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Early Psychological and Quality-of-Life Outcomes After Rhinoplasty: A Prospective Study Across Demographic Subgroups

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ABSTRACT

Background: Rhinoplasty has evolved beyond the correction of nasal structure to encompass improvements in psychological well-being and self-perception. This prospective study evaluated the impact of primary open rhinoplasty on self-esteem and perceived quality of life and examined whether these effects differed across demographic variables, including age, sex, marital status, education, and income.

Methods: Sixty-seven adult patients (27 males and 40 females, aged 18-50 years) who underwent primary open rhinoplasty at a tertiary care otorhinolaryngology clinic were assessed using the Rosenberg Self-Esteem Scale and the State Self-Esteem Scale (SSES) before surgery and at three months after the procedure. Quality of life was evaluated using the Glasgow Benefit Inventory (GBI).

Results: Both measures of self-esteem showed statistically significant improvement three months after surgery ($P < .05$), indicating enhanced confidence and self-perception. The mean GBI score demonstrated an overall positive perceived benefit. No statistically significant differences in psychological improvement were observed across demographic subgroups.

Conclusion: These findings suggest that rhinoplasty contributes meaningfully to self-esteem and perceived quality of life. The lack of significant differences among demographic subgroups indicates that these psychosocial benefits are not confined to specific patient characteristics.

Keywords: Patient satisfaction, psychosocial outcomes, quality of life, rhinoplasty, self-esteem

Introduction

Rhinoplasty is among the most commonly performed aesthetic surgical procedures worldwide, intended not only to improve nasal appearance and function but also to promote psychosocial well-being. Beyond its functional and aesthetic outcomes, rhinoplasty has a notable impact on individuals' self-perception. Previous studies have demonstrated that rhinoplasty can lead to psychological improvements in body image, anxiety, and functional capacity among patients undergoing the procedure.[1] However, these psychosocial outcomes may vary according to individual demographic and socioeconomic characteristics.

Self-esteem and self-confidence are key psychological constructs that reflect an individual's evaluation of self-worth and perceived social competence. The Rosenberg Self-Esteem Scale (RSES) and the State Self-Esteem Scale (SSES) are widely validated instruments used to assess these constructs in clinical and psychosocial research.[2,3] Additionally, the Glasgow Benefit Inventory (GBI) is commonly employed to evaluate patients' perceived benefit and quality-of-life changes following surgical interventions.[4] They provide objective measures to quantify the psychological impact of treatment.

Although several studies have examined changes in patients' psychological well-being following rhinoplasty,[5] the influence of demographic factors such as age, gender, education level, marital status, and income on these outcomes remains limited. Understanding whether certain subgroups experience greater psychosocial benefit could offer valuable guidance for preoperative counseling and postoperative patient management. Therefore, this study evaluated changes in self-esteem, self-confidence, and quality of life after rhinoplasty using validated

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instruments, and explored whether these outcomes were influenced by demographic characteristics.

Material and Methods

This prospective self-controlled cohort study included 67 adult patients (27 males and 40 females), aged 18-50 years, who were consecutively admitted to the Otorhinolaryngology Clinic of a tertiary state hospital for primary rhinoplasty between August 2023 and July 2025. The study was conducted in accordance with the principles of the Helsinki Declaration. Written informed consent was obtained from all participants prior to enrollment, and the study protocol was approved by the institutional ethics committee of Sisli Hamidiye Etfal Training and Research Hopital (Approval number: 4037, Date: August 15, 2023). Each participant served as their own control, enabling within-subject comparisons of preoperative and postoperative psychological outcomes.

Patients with a history of psychiatric disorders (including obsessive–compulsive disorder, major depressive disorder, or other mental illnesses), use of psychiatric medication, drug abuse, congenital craniofacial anomalies, nasal tissue defects or tumors requiring reconstructive surgery, prior rhinoplasty, unrealistic expectations regarding surgical outcomes, or insufficient education to comprehend the assessment tools were excluded from the study.

Sociodemographic data including age, gender, marital status, education level, and monthly income were recorded for all participants. A detailed preoperative nasal examination including nasal endoscopy was performed in every case to assess the degree of obstruction. When indicated, paranasal sinus computed tomography (CT) was also obtained.

All rhinoplasty procedures were performed under general anesthesia using the open rhinoplasty technique by two otorhinolaryngologists with comparable surgical experience, both of whom were staff members of the same department where the study was conducted. To minimize surgeon-related bias, all operations adhered to a standardized surgical protocol and postoperative care regimen. Sutures and nasal casts were removed on postoperative day 10, and internal nasal splints (standard silicone splints) were removed on day 7. The nasal dorsum was taped for two weeks postoperatively, and patients were followed with monthly postoperative visits.

Participants were followed prospectively, and psychometric evaluations were administered at predefined intervals—preoperatively and at the third postoperative month—using the RSES and SSES. Additionally, the GBI was administered postoperatively to assess patients' perceived quality-of-life benefits after surgery.

For statistical evaluation, changes in RSES and SSES scores before and after surgery were calculated for each demographic subgroup—including age (at and below 25 years vs. above 25 years), sex (male/female), education level (high school or below vs. university or higher), marital status (single/married), and monthly income (at and below national monthly minimum wage vs. above the minimum wage). The postoperative mean GBI scores were also compared across the same subgroups. All data were analyzed statistically as described in the Statistical Analysis section.

Main Points

- Rhinoplasty leads to significant improvements in self-esteem and state self-esteem in the early postoperative period.
- Postoperative quality of life demonstrates a generally positive perceived benefit.
- Psychological improvements and perceived benefit after rhinoplasty are not significantly influenced by age, sex, marital status, education level, or income.
- These findings indicate that the psychosocial effects of rhinoplasty are not limited to specific social or demographic groups.

Assessment Tools

The psychosocial outcomes of rhinoplasty were evaluated using three validated instruments:

1. Rosenberg Self-Esteem Scale

A widely used self-report measure assessing global self-esteem, consisting of 10 questions scored on a 4-point Likert scale ranging from "strongly agree" to "strongly disagree." The maximum score is 30, and scores equal to or below 15 are associated with low self-esteem.

2. State Self-Esteem Scale

This 20-item scale evaluates temporary fluctuations in self-esteem, assessing performance, social, and appearance-related self-esteem domains. Scores range from 20 to 100, with higher scores reflecting greater state self-esteem.

3. Glasgow Benefit Inventory

An 18-item questionnaire designed to measure postoperative quality-of-life benefits following interventions (here rhinoplasty). Scores range from −100 (maximal deterioration) through 0 (no change) to +100 (maximal improvement), with positive scores indicating perceived benefit.

All assessments were administered preoperatively and at the third postoperative month, except for the GBI, which was applied only postoperatively. Subgroup analyses were performed according to age, sex, marital status, education level, and monthly income to examine differential effects on self-esteem and perceived surgical benefit.

Statistical Analysis

The sample size for the study was calculated using G*Power (v.3.1.9.4). All statistical analyses were performed using IBM SPSS Statistics software (version 25, IBM Corp., Armonk, NY, USA). Descriptive statistics were expressed as mean ± standard deviation (SD), minimum, and maximum values for continuous variables, and as frequencies and percentages for categorical variables. Normality of the continuous data was assessed using the Shapiro–Wilk test.

For normally distributed continuous variables, comparisons between independent groups were performed using the independent samples *t* test, whereas the Mann–Whitney *U*-test was used for non-normally distributed variables. Within-subject comparisons of preoperative and postoperative RSES

and SSES scores were conducted using the Wilcoxon signed-rank test. Associations between categorical variables were analyzed using the chi-square test.

All statistical tests were two-tailed, and a *P* value < .05 was considered statistically significant.

Results

A total of 67 participants aged between 18 and 50 years were included in the study, with a mean age of 27.7 ± 8.7 years. Of these, 52.2% were ≤25 years old and 47.8% were older than 25 years. In terms of gender, 40.3% were male and 59.7% were female. Regarding marital status, 70.1% of the participants were single and 29.9% were married. Educationally, 74.6% had a university degree or higher, while 25.4% had less than a university-level education. Considering income levels, 64.2% reported a monthly income at or below the national minimum wage, whereas 35.8% reported an income above this threshold.

Overall Results

Preoperative Rosenberg Self-Esteem Scale (RSES) scores ranged from 9 to 30, with a mean of 22.8 ± 5.1. Postoperatively, scores ranged from 14 to 30, with a mean of 25.2 ± 4.6. The mean difference between pre- and postoperative RSES scores was 2.7 ± 3.4. An increase in self-esteem was observed in 74.6% of participants, no change in 17.9%, and a decrease in 7.5%. The mean postoperative RSES score was significantly higher than the preoperative score (*P* < .001). Similarly, preoperative SSES scores ranged from 47 to 96 (mean 75.6 ± 11.8), while postoperative scores ranged from 52 to 100 (mean 80.4 ± 11.9). The mean difference was 4.8 ± 9.3, with 74.6% of participants showing an increase, 11.9% showing no change, and 13.4% showing a decrease. The postoperative SSES scores were significantly higher than the preoperative scores (*P* < .001). Postoperative GBI scores ranged from -36 to 100, with a mean of 45.3 ± 28.7, indicating a generally positive perceived benefit following surgery.

Sex

In both male and female participants, postoperative RSES scores showed a statistically significant increase compared with preoperative scores (*P* < .001). Similarly, postoperative SSES scores significantly increased in both genders (*P* < .001). Comparisons of pre- and postoperative mean RSES, SSES, and GBI scores between male and female participants are summarized in Table 1.

Age

Among participants aged ≤25 years, postoperative RSES scores showed a significant increase compared to preoperative values (*P* = .001). A similar significant improvement was observed in participants aged >25 years (*P* < .001). For the

Table 1. Comparison of Pre- and Postoperative RSES and SSES Scores and Postoperative GBI Scores Between Male and Female Patients

	Male (n = 27)		Female (n = 40)		
Sex	**Mean ± SD n (%)**	**Median**	**Mean ± SD n (%)**	**Median**	***P***
RSES Score					
Preoperative	23 ± 5.1	24	22.7 ± 5.1	23.5	.78[m]
Postoperative	25.9 ± 4.2	28	24.8 ± 4.9	26.5	.39[m]
Difference	3.5 ± 3.5	3	2.1 ± 3.2	2	.27[m]
Intra-group *P*value	< .001[w]		< .001[w]		
Change in RSES Score					
Increase	22 (81.5%)		28 (70%)		.50[x]
Same	4 (14.8%)		8 (20%)		
Decrease	1 (3.7%)		4 (10%)		
SSES Score					
Preoperative	74.2 ± 11.5	76	76.6 ± 12.1	78.5	.36[m]
Postoperative	78.3 ± 11.9	80	81.8 ± 11.9	85	.15[m]
Difference	4.1 ± 9.7	4	5.3 ± 9.2	4	.69[m]
Intra-group *P*value	< .001[w]		< .001[w]		
Change in SSES Score					
Increase	20 (74.1%)		30 (75%)		.95[x]
Same	3 (11.1%)		5 (12.5%)		
Decrease	4 (14.8%)		5 (12.5%)		
GBI Score	38.9 ± 34.7	41.6	49.6 ± 23.2	47.2	.22[m]

[m]Mann-Whitney *U*-test/[w]Wilcoxon test/[x]chi-square test.
GBI: Glasgow Benefit Inventory; RSES, Rosenberg Self-Esteem Scale; SSES, State Self-Esteem Scale.

Table 2. Pre- and Postoperative RSES and SSES Scores and Postoperative GBI Scores Across Age Groups with Statistical Comparisons

	≤ 25 (n = 35)		> 25 (n = 32)		
Age	**Mean ± SD n (%)**	**Median**	**Mean ± SD n (%)**	**Median**	***P***
RSES Score					
Preoperative	22.3 ± 5.3	23	23.4 ± 4.8	25	.32[m]
Postoperative	24.5 ± 5.2	27	26.1 ± 3.8	27	.39[m]
Difference	2.2 ± 3.2	2	3.1 ± 3.6	3	.61[m]
Intra-group *P* value	**.001**[w]		**< .001**[w]		
Change in RSES Score					
Increase	25 (71.4%)		25 (78.1%)		.82[x]
Same	7 (20%)		5 (15.6%)		
Decrease	3 (8.6%)		2 (6.3%)		
SSES Score					
Preoperative	75.4 ± 13.2	76	79.5 ± 13	78	.88[m]
Postoperative	79.1 ± 13.4	80	81.8 ± 10.4	80	.50[m]
Difference	3.8 ± 10.3	4	5.9 ± 8.2	4	.36[m]
Intra-group *P* value	**.007**[w]		**< .001**[w]		
Change in SSES Score					
Increase	26 (74.3%)		24 (75%)		.78[x]
Same	5 (14.3%)		3 (9.4%)		
Decrease	4 (11.4%)		5 (15.6%)		
GBI Score	44.1 ± 26.8	41.6	46.6 ± 31	46.1	.72[t]

[t] Independent samples *t* test/[m]Mann-Whitney *U*-test/[w]Wilcoxon test/[x]chi-square test.
GBI, Glasgow Benefit Inventory; RSES, Rosenberg Self-Esteem Scale; SSES, State Self-Esteem Scale.

SSES, both ≤25 and >25-year groups demonstrated a significant increase in postoperative scores ($P = .007$, $P < .001$, respectively). The mean GBI scores and comparisons between the two age groups were demonstrated in Table 2.

Marital Status

In both single and married participants, postoperative RSES scores significantly increased relative to preoperative values ($P < .001$, $P = .018$, respectively). Likewise, postoperative SSES scores were significantly higher in both groups ($P < .001$, $P = .03$, respectively). The comparison of pre- and postoperative mean RSES, SSES, and GBI scores between single and married participants is presented in Table 3.

Educational Level

Among participants with education below the university level, postoperative RSES scores showed a significant improvement compared with preoperative scores ($P = .006$). A similar significant increase was observed among those with university education or higher ($P < .001$). Postoperative SSES scores were also significantly higher in both education-level groups ($P = .002$, $P < .001$, respectively). Comparative analyses of RSES, SSES, and GBI scores between education groups are presented in Table 4.

Income Level

Participants earning at or below the national minimum wage demonstrated a significant postoperative increase in mean RSES scores compared to preoperative values ($P < .001$). Similarly, those earning above the minimum wage also exhibited significant postoperative improvement ($P = .005$). Comparable patterns were observed for SSES scores, with both income groups showing significant postoperative increases ($P < .001$, $P = .037$, respectively). The mean GBI scores and comparisons of RSES and SSES were also analyzed between the two income groups. (Table 5)

Discussion

The nose is a key determinant of facial proportion and overall aesthetic balance. As public interest in facial harmony has increased, the global demand for rhinoplasty has continued to rise. Individuals who seek rhinoplasty are often motivated by concerns related to body image and self-perception, as physical appearance represents a fundamental component of self-esteem and psychological well-being.[6,7] Lower levels of self-esteem and self-efficacy have been identified as important psychological factors driving individuals to pursue cosmetic enhancement.[8,9] The psychometric evaluation of candidates for aesthetic procedures, as well as the assessment of the psychological effects of such interventions, remains a subject of enduring importance in aesthetic medicine, aimed at improving patient selection and optimizing postoperative satisfaction.

In this study, the authors focused on assessing the levels of self-confidence and self-esteem among patients undergoing

Table 3. Descriptive Statistics and Comparison of Pre- and Postoperative RSES, SSES, and Postoperative GBI Scores Between Single and Married Patients

	Single (n = 47)		Married (n= 20)		
Marital Status	**Mean ± SD n (%)**	**Median**	**Mean ± SD n (%)**	**Median**	***P***
RSES Score					
Preoperative	22.4 ± 5.4	24	23.9 ± 4.2	25.5	.29[m]
Postoperative	24.8 ± 5.1	27	26.3 ± 3	26.5	.56[m]
Difference	2.4 ± 3	3	3.2 ± 4.2	1.5	.94[m]
Intra-group *P* value	**< .001**[w]		**.018**[w]		
Change in RSES Score					
Increase	35 (74.5%)		15 (75.0%)		.96[x]
Same	8 (17.0%)		4 (20.0%)		
Decrease	4 (8.5%)		1 (5.0%)		
SSES Score					
Preop	75 ± 12.1	76	77.0 ± 11.1	79	.47[m]
Postop	79.3 ± 12.8	80	83.1 ± 9.4	86	.30[m]
Difference	4.2 ± 10	4	6.1 ± 7.7	6	.27[m]
Intra-Group *P* value	**< .001**[w]		**.003**[w]		
Change in SSES Score					
Increase	35 (74.5%)		15 (75%)		.79[x]
Same	5 (10.6%)		3 (15%)		
Decrease	7 (14.9%)		2 (10%)		
GBI Score	48.6 ± 27.7	47.2	37.5 ± 30.1	34.7	.15[t]

[t]Independent Samples *t* test/[m]Mann-Whitney *U*-test/[w]Wilcoxon test/[x]Chi-square test.
GBI, Glasgow Benefit Inventory; RSES, Rosenberg Self-Esteem Scale; SSES, State Self-Esteem Scale.

rhinoplasty, as well as evaluating postoperative quality of life and perceived benefit. The impact of demographic differences on patients' psychosocial status and postoperative quality of life was investigated. For this purpose, the RSES, SSES, and GBI were administered, and outcomes were analyzed at the third postoperative month.

The results demonstrated a statistically significant postoperative increase in both RSES and SSES scores, indicating an overall enhancement in self-esteem and self-confidence following rhinoplasty. Notably, 74.6% of participants showed an improvement in both measures, highlighting the consistent psychological benefit of the procedure. These findings are in line with previous research demonstrating that rhinoplasty exerts a positive influence on self-esteem and body image,[10] while contrasting with reports that found no significant change in self-esteem six months after surgery.[11]

In addition, the mean postoperative GBI score was positive, reflecting favorable psychosocial outcomes and an overall improvement in quality of life. This result supports earlier studies suggesting that rhinoplasty contributes not only to facial harmony but also to psychological well-being and social functioning.[10-12] Conversely, an investigation has reported neutral psychological effects, particularly among certain Asian populations, suggesting that cultural or expectation-related factors may influence postoperative satisfaction.[13]

When demographic subgroups were analyzed, no statistically significant differences were observed in postoperative self-esteem or GBI scores across age, gender, marital status, educational level, or socioeconomic status. These findings are consistent with previous research suggesting that the psychological benefits of rhinoplasty are largely independent of demographic characteristics.[14]Conversely, another study has reported that male sex and younger age may predict less favorable psychosocial outcomes and greater postoperative dissatisfaction.[15]In the present cohort, although the differences did not reach statistical significance, males, married individuals, and participants with monthly incomes above the national minimum wage exhibited slightly lower postoperative GBI scores compared with females, single individuals, and those with lower income levels. This subtle variation may reflect underlying psychosocial influences such as cultural expectations, marital dynamics, or professional life factors that can shape the perception of postoperative quality of life. Nevertheless, studies specifically addressing pre- and postoperative psychosocial outcomes and perceived benefits after rhinoplasty in distinct demographic subgroups remain limited, underscoring the need for more targeted research to clarify subtle population-specific patterns.

Given that the preoperative mean RSES and SSES scores in the cohort did not indicate low self-esteem, it is plausible that, for individuals with already adequate or high self-esteem,

Table 4. Descriptive Statistics and Comparison of Pre- and Postoperative RSES, SSES, and GBI Scores According to Patients' Educational Status

	< University (n = 17)		≥ University (n = 50)		
Education Level	**Mean ± SDn (%)**	**Median**	**Mean ± SD n (%)**	**Median**	***P***
RSES Score					
Preoperative	22.3 ± 5.5	24	23 ± 4.9	24	.71[m]
Postoperative	25.8 ± 4	27	25 ± 4.9	27	.73[m]
Difference	3.5 ± 4.7	2	2.4 ± 2.8	3	.94[m]
Intra-group *P* value	**.006**[w]		**< .001**[w]		
Change in RSES Score					
Increase	12 (70.6%)		38 (76%)		.66[x]
Same	4 (23.5%)		8 (16%)		
Decrease	1 (5.9%)		4 (8%)		
SSES Score					
Preoperative	75.5 ± 11.8	77	75.7 ± 11.9	76.5	.99[m]
Postoperative	81.2 ± 12.9	86	80.1 ± 11.7	80	.57[m]
Difference	5.8 ± 6	5	4.4 ± 10.3	4	.54[m]
Intra-group *P* value	**.002**[w]		**< .001**[w]		
Change in SSES Score					
Increase	13 (76.5%)		37 (74%)		.97[x]
Same	2 (11.8%)		6 (12%)		
Decrease	1 (11.8%)		7 (14%)		
GBI Score	49.6 ± 23.7	52.7	43.8 ± 30.3	41.8	.48[t]

[t]Independent Samples *t* test/[m]Mann-Whitney U-test/[w]Wilcoxon test/[x]Chi-square test
GBI, Glasgow Benefit Inventory; RSES, Rosenberg Self-Esteem Scale; SSES, State Self-Esteem Scale.

Table 5. Statistical Comparison of Pre- and Postoperative RSES and SSES Scores and Postoperative GBI Scores According to Patients' Monthly Income Levels

	≤ Minimum Wage (n = 43)		>Minimum Wage (n = 24)		
Income (Monthly)	**Mean ± SD n (%)**	**Median**	**Mean ± SD n (%)**	**Median**	***P***
RSES Score					
Preoperative	22.6 ± 5.2	24	23.3 ± 4.9	24.5	.61[m]
Postoperative	24.8 ± 4.3	26	26 ± 5.1	28	.08[m]
Difference	2.3 ± 3	2	3.4 ± 4	3	.28[m]
Intra-group *P* value	**< .001**[w]		**.005**[w]		
Change in RSES Score					
Increase	30 (69.8%)		20 (83.3%)		.22[x]
Same	9 (20.9%)		3 (12.5%)		
Decrease	4 (9.3%)		1 (4.2%)		
SSES Score					
Preoperative	76.1 ± 11.6	78	74.8 ± 12.3	75.5	.61[m]
Postoperative	80.9 ± 11.9	83	79.6 ± 12.1	80.5	.63[m]
Difference	4.7 ± 7.8	4	4.8 ± 11.8	3	.33[m]
Intra-group *P* value	**< .001**[w]		**.037**[w]		
Change in SSES Score					
Increase	34 (79.1%)		16 (66.7%)		.40[x]
Same	5 (11.6%)		3 (12.5%)		
Decrease	4 (9.3%)		5 (20.8%)		
GBI Score	49.7 ± 27.3	47.2	37.4 ± 29.9	37.5	.09[t]

[t]Independent Samples *t* test/[m]Mann-Whitney *U*-test/[w]Wilcoxon test/[x]Chi-square test
GBI, Glasgow Benefit Inventory; RSES, Rosenberg Self-Esteem Scale; SSES, State Self-Esteem Scale.

rhinoplasty serves to reinforce self-confidence and overall satisfaction rather than to compensate for emotional vulnerability. Patients exhibiting higher preoperative self-esteem and greater emotional stability may still experience meaningful psychological and quality-of-life benefits following rhinoplasty.

From a psychosocial standpoint, the findings reinforce that rhinoplasty functions as a means of self-affirmation across diverse populations, enhancing self-perception and quality of life regardless of demographic background. In contemporary society, multidimensional factors such as self-identity alignment, social integration, and professional appearance may act as important psychosocial drivers for seeking rhinoplasty. Consequently, the observed improvement in self-confidence may no longer be confined to individuals with low self-esteem or specific sociodemographic backgrounds.

Although this study was conducted at a single center with a relatively modest sample size, all surgeries were performed by two surgeons with comparable experience using the same operative technique. This approach minimized inter-surgeon variability and avoided the heterogeneity that can arise in multicenter studies involving surgeons with differing levels of expertise or surgical styles. In addition, while the postoperative evaluation was limited to the third month, this timeframe was deliberately chosen to capture the early psychosocial impact of rhinoplasty rather than its aesthetic outcomes. Considering that long-term psychological status and self-confidence may be influenced by external factors such as life events or social circumstances, early postoperative assessments provide a more refined and isolated measure of the surgery's direct psychological effects.

Conclusion

Rhinoplasty is associated with significant improvements in self-esteem, self-confidence, and quality of life, independent of demographic factors. These findings highlight that the benefits of rhinoplasty extend beyond aesthetic outcomes, offering meaningful psychosocial gains. Such improvements are not limited to individuals with low self-esteem but may instead reflect multifactorial internal dynamics underlying the modern pursuit of self-enhancement. Future studies with larger cohorts and extended follow-up would further clarify the persistence and trajectory of these early psychosocial benefits.

Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author.

Artificial Intelligence Usage Statement: The authors declared that no Artificial Intelligence Tool was used in the preparation of the manuscript.

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