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Septorhinoplasty and Its Relevance to Health Outcomes: Functional and Psychosocial Assessment

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Abstract

Background: Septorhinoplasty aims to address both aesthetic and functional nasal concerns, *and its impact may extend across multiple dimensions of daily living*. This study evaluated the functional, psychosocial, and quality-of-life effects of septorhinoplasty *using validated patient-reported outcome measures*. **Methods:** *A prospective single-centre cohort design was employed.* Descriptive statistics *(means and standard deviations)* were calculated. The Wilcoxon matched-pairs test was used to assess *the differences between pre- and postoperative outcomes, and the Spearman rank correlation test evaluated the* associations between functional improvement and psychosocial outcomes. *A priori* sample size estimation *supported adequate statistical power* (power >95%, α <0.05). A total of 150 patients completed the NOSE questionnaire, the Stress Assessment Questionnaire, and the WHOQOL-BREF preoperatively and at the *six-month follow-up*. *Statistical analyses were performed using SPSS software*. **Results:** Postoperative evaluations demonstrated *clinically and statistically significant* improvements in nasal function (NOSE scores, $p<0.001$). Psychological outcomes showed *notable enhancements* in self-esteem and *reductions in stress-related symptoms* ($Z=8.44$, $p<0.001$). WHOQOL-BREF revealed significant gains in physical, psychological, and social domains (all $p<0.001$). *Greater functional improvement was moderately associated with better psychological and social outcomes* ($r=0.5$, $p<0.05$). **Conclusion:** Septorhinoplasty significantly

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improves not only nasal airflow and facial satisfaction but also *multiple dimensions of health-related quality of life*, including sleep, energy, social confidence, and psychological well-being. *Although limited by its single-centre design and absence of long-term follow-up*, these findings highlight the *broader functional and psychosocial relevance* of septorhinoplasty beyond cosmetic correction.

Keywords: Septorhinoplasty; Rhinoplasty; Nasal Obstruction; Quality of Life

Introduction

Septorhinoplasty, one of the most frequently performed procedures in otolaryngology and facial plastic surgery, serves a dual purpose—addressing both functional nasal obstruction and aesthetic dissatisfaction. Traditionally, surgical success has been evaluated primarily through structural and airway outcomes. However, emerging evidence emphasises that nasal function and facial appearance are integral to a person's psychosocial well-being, self-perception, and overall quality of life. Therefore, septorhinoplasty should be viewed not merely as a reconstructive or cosmetic procedure, but as a comprehensive therapeutic intervention that affects the physical, psychological, and social aspects of health (Meningaud et al., 2008; Litner et al., 2017).

Nasal obstruction—whether caused by septal deviation, turbinate hypertrophy, or nasal valve collapse—can significantly impair airflow, sleep quality, and physical performance. Such functional limitations often coexist with emotional distress, social withdrawal, and reduced self-esteem, underscoring the interdependence of somatic and psychological well-being. In this context, restoring nasal patency and aesthetic harmony through septorhinoplasty has the potential to improve multiple aspects of daily life, from physiological comfort to interpersonal confidence and emotional stability (Ishii et al., 2019; Kosins et al., 2013).

Recent advances in outcomes research have led to the adoption of validated patient-reported instruments such as the Nasal Obstruction Symptom Evaluation (NOSE) scale, the World Health Organisation Quality of Life Instrument (WHOQOL-BREF), and standardised stress and well-being questionnaires. These tools allow for comprehensive assessment of both functional recovery and subjective quality of life (Ishii et al., 2019; Kosins et al., 2013). Despite these developments, relatively few studies have systematically examined the relationship between postoperative functional gains and corresponding psychosocial improvements within the same patient cohort. Consequently, the broader implications of septorhinoplasty for psychosocial health **remain incompletely defined**.

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Despite growing recognition of septorhinoplasty's psychosocial significance, comprehensive evaluations integrating functional, psychological, and social outcomes remain limited. Prior research has often emphasised either objective nasal airflow improvement or aesthetic satisfaction without adequately exploring their interrelationship. Given that nasal function, emotional health, and social confidence are interconnected determinants of quality of life, the present study aimed to provide a multidimensional assessment of septorhinoplasty outcomes. Specifically, this study sought to evaluate outcomes across functional, psychological, and social domains, hypothesising that improvements in nasal function would correlate positively with enhanced psychosocial well-being.

The specific objectives were to (i) evaluate the procedure's impact on nasal airflow, perceived stress, and quality-of-life domains, and (ii) analyse correlations between functional recovery and psychosocial improvement. Through this holistic approach, the study aims to highlight septorhinoplasty **as a clinically relevant intervention with potential functional and psychosocial benefits**, rather than solely as a cosmetic or reconstructive procedure.

Methods

Study Design and Participants

The study was approved by the Institutional Ethics Committee (approval number: UGREC-08-25), and all participants provided written informed consent *before enrollment* in accordance with the Declaration of Helsinki. Eligible participants were adults aged 18 to 60 years presenting with functional nasal obstruction, aesthetic nasal deformity, *or both, who were scheduled for elective septorhinoplasty at a single tertiary care centre*. Exclusion criteria included previous nasal surgery, chronic inflammatory nasal disease, psychiatric disorders requiring active treatment, *systemic conditions that could affect quality-of-life assessment*, and refusal to participate in postoperative follow-up.

Study Protocol

A prospective single-centre cohort study was conducted on 150 patients undergoing septorhinoplasty. Each participant was evaluated twice: at baseline (preoperatively) and at a *standardised six-month postoperative follow-up.* Functional nasal assessment was conducted using the Nasal Obstruction Symptom Evaluation (NOSE) questionnaire, a validated instrument that quantifies perceived nasal obstruction on a 0–100 scale. Psychosocial outcomes were assessed using a Stress Assessment Questionnaire *that measured perceived stress and emotional response, and overall quality of life was evaluated using the World Health Organisation*

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Quality of Life Instrument (WHOQOL-BREF), which encompasses physical, psychological, social, and environmental domains.

All questionnaires were self-administered *in a controlled clinical setting* under supervision to ensure completeness and consistency. Septorhinoplasty procedures were performed by the same surgical team using standardised operative protocols *to reduce inter-operator variability*. Postoperative care and follow-up were *standardised according to institutional protocols*.

Sample Size Determination

A priori sample size estimation was performed using parameters for a dependent (paired) sample t-test. Based on a desired statistical power of >95%, significance level $\alpha < 0.05$, *and conservative assumptions for within-subject correlation* ($R \approx 0.2$) and standardised effect size (0.3), a minimum sample size of 147 participants was calculated. To account for potential dropouts, *slightly over-recruitment was planned,* and a total of 150 patients were included in the final analysis.

Statistical Analysis

Data were analysed using **SPSS software (version 11.0; IBM Corp., Armonk, NY, USA)**. Descriptive statistics were calculated for all variables and presented as mean ± standard deviation (SD). *Given the non-parametric distribution of outcome measures,* the Wilcoxon matched-pairs test was applied to assess pre- and postoperative differences in NOSE, stress, and WHOQOL-BREF scores. The Spearman rank correlation test (R) was used to evaluate associations between functional improvement and changes in psychological and social well-being domains.

Statistical significance was defined as $p < 0.05$ for all analyses. *Graphical summaries were used for descriptive visualisation only* to illustrate the distribution of pre- and postoperative changes across domains.

Results

Functional Outcomes

Postoperative assessments demonstrated *statistically significant and consistent* improvements in nasal airway function across all measured parameters. *For clarity, Figure-based findings are synthesised below rather than described individually.*

Nasal congestion and discharge scores decreased markedly following surgery (Figure 1). The mean congestion score declined from 2.18 ± 1.08 preoperatively to 0.87 ± 0.57 postoperatively ($Z = 8.44$, $p < 0.001$), with *a substantial shift toward low-symptom categories*. Approximately one-third

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(33%) of patients reported minimal or no nasal discharge after surgery compared with only 3% before intervention.

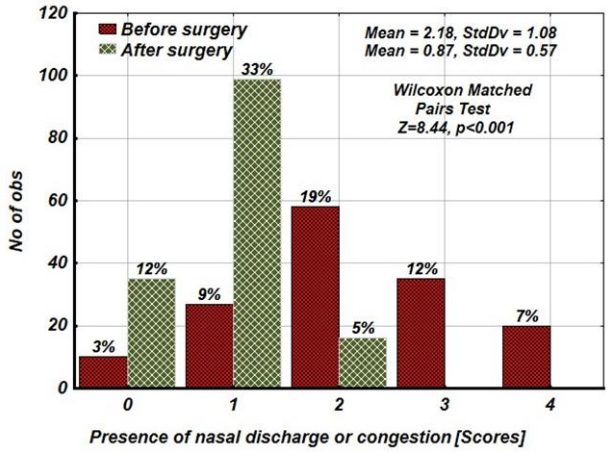

Figure 1: Nasal Congestion and Discharge Scores Before and After Septorhinoplasty

Distribution of patient-reported nasal congestion and discharge severity preoperatively and six months postoperatively. Postoperative assessment demonstrates a marked shift toward lower symptom scores, indicating significant improvement in nasal patency.

Comparable improvements were observed across additional NOSE domains (Figures 2–5). Mean scores for airway obstruction, breathing difficulty, sleep disturbance, and exertional airflow limitation all decreased significantly (all $p < 0.001$). Notably, reports of complete airway obstruction declined from 10% preoperatively to 2% postoperatively, while the proportion of patients reporting near-normal nasal patency exceeded 30%.

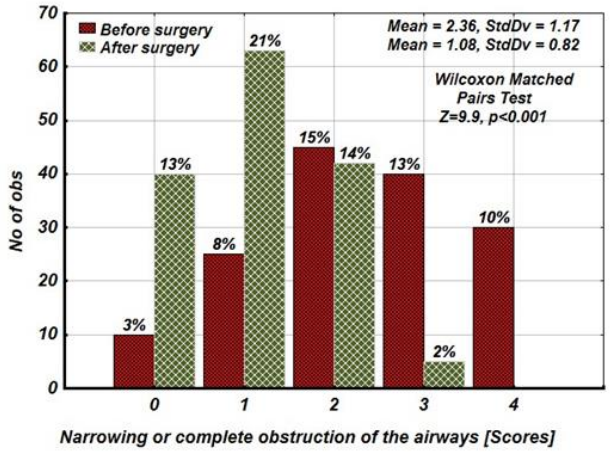

Figure 2: Changes in Airway Obstruction Severity Following Septorhinoplasty

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Comparison of preoperative and postoperative scores for nasal airway narrowing or obstruction. A substantial reduction in moderate-to-severe obstruction is observed after surgery.

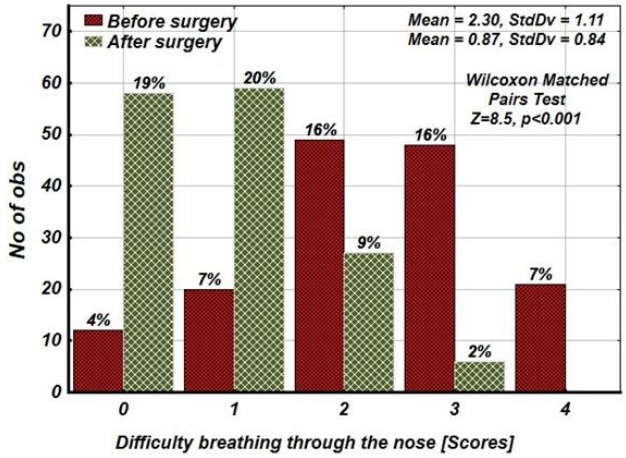

Figure 3: Subjective Difficulty in Nasal Breathing Pre- and Postoperatively

Patient-reported difficulty breathing through the nose before and after septorhinoplasty, showing significant postoperative improvement and increased prevalence of near-normal airflow.

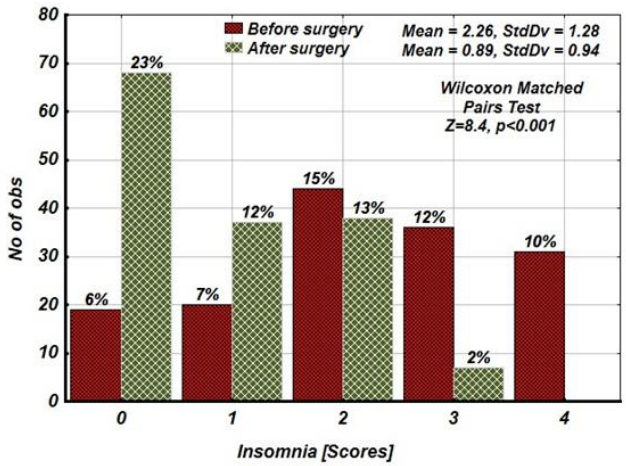

Figure 4: Sleep Disturbance (Insomnia) Scores Before and After Surgery

Changes in insomnia-related symptoms associated with nasal obstruction. Postoperative scores indicate improved sleep quality and reduced nocturnal breathing disturbance.

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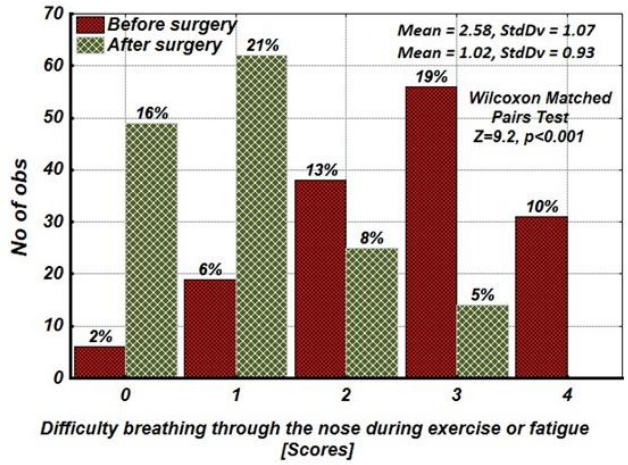

Figure 5: Nasal Breathing During Physical Exertion

Severity of nasal breathing difficulty during physical activity before and after septorhinoplasty. Postoperative results show improved exertional airflow tolerance.

Collectively, these data support septorhinoplasty as a clinically relevant procedure associated with improvements in functional and psychosocial outcomes within the studied cohort.

The magnitude and consistency of improvement across domains support a robust functional benefit, in line with previously reported postoperative improvements in nasal airway function.

Summary of NOSE Outcomes

Postoperative NOSE questionnaire analysis demonstrated *significant improvement across all assessed functional domains* (all $p < 0.001$). Patients reported reduced nasal obstruction, improved breathing comfort, better sleep quality, and decreased exertional limitation. *Rather than isolated symptom relief, results reflect a coherent pattern of functional restoration.*

Psychological and Stress-Related Outcomes

Psychological assessment using the multidimensional STRESS inventory revealed *significant postoperative reductions in perceived stress across most domains.* Of the ten evaluated subscales ($STRESS_{1–10}$), eight demonstrated statistically significant improvement (all $p < 0.05$) (Fig. 6-15). *Two domains—cognitive fatigue ($STRESS_4$) and cognitive tension ($STRESS_9$)—did not change significantly.*

Key psychological improvements are summarised below to prioritise clinically meaningful trends.

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General Stress, Emotional Tension, and Social Self-Perception (STRESS$_{1–3}$)

Postoperative scores for general stress perception, emotional tension, and social self-perception decreased significantly (Figures 6–8). STRESS$_1$ declined from 1.24 ± 0.61 to 0.94 ± 0.75 ($p < 0.001$), STRESS$_2$ from 1.08 ± 0.74 to 0.61 ± 0.71 ($p < 0.001$), and STRESS$_3$ from 1.78 ± 0.79 to 1.04 ± 0.87 ($p < 0.001$).

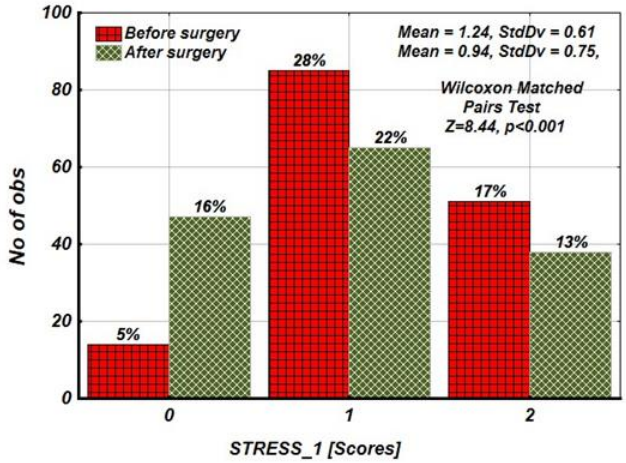

Figure 6: STRESS$_1$ – General Stress Perception

Pre- and postoperative distribution of general stress perception scores, demonstrating a significant reduction in perceived stress following surgery.

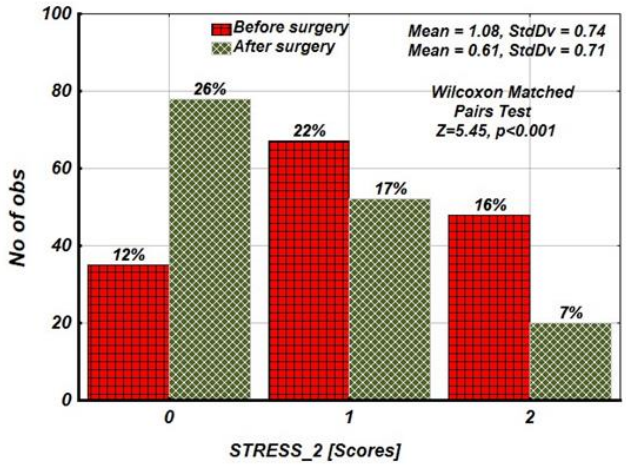

Figure 7: STRESS$_2$ – Emotional Tension and Irritability

Comparison of emotional tension and irritability scores before and after septorhinoplasty, showing a postoperative decrease in stress-related emotional reactivity.

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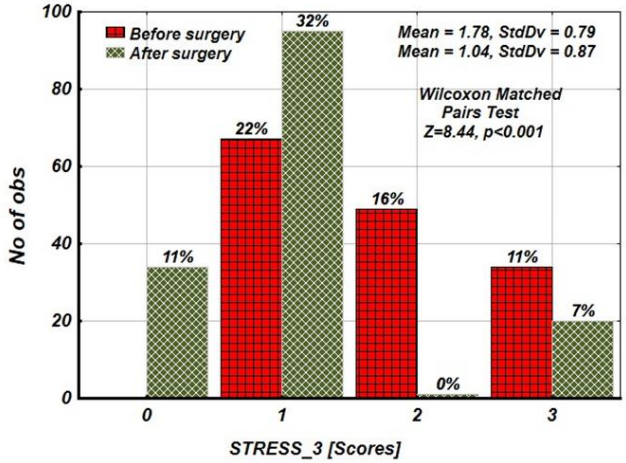

Figure 8: STRESS$_3$ – Social Anxiety and Self-Perception

Changes in social anxiety and self-perception scores, with postoperative improvement reflecting enhanced social confidence.

These reductions indicate lower perceived stress and improved social confidence, likely associated with improved nasal function and appearance rather than direct psychological causation.

Fatigue and Cognitive Strain (STRESS$_4$ and STRESS$_9$)

STRESS$_4$ (fatigue/concentration difficulties) and STRESS$_9$ (cognitive tension) did not show significant postoperative change ($p = 0.15$ and $p = 0.29$, respectively; Figures 9 and 10). *This suggests that cognitive workload and attentional strain may be relatively independent of surgical intervention and influenced by external psychosocial factors.*

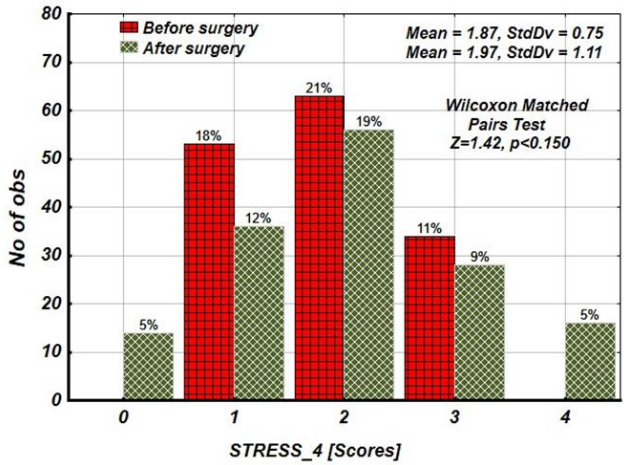

Figure 9: STRESS$_4$ – Fatigue and Concentration Difficulties

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Pre- and postoperative scores for fatigue and concentration-related stress, showing no statistically significant change following surgery.

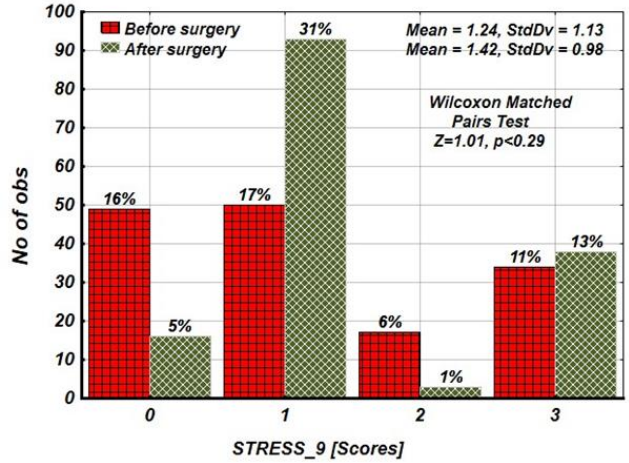

Figure 10: STRESS$_9$ – Cognitive Tension

Distribution of cognitive tension scores before and after surgery, indicating no significant postoperative change.

Positive Affect, Stress Reactivity, and Emotional Regulation (STRESS$_{5–8}$)

Postoperative analyses demonstrated *moderate but significant* increases in positive affect (STRESS$_5$; p = 0.034) and emotional regulation (STRESS$_7$; p = 0.001), alongside *a pronounced reduction in stress reactivity and rumination* (STRESS$_6$; p < 0.001) (Figures 11-13). Interpersonal sensitivity (STRESS$_8$) also declined significantly (p = 0.001) (Figure 14).

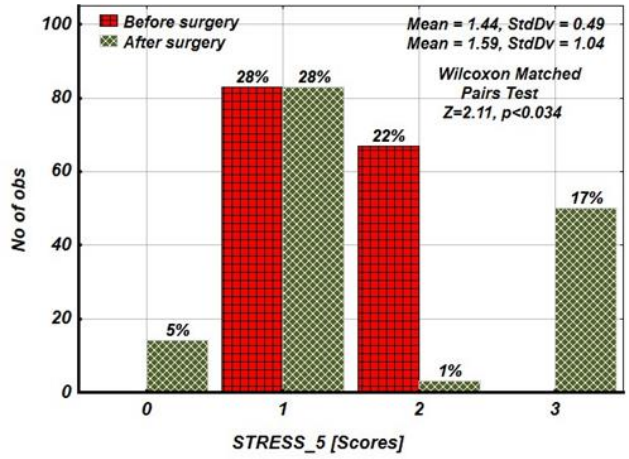

Figure 11: STRESS$_5$ – Positive Affect and Life Satisfaction

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Distribution of positive affect and life satisfaction scores before and after septorhinoplasty, demonstrating a modest but significant postoperative increase.

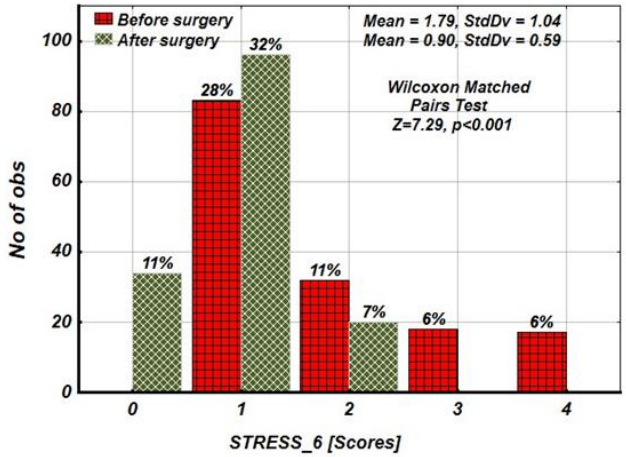

Figure 12: STRESS$_6$ – Stress Reactivity and Rumination

Changes in stress reactivity and rumination, with a marked postoperative reduction indicating improved emotional regulation.

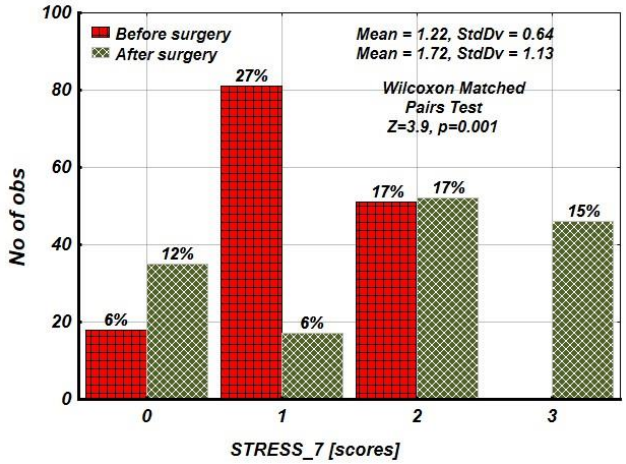

Figure 13: STRESS$_7$ – Emotional Regulation and Self-Control

Comparison of emotional regulation and self-control scores before and after surgery, showing significant postoperative improvement.

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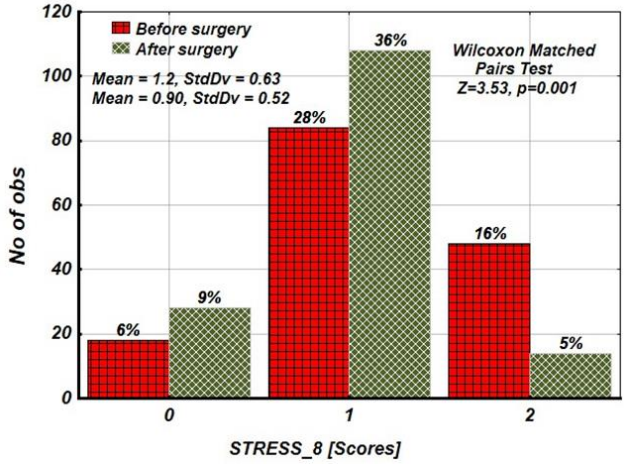

Figure 14: STRESS$_8$ – Interpersonal Sensitivity

Pre- and postoperative interpersonal sensitivity scores, demonstrating reduced hypersensitivity and improved relational comfort after septorhinoplasty.

Together, these patterns suggest improved emotional balance and coping capacity, without implying direct neuropsychological causation.

Global Stress Index (STRESS$_{10}$)

The Global Stress Index decreased significantly from 1.11 ± 0.57 to 0.72 ± 0.68 ($p < 0.001$), reflecting *an overall reduction in perceived stress across emotional and interpersonal dimensions (Figure 15)*.

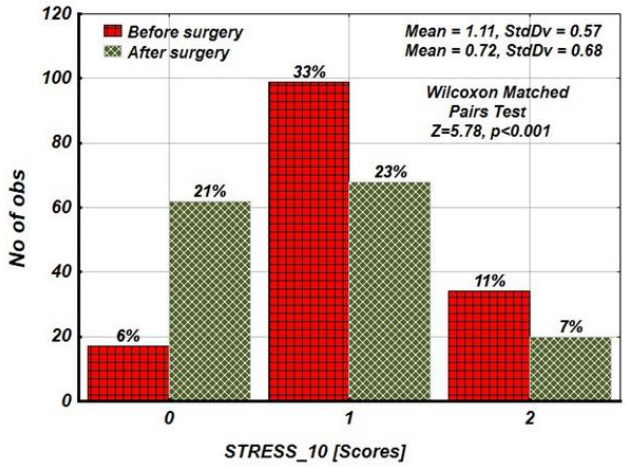

Figure 15: STRESS$_{10}$ – Global Stress Index

Overall perceived stress levels before and after septorhinoplasty, showing a significant reduction in global stress burden postoperatively.

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In summary, septorhinoplasty was associated with meaningful psychological improvement in stress perception, emotional regulation, and social confidence. Domains related to cognitive load remained unchanged, indicating areas where adjunctive interventions may be beneficial.

WHO Quality of Life (WHOQOL-BREF) Outcomes

Postoperative WHOQOL-BREF analysis demonstrated *significant enhancement in health-related quality of life,* with improvements observed in 12 of 15 items ($p < 0.05$; Table 1). *Results are synthesised by domain to avoid item-level redundancy.*

Table 1: WHOQOL-BREF Domain Scores Before and After Septorhinoplasty

WHO						
N	Mean_before	STD_before	Mean_after	STD_after	Wilcoxon_Z	Wilcoxon_p
WHO_1	3.65	0.98	4.48	0.63	5.85	<0.001
WHO_2	3.65	0.98	4.48	0.90	5.95	<0.001
WHO_3	2.80	1.41	2.13	1.24	3.75	<0.001
WHO_4	3.13	1.38	3.4	1.18	2.19	0.028
WHO_5	3.57	0.92	4.11	0.82	4.84	<0.001
WHO_6	1.37	0.56	1.34	0.54	0.44	0.65
WHO_7	3.07	0.99	4.14	0.97	7.36	<0.001
WHO_8	3.40	0.80	4.06	0.72	7.21	<0.001
WHO_9	3.16	1.08	4.17	0.91	7.67	<0.001
WHO_10	2.98	1.19	4.20	1.03	7.21	<0.001
WHO_11	3.47	0.93	3.88	0.79	4.30	<0.001
WHO_12	3.37	0.75	4.10	0.74	7.59	<0.001
WHO_13	4.02	0.60	3.78	0.95	2.53	0.01
WHO_14	3.84	0.88	3.59	1.00	2.45	0.01
WHO_15	2.65	1.14	2.43	1.10	1.64	0.09

Comparison of preoperative and six-month postoperative WHOQOL-BREF item scores. Significant improvements are observed primarily in physical, psychological, and social domains, with limited change in environmental and financial domains.

Physical and Psychological Domains

Significant postoperative gains were observed in **WHO_1 (general health perception), WHO_2 (satisfaction with health), WHO_5 (energy and fatigue), WHO_7 (positive feelings), WHO_8 (self-esteem), WHO_9 (thinking, learning, memory, and concentration),** and **WHO_{10} (body image and appearance)** (all $p < 0.001$). The largest improvements were noted in **WHO_8 (self-esteem)** and **WHO_{10} (body image and appearance),** paralleling reductions in social stress and improvements in nasal function. *While improved sleep and airflow may contribute to better concentration and vitality, these associations should be interpreted as correlational rather than causal.*

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Social Relationships and Daily Functioning

Personal relationships (**WHO_{11}**), perceived social support (**WHO_{12}**), and capacity for daily activities (**WHO_{4}**) improved significantly ($p \leq 0.028$). These findings suggest enhanced social engagement and functional independence following surgery.

Neutral or Negative Domains

Dependence on medication or medical aids (WHO_{6}) remained unchanged ($p = 0.65$). Physical safety and security (WHO_{13}), home environment (WHO_{14}), and financial resources (WHO_{15}) showed small or non-significant declines, likely reflecting temporary postoperative or economic factors rather than lasting detriment.

Integrated Outcome Summary

Across functional, psychological, and quality-of-life measures, septorhinoplasty was associated with consistent postoperative improvement. The strongest effects were observed in nasal airflow, sleep quality, **WHO_{10} (body image), WHO_{8} (self-esteem)**, emotional stress, and social confidence. Cognitive strain (**WHO_{9}-related domains**) and environmental or financial perceptions (**WHO_{13}–WHO_{15}**) showed limited change. Overall, results support septorhinoplasty as a procedure with broad functional and psychosocial benefits, while acknowledging that observed psychological improvements represent associations rather than direct causal effects.

Discussion

The present study provides a *clinical* evaluation of the functional, psychological, and quality-of-life outcomes following septorhinoplasty using a multidimensional framework. Postoperative NOSE results demonstrated substantial symptom relief, with mean congestion scores falling from 2.18 ± 1.08 to 0.87 ± 0.57 ($Z = 8.44$, $p < 0.001$). Airway obstruction decreased from 2.36 ± 1.17 to 1.08 ± 0.82 ($Z = 9.9$, $p < 0.001$), and breathing difficulty during exertion improved markedly ($Z = 9.2$, $p < 0.001$).

These findings indicate a significant enhancement of nasal patency and functional respiratory comfort, consistent with previous reports of 60–80% postoperative improvement (Rohrich & Ahmad, 2011; Rhee et al., 2014).

Postoperative NOSE scores showed a significant reduction in nasal obstruction symptoms, confirming that septorhinoplasty effectively restores nasal patency and alleviates breathing-related discomfort within the studied clinical group. Improvements were especially notable for airflow restriction, nocturnal breathing, and congestion—factors closely linked to sleep quality and daytime fatigue. These findings are consistent with previous functional rhinoplasty studies reporting notable postoperative improvements in NOSE

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indices, highlighting that improved nasal airflow may contribute to better oxygenation and sleep stability. However, causal connections regarding systemic physiological effects cannot be definitively established based on the current study design. Enhanced respiration may also support secondary benefits such as reduced fatigue and increased daily energy levels, as documented in earlier research (Rhee et al., 2014; van Egmond et al., 2016).

Parallel to functional recovery, psychological assessments indicated significant reductions in perceived stress and emotional tension across eight of ten domains of the STRESS inventory ($p < 0.05$). Significant enhancements were noted in general stress levels, emotional tension, and social self-perception, with all improvements achieving statistical significance ($p < 0.001$). Positive affect increased ($STRESS_5$, $p = 0.034$), and stress reactivity declined ($STRESS_6$, $p < 0.001$), suggesting a postoperative shift toward improved emotional balance. *These changes should be interpreted as associative rather than causative*, reflecting psychosocial adjustment following symptom relief and altered self-perception rather than direct psychological effects of surgery.

Cognitive fatigue and cognitive tension ($STRESS_4$ and $STRESS_9$) remained largely unchanged, indicating that *cognitive dimensions of stress may be less responsive to surgical intervention and more strongly influenced by external lifestyle or occupational factors*. This distinction reinforces that septorhinoplasty primarily affects emotional and social aspects of stress rather than global cognitive load. These findings are consistent with existing evidence indicating that correction of nasal deformities reduces body-image dissatisfaction and social anxiety while enhancing self-confidence and emotional well-being (Sarwer et al., 2018; Honigman et al., 2004).

Postoperative decreases in stress intensity and emotional tension may reflect the influence of improved facial harmony and reduced self-consciousness on psychological equilibrium. The reduction in rumination and stress reactivity supports the concept of somatopsychic interaction, whereby alleviation of chronic physical discomfort and appearance-related concern is associated with improved mental well-being. *Nevertheless, the present findings do not allow conclusions regarding underlying psychoneurobiological mechanisms.*

The WHOQOL-BREF analysis further demonstrated postoperative improvement across multiple quality-of-life domains, particularly in general health perception, energy, self-esteem, body image, and interpersonal relationships. The largest gains were observed in body image (WHO_{10}), self-esteem (WHO_8), and positive affect (WHO_7), highlighting the relevance of both functional and aesthetic outcomes to patient-reported well-being. Social parameters, including personal relationships (WHO_{11}) and perceived social

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support (WHO_{12}), also improved significantly, suggesting enhanced social engagement following surgery.

Twelve of fifteen WHOQOL-BREF domains showed statistically significant improvement. Domains related to safety, financial resources, and dependence on medical aids remained stable or declined slightly, *likely reflecting short-term postoperative or economic factors rather than enduring quality-of-life impairment*. Such transient fluctuations have been described previously and may normalise with longer follow-up.

The convergence of improvements across functional, psychological, and social domains supports a biopsychosocial interpretation of postoperative adaptation. Improved nasal airflow may reduce physical discomfort and sleep disturbance, while enhanced self-perception and facial satisfaction are associated with improved social confidence. *Observed correlations between NOSE, STRESS, and WHOQOL-BREF outcomes should be interpreted as interrelated patient-reported changes rather than evidence of direct causation.*

Significant gains in WHOQOL-BREF psychological and social domains—particularly self-esteem, body image, and social support—mirror findings from prior rhinoplasty cohorts, where improvements in self-perception were associated with emotional relief and social functioning (Meningaud et al., 2008; Schwitzer et al., 2015).

Although these findings suggest meaningful functional and psychosocial benefits, the present study is limited by its single-centre design, absence of a control group, and relatively short follow-up period. Consequently, conclusions regarding population-level impact or long-term outcomes should be drawn cautiously. *Rather than positioning septorhinoplasty as a public health intervention, the present results support its relevance as a clinical procedure with measurable functional and psychosocial benefits at the individual patient level.* Routine incorporation of validated psychometric assessment may enhance patient-centred counselling, expectation management, and postoperative evaluation.

In this context, septorhinoplasty functions as both a reconstructive and psychosocially relevant clinical intervention. *The observed improvements highlight the interdependence of physical function and psychological well-being within a clinical setting*, aligning with contemporary otolaryngologic and reconstructive practice. While broader public health implications remain speculative, the findings reinforce the value of septorhinoplasty in improving patient-reported quality of life when appropriately indicated.

Clinical Implications

The present findings underscore the importance of viewing septorhinoplasty not merely as an aesthetic procedure but as a clinically

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relevant intervention with potential functional and psychosocial benefits. Septorhinoplasty can restore functional breathing, *be associated with* reduced stress, and support psychosocial rehabilitation at the individual patient level. Routine pre- and postoperative evaluation using standardised tools such as the NOSE, *STRESS*, and WHOQOL-BREF scales enables a comprehensive understanding of patient-reported outcomes and facilitates evidence-based patient counselling within clinical practice.

Furthermore, the inclusion of psychological assessment as part of surgical planning may aid in identifying individuals at risk of postoperative dissatisfaction and in tailoring perioperative support to optimise holistic recovery, without implying that surgery alone addresses all psychosocial determinants.

Limitations

Several limitations warrant acknowledgement. First, the six-month follow-up, though sufficient to capture early postoperative adaptation, may not fully represent long-term psychosocial stabilisation. Second, self-reported outcome measures are inherently subjective and may be influenced by expectancy effects or social desirability bias. Third, the sample comprised individuals undergoing elective surgery at a single clinical centre, without a control group, which may limit generalisability across broader demographic and cultural contexts. Future longitudinal and multicentric studies incorporating objective airflow measurements (e.g., rhinomanometry) and psychometric follow-up beyond one year are recommended to confirm the durability and scope of these benefits (Kosins et al., 2013; van Egmond et al., 2016).

Conclusion

Septorhinoplasty is associated with significant improvements in nasal airflow, psychological well-being, and health-related quality of life *within the studied cohort*. Functional recovery *was accompanied by* reductions in perceived stress and *improvements in* self-esteem, social confidence, and vitality. These outcomes support septorhinoplasty's role as a functional procedure with meaningful psychosocial relevance, **while acknowledging that broader public health implications and long-term effects require confirmation through controlled, multicentre, and longitudinal studies** (Rohrich & Ahmad, 2011; Meningaud et al., 2008; Litner et al., 2017).

Declaration for Human Participants: This study was reviewed and approved by the Research Ethics Committee of the School of Health Sciences, University of Georgia, Tbilisi, Georgia (approval number UGREC-08-25). All participants were fully informed about the purpose, procedures, and

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confidentiality principles of the research, and each provided written informed consent prior to inclusion. The conduct of the study complied with institutional ethical requirements and strictly adhered to the principles of the Declaration of Helsinki for ethical medical and human research.

Conflict of Interest: The author reported no conflict of interest.

Data Availability: All data are included in the content of the paper.

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