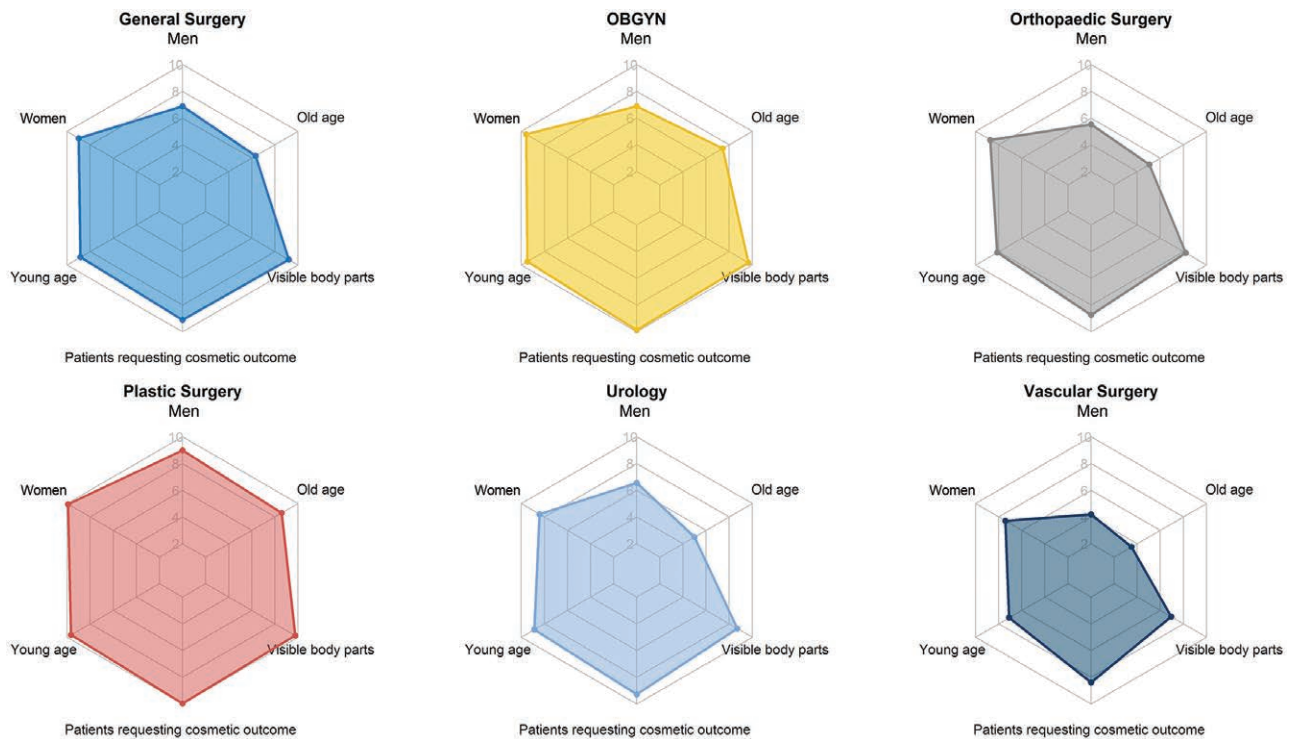


Fig. 3. Importance score for patient factors according to different specialties.

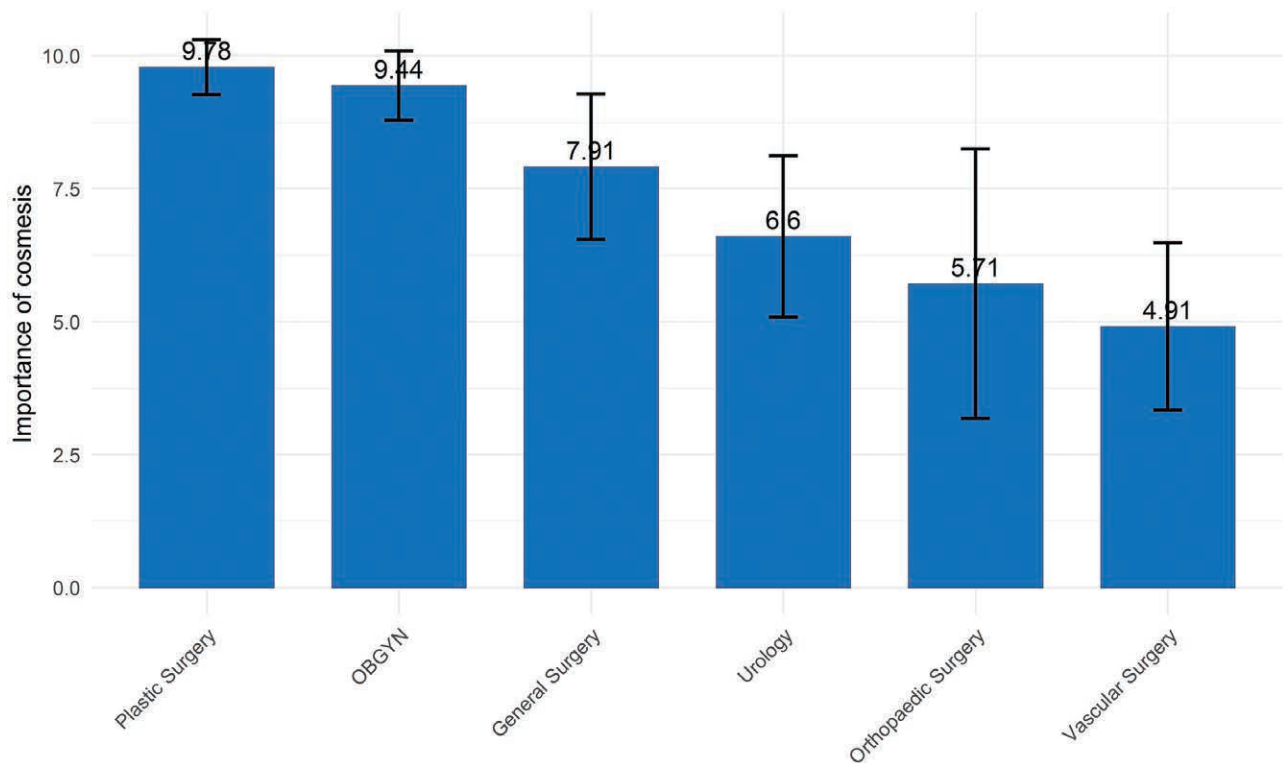
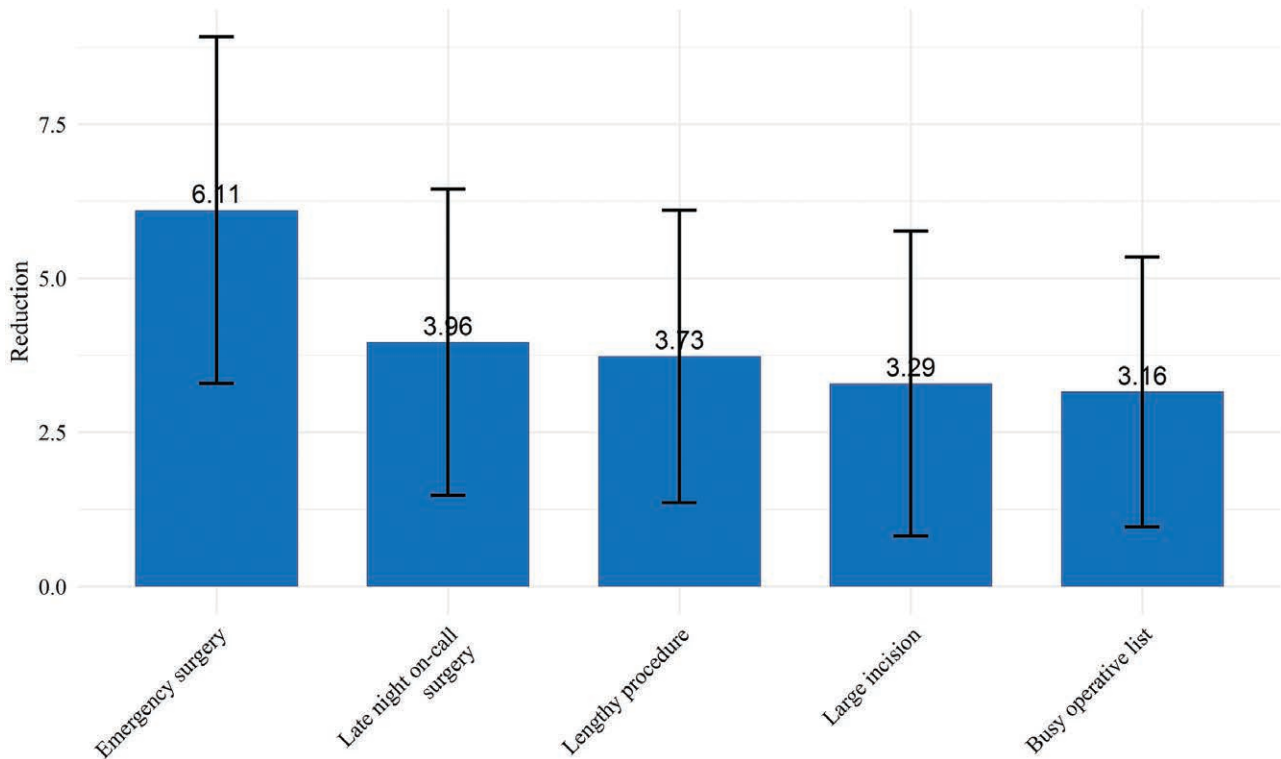


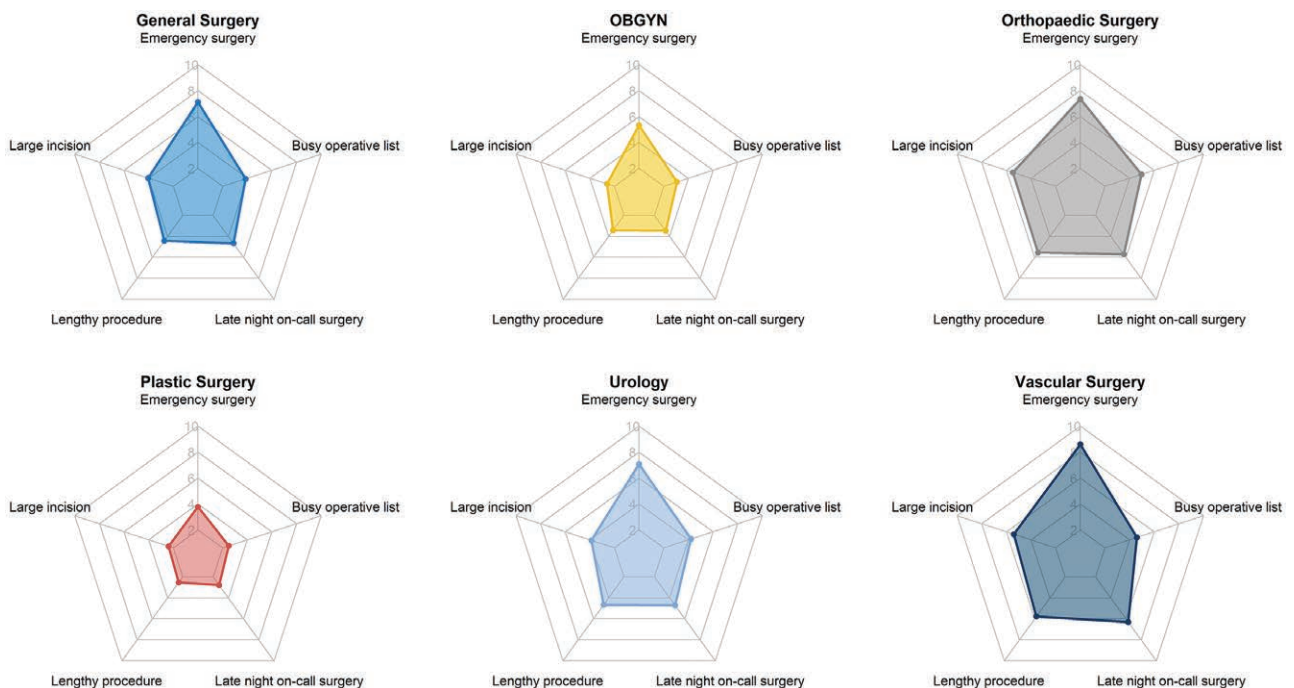
Fig. 4. Importance score by specialty (mean ± SD).

attitudes, the relative patterns of perceptions seem to be broadly consistent. This may be indicative of the male preponderance of our study population, as well as the limited

regional setting of our study as overarching determinants. As such, it may be difficult to generalize these findings to the global surgical community.



**Fig. 5.** Factors reducing the importance of scar cosmesis (lines represent 95% CI).



**Fig. 6.** Perceived reduction in the importance of scar cosmesis according to speciality.

Thirdly, the setting and the nature of the surgery appears to play a major role as indicated by the discrepancy in attitudes between public and private surgeons. Along with the potentially modifiable changes in attitudes in response to busy operative lists for instance, these findings suggest a role for institutions in adopting more

accommodating policies toward surgeons' workload to improve patient satisfaction. This reflects the longstanding concerns and demands within the general medical profession with regard to physician burnout and its association with suboptimal patient outcomes.<sup>9</sup> However, given the relatively lower prioritization of scar outcomes

for institutions and the cost–benefit considerations, a potentially more feasible solution is to incorporate the sharing of experiences via cross-specialty learning and communication. The management of patient expectations before surgery may be an additional route for improving patient satisfaction. Nevertheless, some of the differences in the results between the specialties are difficult to extricate due to the nature of the daily work in each field and their routine sites of operation. Here, plastic surgeons' responses have perhaps predictably shown the most resilience in their attitude toward scar cosmesis, which is likely suggestive of the main goals in their operative framework. Similar conclusions can be drawn from the nature of vascular and orthopedic operations, where the scar is secondary to their primary objectives. The question still remains on whether surgeons of particular predetermined attitudes are drawn to their respective fields or whether these differences arise through the years of differential training and experience.<sup>6</sup>

### CONCLUSIONS

With up to 91% of patients wishing for even slight improvements in the appearance of their scars,<sup>3</sup> there is a need for greater alignment between surgeon and patient perspectives on scar cosmesis. The attitudes of surgeons may be key toward this goal, and the necessary improvements may be achieved with emphasis on teaching strategies in training programs or potentially through enabling changes in the working conditions.

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