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The relationship between improved quality of life in patients undergoing aesthetic surgery and cosmetic procedures

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Abstract

Aesthetic procedures are increasingly performed worldwide and are associated with improved appearance satisfaction and quality of life. The success of aesthetic procedures is no longer measured solely by objective clinical outcomes but is increasingly evaluated using patient-reported outcomes. This study aimed to evaluate changes in quality of life before and after facial aesthetic surgery and non-surgical cosmetic procedures. This online survey-based pre-post analytical observational study used a structured questionnaire administered to adults aged 18 years or older who had undergone surgical or non-surgical facial cosmetic procedures within the previous 3–12 months. Quality of life was assessed using three FACE-Q domains: Appearance (23 items), Health-Related Quality of Life (10 items), and Adverse Effects (6 items), with each domain scored on a scale ranging from 0 to 100. Data were analyzed using IBM SPSS Statistics for Windows, Version 25.0. A total of 180 patients were included in the analysis (mean age, 30.26 ± 8.24 years; 53.9% underwent non-surgical procedures, and 46.1% underwent surgical procedures). Appearance scores improved from 52.48 ± 7.97 to 83.89 ± 8.02, Health-Related Quality of Life scores improved from 51.22 ± 8.74 to 84.12 ± 7.62, and Adverse Effects scores improved from 47.73 ± 8.79 to 80.92 ± 8.74 (all $p < 0.001$). Improvements in the non-surgical group were +32.23, +33.75, and +32.81 points, respectively, whereas the surgical group demonstrated improvements of +30.46, +31.90, and +33.61 points, respectively (all $p < 0.001$). Post-treatment scores were comparable between the non-surgical and surgical groups for Appearance (84.81 vs. 82.81; $p = 0.094$), Health-Related Quality of Life (85.08 vs. 82.99; $p = 0.066$), and Adverse Effects (80.49 vs. 81.41; $p = 0.485$). Overall, both surgical and non-surgical facial cosmetic procedures resulted in substantial and comparable improvements in appearance satisfaction and quality of life, supporting patient-reported outcomes as a key indicator of successful aesthetic treatment.

INTRODUCTION

Aesthetic procedures encompass a range of surgical and non-surgical interventions primarily intended to improve physical appearance and, consequently, enhance patient satisfaction and quality of life (Nayab et al., 2024; Montemurro et al., 2023). The global use of these procedures has increased rapidly. A recent international survey estimated that 34.9 million surgical and non-surgical aesthetic procedures were performed in 2023, including 15.8 million surgical and 19.1 million non-surgical procedures, representing an increase of approximately

3.4% compared with the previous year and nearly 40% over the preceding four years (Triana et al., 2024). More recent estimates suggest that nearly 38 million procedures were performed in 2024, including approximately 17.4 million surgical procedures and 20.5 million non-surgical procedures, reflecting a continued shift toward more accessible and minimally invasive aesthetic interventions within the growing medical tourism and cosmetic tourism sectors (Kadam, 2024; Azzam et al., 2025; Blount et al., 2023; Long et al., 2023; Campbell et al., 2019). The combination of the high prevalence of appearance dissatisfaction and the rapid growth in the utilization of aesthetic procedures underscores the need for robust evidence regarding patient-reported outcomes.

In response to this growing demand, the evaluation of success in aesthetic medicine has evolved substantially. The success of aesthetic procedures is no longer evaluated solely on objective clinical outcomes, such as facial symmetry, anatomical proportions, or photographic documentation, but increasingly on patients' perceptions of appearance satisfaction and postoperative quality of life. This paradigm shift has highlighted the need for valid and reliable instruments to capture the patient perspective. Consequently, patient-reported outcome measures (PROMs), such as the FACE-Q, have been developed and extensively validated to assess appearance satisfaction, health-related quality of life, psychosocial well-being, and patient experiences following aesthetic procedures. The FACE-Q is particularly valuable because it was specifically developed for patients undergoing facial aesthetic procedures and has demonstrated excellent responsiveness to clinically meaningful change (Hible et al., 2016; Klassen et al., 2015; Klassen, Cano, East, et al., 2016; Klassen, Cano, Schwitzer, et al., 2016; Weinkle et al., 2018).

A growing body of evidence, including systematic reviews and meta-analyses, has demonstrated that both surgical and non-surgical facial aesthetic procedures are consistently associated with significant improvements in appearance satisfaction and quality of life. For example, a meta-analysis by Dreher et al. concluded that aesthetic surgery produced significant improvements across multiple quality-of-life domains. Similarly, an umbrella review by Hemsworth et al. found that non-surgical aesthetic procedures consistently improved quality of life and psychological well-being. More recently, Gallo et al. conducted a comprehensive systematic review and meta-analysis demonstrating significant improvements in FACE-Q scores across multiple domains following both surgical and non-surgical facial interventions. However, the magnitude of these improvements may vary according to patient characteristics, the type of procedure performed, and the outcome measures used (Asín-Prieto et al., 2015; Button et al., 2015).

Despite these encouraging findings, previous studies have several limitations that restrict the generalizability of their results. Many have used observational pre-post study designs without an appropriate comparison group, included relatively small sample sizes, employed heterogeneous or insufficiently validated quality-of-life instruments, and lacked long-term follow-up. Consequently, firm conclusions regarding the comparative effectiveness of surgical and non-surgical approaches and the long-term sustainability of treatment benefits remain difficult to establish. Furthermore, substantial heterogeneity in study populations, procedural techniques, and outcome measures complicates direct comparisons across studies.

In Indonesia, the rapid expansion of aesthetic medicine services and medical tourism in major cities has created a clinical environment in which evidence-based decision-making is

increasingly important. The Indonesian aesthetic medicine market is valued at billions of U.S. dollars and continues to grow rapidly in cities such as Jakarta, Bali, and Surabaya, driven by increasing awareness of physical appearance and the influence of social media. Nevertheless, evidence directly comparing changes in quality of life between patients undergoing aesthetic surgery and those receiving non-surgical cosmetic procedures within the same study population remains limited. Although the recent translation and cross-cultural validation of the FACE-Q into Indonesian by Danila et al. represents an important milestone, comparative research using the validated Indonesian version of the instrument remains scarce.

This research gap is particularly important because Indonesia has distinct sociodemographic characteristics, cultural perceptions of beauty, and patterns of healthcare access that differ from those of Western countries. Most existing evidence has been generated in developed countries with predominantly White populations, limiting its generalizability to the Indonesian population. Furthermore, no previous study in Indonesia has directly compared changes in quality of life between surgical and non-surgical facial aesthetic procedures within a single, well-defined study population, making it difficult for clinicians to provide evidence-based recommendations.

The importance of this study is supported by several considerations. First, the rapid growth of the Indonesian aesthetic industry requires robust evidence to ensure safe, effective, and patient-centered clinical practice. Second, the availability of the culturally validated Indonesian version of the FACE-Q provides an opportunity to generate high-quality local evidence to inform clinical practice and healthcare policy. Third, the lack of comparative evidence regarding surgical and non-surgical procedures creates uncertainty for both clinicians and patients when making treatment decisions. Finally, the findings of this study may assist clinicians in counseling patients, establishing realistic expectations, and identifying individuals who may be at greater risk of unfavorable psychological outcomes.

The novelty of this study lies in several aspects. First, to the best of the authors' knowledge, this is the first study in Indonesia to directly compare changes in quality of life between patients undergoing surgical and non-surgical facial aesthetic procedures using the culturally validated Indonesian version of the FACE-Q. Second, the study includes a broad spectrum of interventions, encompassing surgical procedures (e.g., rhinoplasty, blepharoplasty, and facelift surgery) and non-surgical procedures (e.g., injectable treatments, energy-based devices, and skin resurfacing procedures), providing a broader perspective than previous studies that focused on a single intervention. Third, the study evaluates three FACE-Q domains—Appearance, Health-Related Quality of Life, and Adverse Effects—allowing for a more comprehensive assessment of patient-reported outcomes. Finally, by focusing specifically on the Indonesian population, this study addresses an important gap in the literature and provides culturally relevant evidence.

The primary objective of this study was to evaluate changes in quality of life before and after facial aesthetic surgery and non-surgical cosmetic procedures. Specifically, the study aimed to measure changes in scores across the three FACE-Q domains (Appearance, Health-Related Quality of Life, and Adverse Effects) before and after treatment, compare post-treatment scores between the surgical and non-surgical groups, and determine whether significant differences existed in quality-of-life improvement between the two treatment groups.

This study has important implications for clinical practice in Indonesia. The findings are expected to assist clinicians in selecting the most appropriate treatment modality based on patient characteristics and clinical indications rather than assumptions regarding the superiority of one procedure over another. In addition, the results may contribute to the development of policies and clinical standards that improve patient safety and the quality of aesthetic services. Furthermore, this study provides a foundation for future research using more rigorous study designs, such as prospective cohort studies and randomized controlled trials, to strengthen the evidence base.

The anticipated benefits of this study extend to multiple stakeholders. For clinicians, the findings may support evidence-based decision-making and facilitate realistic patient counseling. For patients, they may provide objective information to support informed treatment decisions. For researchers, the study offers a foundation for future investigations using more robust research designs. For policymakers, the findings may inform the development of standards and regulations governing aesthetic services in Indonesia. Accordingly, this study not only addresses an important knowledge gap but also offers practical implications that can be directly applied in clinical practice.

METHOD

Study Design and Setting

This analytical observational study employed a pre-post design to assess changes in quality of life among individuals undergoing non-surgical facial cosmetic procedures and facial aesthetic surgery. The study was conducted entirely online using a structured electronic questionnaire distributed via Google Forms. Data were collected from January to August 2025, with participant recruitment conducted between January and June 2025 and data analysis performed from July to August 2025.

Participants

Participants were recruited voluntarily using a non-probability consecutive sampling technique, where eligible individuals self-enrolled after viewing study invitations circulated through social media platforms, beauty communities, aesthetic clinic patient networks, and personal contacts. Eligible respondents were adults aged 18 years or older who had undergone at least one facial cosmetic procedure within the last three to twelve months, and who completed both baseline (pre-procedure) and post-procedure FACE-Q assessments. Additional inclusion criteria required that the procedure performed was categorized as either non-surgical cosmetic or facial cosmetic surgery.

Exclusion criteria included incomplete survey responses; having undergone a procedure less than three months before completing the survey; having multiple major facial procedures within the same period that could confound outcome assessment; a history of facial trauma, congenital craniofacial abnormalities, or dermatologic conditions likely to influence FACE-Q responses; active psychiatric disorders affecting response validity; and failure to provide informed consent.

Procedure Classification

Procedures were classified into two categories. **Non-surgical facial cosmetic procedures** included injectables and fillers, energy-based devices, and surface

treatments. **Facial cosmetic surgery** included aesthetic rhinoplasty, aesthetic blepharoplasty, and facelift or necklift procedures.

Data Collection

Data were obtained using a structured Google Form survey consisting of demographic questions, procedural history, and the standardized FACE-Q questionnaire. Demographic variables collected included age, gender, employment status, marital status, and educational level, while clinical variables captured the type of cosmetic procedure performed. The FACE-Q instrument assessed three domains: Appearance, Health-Related Quality of Life, and Adverse Effects.

Each FACE-Q domain comprises a different number of items and raw-score ranges: the Appearance domain contains 23 items with a total raw score range of 0--175; the Health-Related Quality of Life domain comprises 10 items with a range of 0--83; and the Adverse Effects domain contains 6 items with a range of 0--55. All raw scores were subsequently transformed into a standardized 0--100 scale, with higher scores indicating better outcomes. The use of the FACE-Q instrument in this study is supported by its previous translation and transcultural validation for the Indonesian population, ensuring that the items are culturally appropriate and conceptually equivalent to the original English version. Baseline FACE-Q scores represented the participant's condition prior to the procedure, while post-procedure scores were recorded at the time of survey completion. All respondents provided electronic informed consent before participation, and data were collected anonymously without identifiers.

Outcome Measures

The primary outcome was the change in quality-of-life scores across the three FACE-Q domains (Appearance, Health-Related Quality of Life, and Adverse Effects) before and after the procedure. Secondary outcomes included comparisons of post-procedure scores between individuals undergoing non-surgical procedures versus facial cosmetic surgery.

Statistical Analysis

Descriptive statistics summarized demographic characteristics and procedural distribution. Continuous variables were reported as mean ± standard deviation (SD), and categorical variables as frequencies (n) and percentages (%). Pre- and post-procedure comparisons within each group were evaluated using paired statistical tests, while between-group comparisons of post-procedure scores were assessed using independent sample tests. Results were presented as mean differences with 95% confidence intervals (CI), and p-values <0.05 were considered statistically significant. **All analyses were performed using IBM SPSS Statistics version 25.**

RESULTS AND DISCUSSION

Subject characteristics

A total of 180 patients were included in the study. The mean age of participants was 30.26 ± 8.24 years. Most participants were female (81.7%). A majority were employed (75.6%). In terms of marital status, 77.8% were married. Regarding educational background, 78.9% had completed a bachelor's degree or an equivalent level of education, while 21.1% reported an education level from elementary to senior high school. These demographic characteristics describe the baseline profile of the study population undergoing aesthetic surgery and cosmetic procedures (Table 1).

Table 1. Demographic characteristics

Characteristics	Mean (±SD) or frequency (%), N = 180
Age (years)	30.26 ± 8.24
Gender	
Female	147 (81.7%)
Male	33 (18.3%)
Not mentioned	0 (0.0%)
Employment status	
No	44 (24.4%)
Yes	136 (75.6%)
Marital status	
No	40 (22.2%)
Yes	140 (77.8%)
Educational status	
Elementary to Senior High School	38 (21.1%)
Bachelor's degree or equivalent	142 (78.9%)

Source: *Prepared by the authors based on primary data collected using the FACE-Q questionnaire and processed using IBM SPSS Statistics Version 25 (2025).*

Of the 180 patients, 97 (53.9%) underwent non-surgical facial cosmetic procedures and 83 (46.1%) underwent facial cosmetic surgery (Table 2). Within the non-surgical group, surface treatments were the most common (48 patients, 26.7%), followed by energy-based devices (39 patients, 21.7%) and injectables or fillers (10 patients, 5.6%). Among surgical procedures, aesthetic rhinoplasty accounted for 47 patients (26.1%), followed by face or neck-lift procedures (27 patients, 15.0%) and aesthetic blepharoplasty (9 patients, 5.0%).

Table 2. Procedure characteristics

Type of procedures	Frequency (%), N = 180
Non-surgical facial cosmetic procedures	**97 (53.9%)**
Injectables & fillers	10 (5.6%)
Energy-based devices	39 (21.7%)
Surface treatments	48 (26.7%)
Facial cosmetic surgery	**83 (46.1%)**
Aesthetic rhinoplasty	47 (26.1%)
Aesthetic blepharoplasty	9 (5.0%)
Face/neck-lift	27 (15.0%)

Source: *Prepared by the authors based on primary data collected from respondents undergoing facial aesthetic procedures and processed using IBM SPSS Statistics Version 25 (2025).*

Before undergoing procedures, the mean scores were 52.48 ± 7.97 for appearance, 51.22 ± 8.74 for health-related quality of life, and 47.73 ± 8.79 for adverse effects. After treatment, all three domains showed higher mean scores: 83.89 ± 8.02 for appearance, 84.12 ± 7.62 for health-related quality of life, and 80.92 ± 8.74 for adverse effects. These values describe the overall pre- and post-procedure quality-of-life profiles in the study population (Table 3).

Table 3. Quality of life characteristics

Type of procedures	Mean (±SD), N = 180
Before procedures/surgery	
Appearance	52.48 ± 7.97
Health-related QoL	51.22 ± 8.74
Adverse Effects	47.73 ± 8.79
After procedures/surgery	
Appearance	83.89 ± 8.02
Health-related QoL	84.12 ± 7.62
Adverse Effects	80.92 ± 8.74

Source: *Prepared by the authors based on FACE-Q assessment data analyzed using IBM SPSS Statistics Version 25 (2025).*

Changes in quality of life before and after procedures

Among patients who underwent non-surgical facial cosmetic procedures (n = 97), mean scores increased in all measured domains. Appearance improved by 32.23 points (95% CI 29.88–34.58), health-related quality of life increased by 33.75 points (95% CI 31.33–36.18), and adverse effects improved by 32.81 points (95% CI 30.27–35.36), all with p<0.001 based on the Mann-Whitney test (Table 4).

Table 4. Changes in quality of life before and after non-surgical facial cosmetic procedures

Variable	Mean (±SD), N = 97		Mean difference (95%CI)	p-value
	Before	After		
Appearance	52.48 ± 7.97	83.89 ± 8.02	+32.23 (29.88 to 34.58)	<0.001*
Health-related QoL	51.22 ± 8.74	84.12 ± 7.62	+33.75 (31.33 to 36.18)	<0.001*
Adverse Effects	47.73 ± 8.79	80.92 ± 8.74	+32.81 (30.27 to 35.36)	<0.001*

Source: *Prepared by the authors based on primary data analyzed using IBM SPSS Statistics Version 25 and FACE-Q questionnaire results (2025).*

*Statistically significant (p<0.05; two-tailed) based on bivariate analysis

For patients who received facial cosmetic surgery (n = 83), similar improvements were observed. Appearance increased by 30.46 points (95% CI 28.21–32.71), health-related quality of life increased by 31.90 points (95% CI 29.25–34.56), and adverse effects improved by 33.61 points (95% CI 30.94–36.29), also with p<0.001 based on the Mann-Whitney test (Table 5).

Table 5. Changes in quality of life before and after facial cosmetic surgery

Variable	Mean (±SD), N = 83		Mean difference (95%CI)	p-value
	Before	After		
Appearance	52.48 ± 7.97	83.89 ± 8.02	30.46 (28.21 to 32.71)	<0.001*
Health-related QoL	51.22 ± 8.74	84.12 ± 7.62	31.90 (29.25 to 34.56)	<0.001*
Adverse Effects	47.73 ± 8.79	80.92 ± 8.74	33.61 (30.94 to 36.29)	<0.001*

Source: *Prepared by the authors based on primary data analyzed using IBM SPSS Statistics Version 25 and FACE-Q questionnaire results (2025).*

Quality of life difference between non-surgical facial cosmetic procedures and facial cosmetic surgery

When comparing non-surgical facial cosmetic procedures with facial cosmetic surgery, the mean post-procedure appearance scores were 84.81 ± 8.05 and 82.81 ± 7.90, respectively, with a mean difference of 2.01 points (95% CI −0.35 to 4.36); this difference was not statistically significant (p=0.094). Health-related quality of life scores were 85.08 ± 7.41 for non-surgical procedures and 82.99 ± 7.76 for surgery, with a mean difference of 2.10 points (95% CI −0.14 to 4.33), which was also not statistically significant (p=0.066). Adverse-effects scores were 80.49 ± 8.56 for non-surgical procedures and 81.41 ± 8.97 for surgery, with a mean difference of −0.92 points (95% CI −3.50 to 1.67), likewise not statistically significant (p=0.485). These findings indicate no significant post-treatment quality of life differences between the two procedure groups (Table 6).

Table 6. The quality of life difference between the procedure/surgery

Variable	Mean (±SD), N = 180		Mean difference (95%CI)	p-value
	Aesthetic	Cosmetic		
Appearance	82.81 ± 7.90	84.81 ± 8.05	2.01 (−0.35 to 4.36)	0.094
Health-related QoL	82.99 ± 7.76	85.08 ± 7.41	2.10 (−0.14 to 4.33)	0.066

Adverse Effects	81.41 ± 8.97	80.49 ± 8.56	−0.92 (−3.50 to 1.67)	0.485

Source: *Prepared by the authors based on comparative analysis of FACE-Q scores using IBM SPSS Statistics Version 25 (2025).*

The characteristics of the subjects in this study show a profile that is very much in line with the pattern of aesthetic service users that has been reported internationally. The mean age of 30.26 years, with a female predominance, the majority employed, married, and highly educated (78.9% with at least a bachelor's degree), is consistent with the findings of a multinational survey that describes aesthetic procedure patients as primarily young to middle-aged women with relatively good socioeconomic resources.6 The composition of procedure types, namely 53.9% non-surgical facial cosmetic procedures and 46.1% facial aesthetic surgery, is nearly identical to the global distribution of non-surgical versus surgical procedures in the most recent ISAPS survey, where non-surgical procedures were slightly more dominant but both have increased sharply in the past decade.5 The predominance of aesthetic rhinoplasty and facelift/necklift in the surgical group is consistent with reports that rhinoplasty, blepharoplasty, and facial rejuvenation procedures are among the most common facial surgical procedures globally, while variations in the proportion of non-surgical procedures likely reflect local preferences, technology availability, and cost structures.13,16

This study found substantial improvements across all quality of life domains, with mean increases of approximately 30-34 points on a 0-100 scale for appearance, health-related quality of life, and side effects dimensions, in both the non-surgical and surgical procedure groups. This magnitude of change aligns with FACE-Q-based meta-analyses, where rhinoplasty was reported to provide a mean improvement of approximately 37 points on the Face Overall scale, while some other facial surgical procedures produced even larger increases in psychological and social scores.16 Furthermore, Yıldız and Selimen's prospective study also found improvements of approximately 20-30 points across various SF-36 domains after facial aesthetic and reconstructive surgery, indicating a shift from lower pre-operative quality of life to values closer to those of the general population post-procedure,17 consistent with Dreher et al.'s meta-analysis. which consistently demonstrates positive effects of aesthetic surgery on body image and quality of life.14

The substantial improvement in quality of life scores in the non-surgical cosmetic procedure group in this study suggests that minimally invasive interventions can produce subjective benefits comparable to those more commonly associated with aesthetic surgery. Quantitatively, the magnitude of these changes is comparable to the range of moderate-to-large effects reported in narrative reviews and FACE-Q-based instrument development, where shifts of approximately 20-30 points on a 0-100 scale are generally interpreted as clinically meaningful changes in appearance satisfaction and psychosocial functioning.11–13 These findings are also consistent with the umbrella review by Hemsworth et al., which concluded that a variety of non-surgical procedures consistently improve indicators of quality of life and psychological well-being, despite considerable heterogeneity in methods and instruments.18

Among patients in the facial cosmetic surgery group, the nearly identical pattern of score improvement is consistent with Dreher et al.’s meta-analysis, which showed that various aesthetic surgeries resulted in significant improvements in quality of life and body image compared with preoperative values, with effects ranging from moderate to large.14 These results are also consistent with Yıldız and Selimen's study, which reported significant

improvements in nearly all SF-36 subscales after facial aesthetic and reconstructive surgery,17 and with Luong et al.'s rhinoplasty study.19 Compared with Gallo et al.'s meta-analysis, using the FACE-Q module and reporting an average improvement of approximately thirty points on the Face Overall scale after both surgical and non-surgical interventions, the magnitude of change in this study was in a similar range, confirming that both surgical and non-surgical procedures can provide equivalent subjective benefits when performed in a relatively young, highly educated, and rigorously selected patient population.15,16 The small differences between studies are likely related to variations in the type of procedure, duration of follow-up, instruments used, and patient factors that have been shown to influence FACE-Q scores and patient-reported outcomes and should be considered in the interpretation of effects and generalization of results.

The results of this study indicate that there is no significant difference in post-treatment quality of life between the non-surgical facial cosmetic procedure and aesthetic surgery groups, with post-treatment mean scores in the high range for all domains and small intergroup mean differences. Quantitatively, the magnitude of these mean differences is much smaller than the previously recorded intragroup gains of approximately 30-34 points in each domain, thus clinically reflecting a convergence of benefits rather than superiority of one modality. This pattern aligns with the FACE-Q meta-analysis by Gallo et al., which reported a mean increase in Face Overall scores of approximately 37 points after various surgical interventions and comparable substantial improvements for non-surgical interventions, with no consistent evidence that one category systematically resulted in a higher quality of life than the other when measured by standardized patient scales.16,20 Similarly, the umbrella review by Hemsworth et al. showed that non-surgical aesthetic medical procedures consistently improved measures of quality of life and psychological well-being,18 while the meta-analysis by Dreher et al. concluded that aesthetic surgery also provided significant improvements across multiple domains of quality of life.14

The lack of intergroup differences in this study, despite the more invasive nature of the surgical procedure, can be explained by several aspects. First, the theory of goal attainment and psychosocial adaptation emphasizes that once the primary aesthetic complaint has been resolved to a threshold deemed satisfactory by the patient, the type of treatment becomes less important than achieving subjectively meaningful changes. This is supported by evidence that both rhinoplasty and non-surgical rejuvenation procedures resulted in significant improvements in the psychological and social domains of the FACE-Q, with overlapping confidence intervals. Second, a cross-sectional regression study by Gallo et al. showed that patient factors contributed more to the variation in FACE-Q scores than the type of procedure itself.15 Therefore, the small difference in post-treatment scores between groups in this study likely reflects the dominant role of patient characteristics and congruence of expectations rather than the procedure category. Third, from a methodological standpoint, the before–and-after design without randomization and the moderate sample size potentially limited the ability to detect small intergroup differences, while larger, clinically relevant differences were clearly evident in the intragroup analysis.

This study has several strengths, including the use of a validated, procedure-specific FACE-Q across three domains, a relatively large sample, and direct comparison of non-surgical and surgical facial procedures within a single study, allowing a comprehensive assessment of

quality-of-life changes across modalities. Therefore, the findings of this study strengthen the evidence that both non-surgical and surgical facial aesthetic interventions can yield similarly high post-treatment quality-of-life scores. Despite these strengths, the before-and-after design without a control group or randomization, reliance on bivariate rather than multivariable analyses, exclusive use of short-term patient-reported outcomes, and recruitment from a single, relatively homogeneous center (predominantly young, highly educated, working women undergoing facial procedures) limit causal inference and generalizability to other populations, procedure types, and healthcare settings.

CONCLUSION

This study concluded that both non-surgical and surgical facial cosmetic procedures resulted in substantial and comparable improvements in appearance, health-related quality of life, and patient-reported adverse effects, with post-treatment scores consistently remaining in the high range. Therefore, the choice of treatment modality should be based on clinical indications, patient characteristics, risk profiles, and individual preferences rather than on the assumption that one procedure is inherently superior to the other. Future studies should employ controlled or randomized study designs with longer follow-up periods, apply multivariable analyses to adjust for important covariates, and combine FACE-Q assessments with clinician-reported and objective outcome measures, ideally incorporating estimates of the minimal clinically important difference (MCID). In addition, multicenter recruitment involving more diverse patient populations and a broader range of aesthetic procedures would strengthen causal inference, enhance external validity, and improve the generalizability of the findings.

REFERENCES

Asín-Prieto, E., Rodríguez-Gascón, A., & Isla, A. (2015). Applications of the pharmacokinetic/pharmacodynamic (PK/PD) analysis of antimicrobial agents. *Journal of Infection and Chemotherapy*, *21*(5), 319–329.

Asín-Prieto, E., Rodríguez-Gascón, A., & Isla, A. (2015). Applications of the pharmacokinetic/pharmacodynamic (PK/PD) analysis of antimicrobial agents. *Journal of Infection and Chemotherapy, 21*(5), 319–329.

Azzam, D. B., Dai, Y. L., North, V. S., Callahan, A. B., Heher, K. L., Kapadia, M. K., & Vagefi, M. R. (2025). Global surveillance of public interest in cosmetic tourism for aesthetic eyelid surgery abroad: Cross-sectional infodemiology investigation of internet search trends and social media content. *JMIR Infodemiology, 5*, Article e64639. https://doi.org/10.2196/64639

Blount, T. A., Alkaelani, M. T., Koussayer, B., Amawi, Y., Mahboob, O., Le, N., Parus, A., Moffitt, J., Al Bayati, M., & Troy, J. (2023). Complications of medical tourism in aesthetic surgery: A systematic review and case series. *Plastic and Reconstructive Surgery Global Open, 11*(10S), 137–138. https://doi.org/10.1097/01.GOX.0000992616.15716.36

Button, K. S., Kounali, D., Thomas, L., Wiles, N. J., Peters, T. J., Welton, N. J., Ades, A. E., & Lewis, G. (2015). Minimal clinically important difference on the Beck Depression Inventory-II according to the patient's perspective. *Psychological Medicine, 45*(15), 3269–3279.

Campbell, C. A., Restrepo, C., Navas, G., Vergara, I., & Peluffo, L. (2019). Plastic surgery medical tourism in Colombia: A review of 658 international patients and 1,796 cosmetic surgery procedures. *Plastic and Reconstructive Surgery Global Open, 7*(5), Article

e2233. https://doi.org/10.1097/GOX.0000000000002233
Dreher, R., Blaya, C., Tenório, J. L. C., Saltz, R., Ely, P. B., & Ferrão, Y. A. (2016). Quality of life and aesthetic plastic surgery: A systematic review and meta-analysis. *Plastic and Reconstructive Surgery Global Open, 4*(9), e862.
Gallo, L., Churchill, I., Kim, P., Rae, C., Voineskos, S. H., Thoma, A., et al. (2025). Patient factors that impact FACE-Q aesthetics outcomes: An exploratory cross-sectional regression analysis. *Aesthetic Surgery Journal, 45*(6), 543–551.
Gallo, L., Kim, P., Churchill, I. F., Gallo, M., Yuan, M., Voineskos, S. H., et al. (2025). Measuring the impact of surgical and non-surgical facial cosmetic interventions using FACE-Q aesthetic module scales: A systematic review and meta-analysis. *Plastic Surgery (Oakville, Ont.), 33*(3), 403–418.
Hemsworth, B., Hemsworth, C., & Richmond, S. A. (2024). Nonsurgical medical aesthetics and patient quality of life: An umbrella review. *Aesthetic Surgery Journal Open Forum, 6*, ojae096.
Hible, B. P., Schwitzer, J., & Rossi, A. M. (2016). Assessing improvement of facial appearance and quality of life after minimally invasive cosmetic dermatology procedures using the FACE-Q scales. *Journal of Drugs in Dermatology, 15*(1), 62–68.
Kadam, D. (2024). Aesthetic plastic surgery in India is poised for exponential growth and global dominance. *Indian Journal of Plastic Surgery*. https://doi.org/10.1055/s-0044-1800876
Klassen, A. F., Cano, S. J., East, C. A., Baker, S. B., Badia, L., Schwitzer, J. A., & Pusic, A. L. (2016). Development and psychometric evaluation of the FACE-Q scales for patients undergoing rhinoplasty. *JAMA Facial Plastic Surgery, 18*(1), 27–35.
Klassen, A. F., Cano, S. J., Schwitzer, J. A., Baker, S. B., Carruthers, A., Carruthers, J., Chapas, A., & Pusic, A. L. (2016). Development and psychometric validation of the FACE-Q skin, lips, and facial rhytids appearance scales and adverse effects checklists for cosmetic procedures. *JAMA Dermatology, 152*(4), 443–451.
Klassen, A. F., Cano, S. J., Schwitzer, J. A., Scott, A. M., & Pusic, A. L. (2015). FACE-Q scales for health-related quality of life, early life impact, satisfaction with outcomes, and decision to have treatment: Development and validation. *Plastic and Reconstructive Surgery, 135*(2), 375–386.
Long, E., Valentine, L., Hernandez, A., Kim, E., Bustos Hemer, V., Weidman, A., Foppiani Mudr, J., Xun, H., Lee, B., & Lin, S. (2023). A not-so-glamorous vacation: The impact of cosmetic surgical tourism on patients and the healthcare system. *Plastic and Reconstructive Surgery Global Open, 11*(10S), 1. https://doi.org/10.1097/01.GOX.0000991836.85003.e7
Luong, K. P., Slijper, H. P., Stubenitsky, B., Hummelink, S., & Ulrich, D. J. O. (2024). Changes in patient-reported satisfaction and quality of life 6 months after rhinoplasty. *Journal of Plastic, Reconstructive & Aesthetic Surgery, 91*, 325–334.
Montemurro, P., Cheema, M., & Pellegatta, T. (2023). The correlation between the improvement in patient's quality of life and surgeon's satisfaction following primary breast augmentation: A prospective study. *Aesthetic Surgery Journal, 43*(7), 741–747. https://doi.org/10.1093/asj/sjad037
Nayab, Z., Azeem, H., Haider, S. F., Munir, S., Khan, D., Majeed, M. R., & Tahir, S. (2024). Patient satisfaction and quality of life following cosmetic surgery: A multicentre cross-sectional study: Enhancing lives: Insights into post-cosmetic surgery satisfaction and quality of life. *Developmental Medico-Life-Sciences, 1*(8), 23–28. https://doi.org/10.69750/dmls.01.08.073
Triana, L., Palacios Huatuco, R. M., Campilgio, G., & Liscano, E. (2024). Trends in surgical and nonsurgical aesthetic procedures: A 14-year analysis of the International Society of Aesthetic Plastic Surgery (ISAPS). *Aesthetic Plastic Surgery, 48*(21).

https://doi.org/10.1007/s00266-024-04260-2
Weinkle, S. H., Werschler, W. P., Teller, C. F., Sykes, J. M., Shamban, A., Rivkin, A., Narurkar,V. A., Kaminer, M. S., Dayan, S., & Cohen, J. L. (2018). Impact of comprehensive, minimally invasive, multimodal aesthetic treatment on satisfaction with facial appearance: The HARMONY study. *Aesthetic Surgery Journal, 38*(5), 540–556.
Yıldız, T., & Selimen, D. (2015). The impact of facial aesthetic and reconstructive surgeries on patients' quality of life. *Indian Journal of Surgery, 77*(Suppl. 3), 831–836.