Original Article

# Harmonizing Beauty and Function: A Comprehensive Exploration of Patient Satisfaction in Rhinoplasty

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## ABSTRACT

**Background:** Rhinoplasty has become a globally prevalent esthetic procedure, necessitating precise facial analysis and comprehensive preoperative planning for favorable postoperative outcomes. We aimed to assess patient satisfaction levels concerning nasal appearance following rhinoplasty.

**Methods:** A case series interventional study was conducted involving 52 subjects referred to Rhinoplasty Clinics of Taleghani Hospital, Tehran, Iran from Mar 2021 to Mar 2022. Patients' satisfaction levels were evaluated using a concise checklist before and three months after surgery.

**Results:** The mean age of the patients was 29.23 ± 7.26 years, with 19 (36.5%) being male. Statistically significant improvements were observed in all assessed factors, including nasal obstruction, nasal size, hump presence, nasal bridge width, nasal tip bulbosity, nasal deviation, radix, nostril asymmetry, and tip ptosis ($P < 0.001$). These findings reveal a consistent pattern of patients' satisfaction levels predominantly shifting from moderate to low across various aspects of nasal appearance post-rhinoplasty.

**Conclusion:** The study demonstrated a significant enhancement in patients' satisfaction with their nasal appearance following rhinoplasty, indicated by statistically significant changes across all assessed factors. However, certain aspects exhibit more limited enhancement.

**KEYWORDS**
Rhinoplasty; Patient Satisfaction; Aesthetic; Plastic Surgery

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## INTRODUCTION

Rhinoplasty, a surgical masterpiece aimed at the transformation and refinement of the nose's appearance, encompasses a meticulous process of reshaping the nasal framework, including bones, cartilage, and soft tissues, to achieve facial harmony and aesthetic excellence [1]. The versatility of this procedure extends to a myriad of concerns, ranging from resizing the nose to sculpting the nasal tip or bridge, correcting asymmetry, or enhancing respiratory function [2]. Notably, rhinoplasty has ascended to become one of the world's most frequently performed aesthetic surgeries, with an annual caseload surpassing 200,000, as reported by the American Society of Plastic Surgeons (ASPS) [3]. Yet, the path to successful postoperative outcomes in rhinoplasty is strewn





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with challenges, necessitating meticulous facial analysis and comprehensive preoperative planning. This transformative procedure leaves an indelible mark not only on one's facial aesthetics but also on nasal functionality, ultimately influencing the individual's quality of life (QoL) [4, 5]. To ensure post-rhinoplasty patient satisfaction, surgeons dedicate substantial time to scrutinizing facial aesthetics and conducting a thorough examination of the patient's nasal anatomy, a cornerstone of precise surgical planning [6].

While anthropometric parameters have historically guided surgical aesthetics, their general applicability has come under scrutiny [7-9]. Additionally, the dynamic nature of beauty standards becomes evident when considering a study on Italian models, underscoring the need for individualized and contemporary considerations in rhinoplasty planning [10]. Furthermore, the restoration or preservation of nasal airflow is a crucial objective in rhinoplasty [11]. Nasal obstruction is a common concern among individuals seeking revision rhinoplasty [12]. Interestingly, even in cases where rhinoplasty is primarily aesthetic, nasal function plays a pivotal role in postoperative satisfaction; studies indicate that patients experiencing postoperative nasal obstruction tend to evaluate their aesthetic outcomes less favorably [13]. Importantly, the psychological and personality traits of the patient interweave profoundly in this context [14, 15].

Patient satisfaction, inherently subjective and qualitative, serves as the lodestar for gauging the success of rhinoplasty. Nevertheless, an intricate web of factors, including gender, patient perception, and preoperative priorities, converge to shape patient satisfaction and overall surgical outcomes. Thus, we aimed to meticulously evaluate patients' satisfaction levels regarding nasal appearance following rhinoplasty.

## MATERIALS AND METHODS

### *Design*

This case series interventional study was conducted to comprehensively assess patients' satisfaction levels with respect to nasal appearance following primary rhinoplasty between March 2021 and March 2022.

### *Participants*

The study population comprised individuals who underwent primary rhinoplasty at the Rhinoplasty Clinics of Taleghani Hospital in Tehran, Iran. Inclusion criteria encompassed individuals aged 18 and above who provided informed consent. These patients originally sought treatment at the institution for nasal obstruction management and, during clinical evaluation, expressed concerns related to nasal aesthetics. Exclusion criteria included patients referred for revision rhinoplasty, those with any facial abnormalities or skin scarring on the nose, and individuals with systemic diseases (such as nasal polyps (NP), autoimmune conditions like Wegener's disease, coagulation disorders, or psychiatric illnesses including depression).

### *Data Collection*

A convenience sampling method was employed for data collection. A proficient physician gathered baseline demographic information and assessed patients' satisfaction levels. Baseline demographic data included age, sex, and body mass index (BMI). The assessment of patient satisfaction was conducted using a self-developed checklist administered one day prior to hospitalization and three months after the surgical procedure.

### *Outcome*

The primary outcome of this study was the determination of patient satisfaction levels post-rhinoplasty using a self-developed checklist. This comprehensive checklist encompassed various clinical aspects, including nasal obstruction, nasal size, presence of a hump, nasal bridge width, nasal tip bulbosity, nasal deviation, radix, nostril asymmetry, and tip ptosis.

### *Sample Size Determination*

Sample size estimation was based on a moderate effect size of 0.5, a type 1 error level of 5%, a power of 80%, and accounting for a 5% attrition rate. The final sample size was determined to be 52 subjects.



[ DOI: 10.61186/wjps.13.1.43 ]

### Ethical Considerations

This study was conducted in full compliance with ethical standards and received official approval from the research and Ethics Committee of Shahid Beheshti Medical University (SBMU), Tehran, Iran under the ethics code IR.SBMU.MSP.REC.1400.544. All participants in the study provided written informed consent, ensuring their voluntary participation and understanding of the study's objectives and procedures. Stringent measures were implemented to uphold participant confidentiality, preserving their anonymity throughout the entire research process. Furthermore, the study protocol strictly adhered to the ethical principles and guidelines delineated in the Declaration of Helsinki of 2013, which serves as a foundational framework for conducting research involving human subjects.

### Statistical Analysis

Quantitative variables were presented as mean ± standard deviation (SD), while qualitative variables were expressed as frequency (%). To assess the changes in patient satisfaction levels before and after rhinoplasty, the marginal homogeneity test, which is a generalized version of the McNemar test specifically designed for situations involving three or more levels, was employed. The resulting p-values were reported to indicate the statistical significance of the observed changes. Data analysis was conducted using STATA version 17 statistical software, with a predetermined level of statistical significance set at $P < 0.05$.

## RESULTS

A total of 52 patients undergone rhinoplasty participated in this study. The mean age of the patients was 29.23 ± 7.26 years, with 19 (36.5%) being male. The mean postoperative length of stay (LOS) was 2.33 ± 1.51 days. A summary of the baseline characteristics of the patients is presented in Table 1. Table 2 displays the comparisons of patients' satisfaction levels before and after rhinoplasty surgery. Statistically significant changes were observed in the subjects' opinions across all factors evaluated. The majority of changes in the subjects' opinions were noted to transition from the moderate to the low categories. Concerning the assessment of nasal appearance, among the 52 individuals, 36 (69.0%) experienced a shift from a moderate to a low response in the case of tip ptosis. Additionally, 26 (50.0%) individuals exhibited a transition from a moderate to a low response for other nasal attributes, including nasal obstruction, nasal hump, nasal bridge width, and nasal deviation. Moreover, there were notable changes in nostril asymmetry (25 individuals, 48.0%), nasal size (23 individuals, 44.2%), radix (23 individuals, 44.2%), nasal tip bulbosity (21 individuals, 40.3%), nostril size (21 individuals, 40.3%), and nasal projection (20 individuals, 38.4%), all shifting from moderate to low responses. In contrast, the lowest shift from a moderate to a low response was observed in nasal length, with only 9 individuals (17.3%) experiencing this change. These findings highlight a consistent pattern of patients' satisfaction levels predominantly transitioning from moderate to low across various aspects of nasal appearance following rhinoplasty. Figure 1 illustrates the ranking of the patients' Satisfaction concerning the assessment of nasal appearance.

**Table 1:** Baseline Demographic Characteristics of the Subjects

| Parameters | Mean ± SD and N (%) |
|---|---|
| **Age, years** | 29.23 ± 7.26 |
| **Length of stay (LOS), days** | 2.33 ± 1.51 |
| **Sex; Female** | 33 (63.5%) |
| **BMI, kg/m²** | 22.48 ± 2.51 |
| Normal | 42 (81.8%) |
| Overweight | 9 (17.2%) |
| Obese | 1 (2.0%) |

SD: Standard Deviation, BMI: Body Mass Index



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**Table 2:** Comparison of patients' satisfaction before and after surgery; N (%)

| Parameters | Preoperative | Postoperative | | | *P*-value * |
|---|---|---|---|---|---|
| | | Low | Moderate | High | |
| Nasal obstruction | Low | 18 (34.6) | 0 (0.0) | 0 (0.0) | <0.001 |
| | Moderate | 26 (50.0) | 2 (3.8) | 0 (0.0) | |
| | High | 4 (7.6) | 2 (3.8) | 0 (0.0) | |
| Nasal size | Low | 13 (25.0) | 0 (0.0) | 0 (0.0) | <0.001 |
| | Moderate | 23 (44.2) | 0 (0.0) | 0 (0.0) | |
| | High | 5 (9.6) | 10 (19.2) | 1 (1.9) | |
| Nasal hump | Low | 7 (13.4) | 0 (0.0) | 0 (0.0) | <0.001 |
| | Moderate | 26 (50.0) | 0 (0.0) | 0 (0.0) | |
| | High | 18 (34.6) | 1 (1.9) | 0 (0.0) | |
| Nasal bridge width | Low | 19 (36.5) | 0 (0.0) | 0 (0.0) | <0.001 |
| | Moderate | 26 (50.0) | 0 (0.0) | 0 (0.0) | |
| | High | 5 (9.6) | 2 (3.8) | 0 (0.0) | |
| Radix | Low | 24 (46.1) | 0 (0.0) | 0 (0.0) | <0.001 |
| | Moderate | 23 (44.2) | 0 (0.0) | 0 (0.0) | |
| | High | 3 (5.7) | 2 (3.8) | 0 (0.0) | |
| Nasal tip bulbosity | Low | 2 (3.8) | 0 (0.0) | 0 (0.0) | <0.001 |
| | Moderate | 21 (40.3) | 0 (0.0) | 0 (0.0) | |
| | High | 20 (38.4) | 9 (17.3) | 0 (0.0) | |
| Dissatisfaction with nasal shape | Low | 1 (1.9) | 0 (0.0) | 0 (0.0) | <0.001 |
| | Moderate | 16 (30.7) | 0 (0.0) | 0 (0.0) | |
| | High | 30 (57.6) | 5 (9.6) | 0 (0.0) | |
| Nasal deviation | Low | 13 (25.0) | 1 (1.9) | 0 (0.0) | <0.001 |
| | Moderate | 26 (50.0) | 0 (0.0) | 0 (0.0) | |
| | High | 9 (17.3) | 3 (5.7) | 0 (0.0) | |
| Nostril asymmetry | Low | 13 (25.0) | 0 (0.0) | 0 (0.0) | <0.001 |
| | Moderate | 25 (48.0) | 5 (9.6) | 0 (0.0) | |
| | High | 3 (5.7) | 6 (11.5) | 0 (0.0) | |
| Nostrils size | Low | 18 (34.6) | 0 (0.0) | 0 (0.0) | <0.001 |
| | Moderate | 21 (40.3) | 5 (9.6) | 0 (0.0) | |
| | High | 2 (3.8) | 6 (11.5) | 0 (0.0) | |
| Tip ptosis | Low | 8 (15.3) | 0 (0.0) | 0 (0.0) | <0.001 |
| | Moderate | 36 (69.2) | 0 (0.0) | 0 (0.0) | |
| | High | 7 (13.4) | 1 (1.9) | 0 (0.0) | |
| Nasal projection | Low | 22 (42.3) | 0 (0.0) | 0 (0.0) | <0.001 |
| | Moderate | 20 (38.4) | 5 (9.6) | 0 (0.0) | |
| | High | 0 (0.0) | 5 (9.6) | 0 (0.0) | |
| Nasal length | Low | 23 (44.2) | 0 (0.0) | 0 (0.0) | 0.002 |
| | Moderate | 9 (17.3) | 13 (25.0) | 0 (0.0) | |
| | High | 0 (0.0) | 3 (5.7) | 4 (7.6) | |

*Marginal homogeneity test.



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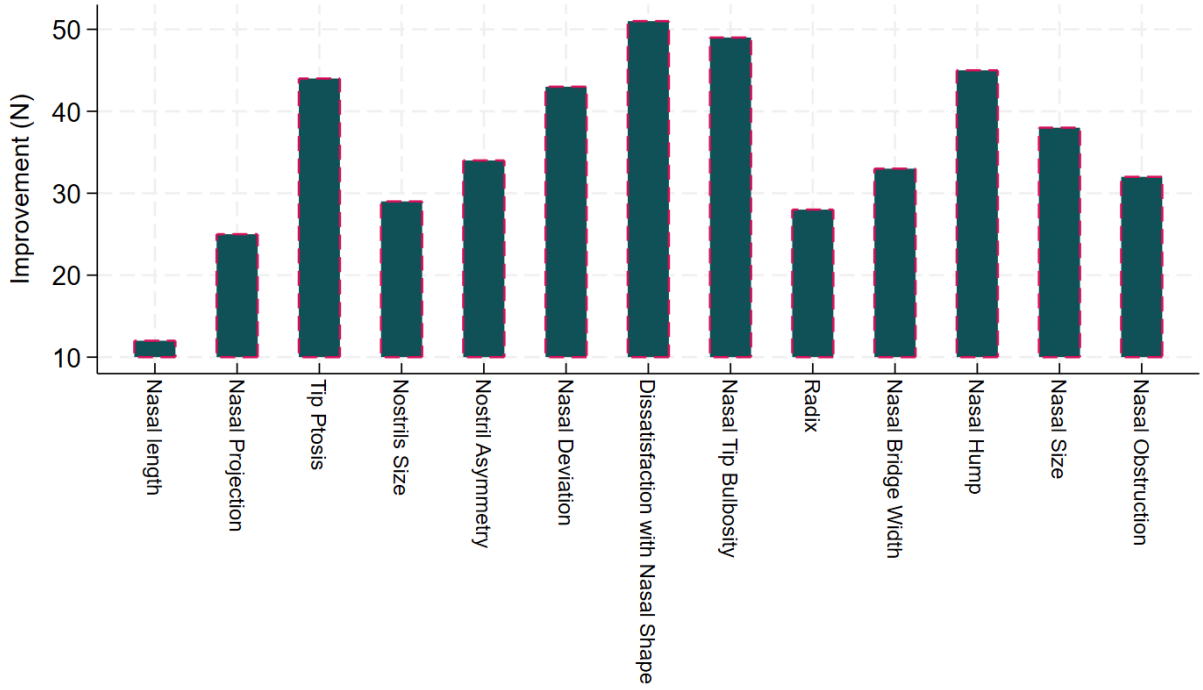


**Figure 1:** Ranking the patients' Satisfaction from high or moderate to low response (improvement) according to the factors of nasal appearance

## DISCUSSION

This study delved into the realm of patient satisfaction following rhinoplasty, aiming to assess the impact of this transformative surgical procedure comprehensively. The results offer valuable insights into the multifaceted nature of patient satisfaction and its relation to various aspects of nasal appearance. The results of this study revealed that over 90% of patients, experienced significant improvements in various aspects following rhinoplasty, including the resolution of nasal congestion, substantial reduction in nasal hump occurrences, improved nasal bridge width and nasal radix, and enhanced satisfaction with the nasal tip, visible nasal deviation, and nasal tip ptosis. However, despite these notable changes, a minority of patients still reported moderate or high dissatisfaction levels postoperatively, particularly regarding nose size, nasal tip size, nostril asymmetry, nasal projection, and nose height.

Our study findings resonate with previous research examining patient satisfaction in the context of rhinoplasty. For instance, approximately 70% of patients were very satisfied, 20% were satisfied, and a minority expressed dissatisfaction with the outcomes of rhinoplasty [16]. Recent studies employing the Rhinoplasty Outcomes Evaluation (ROE) questionnaire consistently observed significantly higher scores post-rhinoplasty, mirroring our results [17, 18]. Additionally, studies investigating patient satisfaction using the FACE-Q questionnaire and social media platforms found significant improvements in various aspects of nasal appearance, in line with our findings [19, 20]. Interestingly, our study also aligns with research that has identified discrepancies in satisfaction between surgeons and patients [21]. Furthermore, patients were significantly more satisfied with the appearance of their nose following rhinoplasty, reinforcing the robustness of our findings [22].

The findings of this study have important implications for practice in the field of rhinoplasty. Plastic surgeons should engage in thorough preoperative discussions to manage patient expectations effectively, recognizing the potential for lingering dissatisfaction with specific aspects of nasal appearance postoperatively. A patient-centered approach is crucial, tailoring procedures to address individual concerns and priorities. The absence of standardized questionnaires underscores the need for their development to facilitate accurate assessments. Open communication between surgeons and patients is essential to bridge potential disparities in satisfaction levels. Continued research



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with larger sample sizes and standardized tools is vital to validate and expand upon these findings, ultimately enhancing patient care. Postoperative support should be available to address lingering dissatisfaction and concerns. By implementing these implications, plastic surgeons can improve patient outcomes and satisfaction while offering patients a clearer understanding of the variability in post-rhinoplasty satisfaction levels.

It is imperative to emphasize the importance of conducting future studies with larger sample sizes and standardized questionnaires to validate these findings and gain a more comprehensive understanding of patient priorities and satisfaction in the context of rhinoplasty.

### *Limitations of the Study*

Limitations of the study should be acknowledged when interpreting the results. The small sample size of rhinoplasty patients may limit the statistical power and generalizability of the findings, necessitating future research with larger cohorts to validate our results. Additionally, the use of a researcher-made questionnaire, due to the absence of a standardized tool for assessing patient's satisfaction in rhinoplasty, may hinder direct comparisons with other studies. Future investigations could explore potential differences in patient and surgeon satisfaction to provide a more comprehensive perspective.

## CONCLUSION

A significant improvement in patients' satisfaction with their nasal appearance post-rhinoplasty, demonstrated by statistically significant changes across all evaluated factors. However, some aspects exhibit limited enhancement. This research provides valuable insights into the nuanced landscape of post-rhinoplasty satisfaction, acknowledging substantial improvements for most patients while highlighting that some individuals still contend with moderate to high dissatisfaction levels. These findings emphasize the importance of tailored preoperative discussions to align expectations with achievable outcomes. Additionally, our results contribute to the evolving understanding of rhinoplasty outcomes, aiding informed decision-making for both patients and practitioners.

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## CONFLICT OF INTEREST

None declared.

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