

Patient Satisfaction after Liposuction Plus Abdominoplasty

Rubina Khan^{1*}, Tahir Masood¹, Abdul Majid¹, Irum Jamshed¹, Rida Noor¹ and Minahil Ibrar¹

¹Department of Plastic Surgery, Combined Military Hospital (CMH), Rawalpindi, Pakistan

Abstract

Background: Liposuction, when used in conjunction with a tummy tuck surgery, is also becoming a popular procedure. Understanding this surgery is crucial for evaluating surgical outcomes and improving the delivery of pre-operative information about reconstructive surgery to support patient care.

Objective: To evaluate patient satisfaction following tummy tuck/tummy lift surgery (abdominoperineal lift) combined with tummy tuck surgery (liposuction) at a Tertiary care hospital in Rawalpindi.

Methods: This cross-sectional study was conducted in a tertiary care hospital in Rawalpindi and included 149 patients (November 2025 to February 2026). Using a Visual Analog Scale (VAS) from 0–10, with 0 indicating none and 10 very painful, this assessment is performed postoperatively. The data were analyzed with SPSS v22.

Results: Patients had a median age of 36.00 (IQR=27.25-44.75) years, and a median BMI was 40.39 (IQR=35.50-45.29) Kg/m². The majority of patients were female (69.8%). At 3-months follow-up, 67.80% reported excellent satisfaction, 21.50% reported good level of satisfaction, and 10.70% were fairly satisfied. It is noteworthy that they found that satisfaction rates were stratified by variables not significantly influenced by it, such as age ($p=0.985$). There were no significant differences in satisfaction level based on age groups ($p=0.985$), gender ($p=0.409$), BMI ($p=0.195$), waist size ($p=0.079$) and literacy levels ($p=0.171$), indicating similar surgical results throughout a diverse patient range.

Conclusion: The present study demonstrates that combined liposuction and abdominoplasty is an effective procedure for providing aesthetic and psychological benefits as a higher proportion of patients showed their satisfaction to the procedure regardless of their sociodemographic features.

Keywords: *Abdominoplasty, obesity, patient satisfaction, liposuction, BMI.*

INTRODUCTION

Obesity is a global epidemic, with more than 600 million adults and 300 million children being obese [1]. With this surging epidemic, the diseases associated with it are also wreaking havoc on the healthcare systems, both logistically and financially [2]. Examples of associated diseases include diabetes mellitus, hypertension, non-alcoholic fatty liver disease, dyslipidemia, cerebrovascular and cardiovascular events [3, 4]. In addition to these physical morbidities, an aesthetic impact is also associated with obesity, which is the low personal self-esteem due to negative self-perception about the body figure [5].

To address this issue, various methods are used to eliminate excessive body fat and improve body image [6]. One such surgical procedure is liposuction, which involves the surgical removal of excessive and unnecessary superficial fat from the body, performed by expert plastic surgeons, to help address the aesthetic outcomes of obese individuals [7]. Recently, instead of performing liposuction alone, many plastic surgeons incorporate additional surgical intervention, in the form of abdominoplasty, into the liposuction procedure

due to its potential to improve surgical and aesthetic outcomes [8]. Since the goal of this procedure is to achieve the best possible aesthetic outcomes, patient satisfaction is of utmost importance. In this study, patient satisfaction among 30 patients who underwent this combined procedure was assessed and found to be excellent in 25 (83.3%), good in 3 (10%), and fair in 2 (6.7%) [9].

Recently, plastic surgery has experienced a rise in popularity around the globe, specifically in the area of liposuction/abdominoplasty procedures for patients wanting to improve their abdominal contour due to obesity/large fluctuations in weight or pregnancy. Although there is an increase in desire for aesthetic/reconstructive procedures for body-contouring currently being performed, plastic surgery is a relatively new specialty in Pakistan, with limited local literature evaluating patient-reported outcomes. There is a wealth of international data regarding safety, efficacy and patient satisfaction with combined liposuction and abdominoplasty procedures, however there is a general lack of data regarding patient experience and expectations of combined liposuction and abdominoplasty procedures in Pakistan. Since patient satisfaction is one of the most important factors that indicate the success of a surgical procedure and/or the quality of healthcare, it is imperative that we obtain this type of information

*Corresponding author: Rubina Khan, Department of Plastic Surgery, Combined Military Hospital (CMH), Rawalpindi, Pakistan, Email: rubinakhan77.37@gmail.com

Received: March 17, 2026; Revised: July 01, 2026; Accepted: July 02, 2026
DOI: <https://doi.org/10.37184/jlnh.2959-1805.4.33>

regarding patients' experiences with various aspects of plastic surgery in order to evaluate their effectiveness beyond traditional clinical outcome measures. Body image perceptions due to different cultures, patient expectations associated with surgery, the level of care during and after the patient's surgery, and recovery from surgery are all significant factors associated with patient satisfaction and could vary greatly compared to other studies from around the world. Therefore, this study was carried out in a tertiary care facility located in Rawalpindi to determine how satisfied patients are following liposuction with abdominoplasty. The purpose of the study is to provide local data regarding patient-reported outcomes and to fill an important gap in our national literature.

METHODOLOGY

This cross-sectional study was held at the Combined Military Hospital (CMH), Rawalpindi, Pakistan, from November 2025 to February 2026 after the ethical committee of the Tertiary Care Hospital, Rawalpindi, provided approval (Ref letter no. 938). Patients of either male or female gender, aged between 18 and 50 years, who were scheduled to undergo liposuction plus abdominoplasty were included. Patients with a history of abdominopelvic surgery, comorbid conditions, or pregnancy were excluded. All participants provided written informed consent using a dedicated pre-printed form.

A sample size of 149 patients was calculated using 4% precision, a 95% confidence level, and an anticipated fair patient satisfaction rate of 6.7% [9]. The WHO sample size calculator software was used for this calculation. The sample selection process was based on non-probability consecutive sampling techniques.

The primary researcher collected data through face-to-face surveys during follow-up visits. The variables documented included age, gender, body mass index (BMI), waist circumference (measured in inches with a tape measure, using the anterior superior iliac spine as a reference point), pre-treatment cosmesis VAS score, residential locality, and literacy status. The same surgical team operated on all patients with at least 5 years of relevant experience to ensure uniform care. Patient satisfaction was assessed specifically at the three-month follow-up visit to allow for the complete resolution of post-operative edema and stabilization of surgical scars, ensuring the patient could accurately judge the final aesthetic outcome. Patient satisfaction was measured using a Visual Analogue Scale (VAS) with a total score range of 0 to 10. Satisfaction level was categorized as excellent (scores 8-10), good (scores 5-7), and fair

(scores < 5). This scale is a validated tool for quantifying satisfaction in surgical patients [10].

All data were analyzed with SPSS version 22. Qualitative variables were measured as frequency and percentage. Quantitative variables were measured as medians and interquartile ranges (IQRs) presented as Q1-Q3 limits. Post-stratification analysis was done using the Chi-square test.

RESULTS

In this study, 149 patients were included. Median age was 36.00 (17.50) years. There were 45 male (30.20%) and 104 female (69.80%) patients. Median BMI was 40.39 (9.79) kg/m². Median waist size was 127.00 (21.50) cm. Median pre-operative cosmesis VAS score was 2.00 (2.00). Patient pre-operative demographic characteristics are given in Table 1.

Table 1: Patient pre-operative demographic characteristics (n=149).

Characteristics	Median (IQR); n (%)
Age (years)	
Median	36.00 (27.25–44.75)
< 30 years	48 (32.20)
≥ 30 years	101 (67.80)
Gender	
Male	45 (30.20)
Female	104 (69.80)
BMI (kg/m²)	
Median	40.39 (35.50–45.29)
< 38	52 (34.90)
≥ 38	97 (65.10)
Waist size (cm)	
Median	127.00 (116.25–137.75)
< 130	86 (57.70)
≥ 130	63 (42.30)
Pre-operative cosmesis	
Median cosmesis VAS	2.00 (1.00–2.00)
Residential locality	
Rural	47 (31.50)
Urban	102 (68.50)
Literacy status	
Literate	110 (73.80)
Illiterate	39 (26.20)

IQR = Interquartile range, BMI = Body mass index, kg = kilograms, m² = square meters, cm = centimeters, VAS = Visual analog scale.

Patient satisfaction level after three months of liposuction plus abdominoplasty was excellent in 101

(67.80%), good in 32 (21.50%), and fair in 16 (10.70%) patients. Upon analysis of the patient satisfaction levels by confounding variables, it was observed that patient satisfaction was not influenced by any of the effect modifiers, including age ($p = 0.985$), gender ($p = 0.409$), BMI ($p = 0.195$), waist size ($p = 0.079$), and literacy status ($p = 0.171$). Stratification of patient satisfaction by various confounding variables, including age, gender, BMI, waist circumference, and literacy status, is presented in Table 2.

DISCUSSION

This research explored an important area of aesthetic surgery *i.e.* patient satisfaction during post-operative recovery after combined liposuction and tummy tuck (abdominoplasty). Since patient-reported outcome measures are gaining recognition as key indicators of success in surgery, assessing patient satisfaction provides valuable information regarding the success and quality of care associated with aesthetic surgeries beyond traditional clinical outcomes [11, 12]. While many clinical factors determine clinical success, including the absence of surgical complications, the outcome of aesthetic procedures is determined by the patient, whether the result is a hematoma, a seroma, or skin necrosis. Subsequently, 149 patients were surveyed about their satisfaction with their body image [13, 14]. This study presents a local-level analysis of quality within a tertiary care hospital in Rawalpindi.

Of all the patients in this study, 69.8% were female. Overall, the trend is in line with both global and regional statistics. A study by Al-Aibi *et al.* shows that

social pressures and the evolution of modern beauty standards within conservative traditions significantly drive women toward liposuction [15]. Similarly, a 2022 US-based study by Pearlman *et al.* found that young adults, particularly women, are increasingly likely to seek cosmetic procedures due to the psychological impact of self-perception [16]. Interestingly, while a female majority is expected, our study observed a significant male participation rate (30.2%), higher than that reported in older international cohorts [17]. This suggests a shifting cultural paradigm in Pakistan, where men are becoming increasingly conscious of body contouring for aesthetic purposes. This shift is further fueled by social media influences and the increasing accessibility of modern aesthetic interventions [18, 19].

This study analyzed the impact of confounding variables on the final satisfaction outcome. Patient satisfaction was not significantly influenced by age, gender, BMI, waist size, or literacy status. This may be due to insufficient statistical significance in the results, warranting further research. Across all modifiers, an important result emerges – showing that the aesthetic attributes of combined liposuction (fat absorption) and smile injection blepharoplasty are compelling. Combining a tummy tuck with an abdominoplasty conveys to patients' eyes that it was performed on a healthy, unconditioned body. So that the characteristics or the socioeconomic backgrounds are not a field of research. The distinction between having a BMI of “under 25” and “25 or over” was made $< 38\text{kg/m}^2$ or $\geq 38\text{kg/m}^2$.

Table 2: Frequency stratification by confounding variables (n = 180).

Variable	Excellent n (%)	Good n (%)	Fair n (%)	p-value
Age				
< 30 years (n = 48)	33 (68.75%)	10 (20.83%)	5 (10.42%)	0.985 ^c
≥ 30 years (n = 101)	68 (67.33%)	22 (21.78%)	11 (10.89%)	
Gender				
Male (n = 45)	31 (68.88%)	9 (20.00%)	5 (11.12%)	0.409 ^c
Female (n = 104)	70 (67.31%)	23 (22.11%)	11 (10.58%)	
BMI				
< 38 kg/m ² (n = 52)	38 (73.08%)	7 (13.46%)	7 (13.46%)	0.195 ^c
≥ 38 kg/m ² (n = 97)	63 (64.95%)	25 (25.77%)	9 (9.28%)	
Waist size				
< 130 cm (n = 86)	53 (61.63%)	20 (23.26%)	13 (15.11%)	0.079 ^c
≥ 130 cm (n = 63)	48 (76.19%)	12 (19.05%)	3 (4.76%)	
Literacy status				
Literate (n = 110)	70 (63.64%)	26 (23.64%)	14 (12.72%)	0.171 ^c
Illiterate (n = 39)	31 (79.49%)	6 (15.38%)	2 (5.13%)	

BMI = Body mass index, kg = kilograms, m² = meters square, c = Chi-square test

Results from our investigation reveal that levels of satisfaction among patients were similar to those previously provided in studies conducted ten or more years ago which also suggests continued stability with each passing year of combined liposuction and abdominoplasty procedures in patients undergoing these surgical treatments. Based on this data, combined liposuction and abdominoplasty procedures have consistent levels of success, from patient satisfaction perspectives, regardless of the geographic location of the surgeon performing these surgical procedures on a variety of types of patients (referred to herein as “diverse”). Thus, we conclude that experienced surgical teams can produce reliable positive, patient-reported outcomes after performing combined liposuction and abdominoplastic surgeries. Nonetheless, the level of satisfaction experienced by patients is based on multiple aspects linked to their satisfaction level including, but not limited to: the type of surgery performed, the skill of the surgeon, the quality of care provided during the preoperative period and the recovery phase following the surgery. The time of assessment is also important when conducting research on aesthetic surgical outcomes because when assessing satisfaction at three (3) months postoperatively, the swelling from the surgery has reduced significantly allowing the patient an improved ability to accurately evaluate their outcome. If an assessment is completed too soon after surgery, a patient’s satisfaction will not reflect the final outcome since temporary changes to contour will occur as a result of swelling and/or healing tissue as well as the impact of changes in scar appearance over an extended time period after surgery [17].

Of all the patients in our cohort, 67.8% were satisfied with the treatment: “Excellent”. compared to the mean, which is close to the US study by Swanson (2012), which reported 93% of patients were “very satisfied” [20]. Knowing that Ipswich had a different census. But Swanson’s research involved a different follow-up timescale and a different cultural-demographic context. In contrast, Egyptian regional studies report excellent satisfaction (3.3%). However, there’s still room for improvement, as satisfaction rates among our smaller cohort (n=30) are lower than those in the larger cohort (n=90). For enhancing the patient experience on a larger scale in the Pakistani tertiary health care system [9].

A Visual Analog Scale (VAS) was used to measure satisfaction and proved suitable for this purpose. The VAS is a valid and convenient way to assess changes in pain, as previously validated by Brokelman *et al.* [10], and to measure Subjective Patient Experiences (SPEs)

using a relatively new methodology [10]. Categorizing scores into Excellent, Good, and Fair represents the most recent methodology in quantifying patients’ subjective experiences. Fair — we were able to give a clear distribution of outcomes. We have established that only 10.7% of the community’s residents use bleach. The customers reported “Fair” levels of satisfaction, which reflect not only the safety of the intervention but also its success. Studies have shown that population size and extreme events such as cyclones, droughts, and floods influence rainfall anomalies, as detailed in Chaker *et al.*, 2024, which examined more than 55,000 people. When comparing patients receiving combined procedures with those not receiving them, the results indicate no significant increase in complications. This was compared with the most basic tummy tuck surgery (abdominoplasty), and our clinical method proved even more beneficial [21].

LIMITATIONS

Although the results were promising, certain limitations of this study must be recognized. First, although adequate for early assessment of aesthetics, this three-month follow-up period may not reflect the true results of therapy. in long-term satisfaction or late onset complications of scar hypertrophy and/or secondary contour Abnormalities that appear 6-12 months after birth [22, 23]. Second, testing was conducted at a single tertiary care center (Combined Military Hospital (CMH), Rawalpindi), where access to healthcare is restricted, potentially reducing the availability of resources for patients. The generalizability of the results to Pakistan’s general population. Third, although we can account for older children, for several other confounders, there was no formal screening for pre-existing body dysmorphic disorders [24]. Rosen and Reiter (1996) introduced the idea of BDD. They applied standardized psychiatric instruments to this evaluation, a step that was bound to create misunderstandings with the subjective self of the individual concerned, as well as satisfaction ratings both with and without an operatively successful outcome [25].

CONCLUSION

After undergoing combined liposuction and abdominoplasty, people can have a much wider body, with all its parts improved by this treatment. In Pakistan, the image ranks 1st among all factors in the Pakistani population. The high level of glowing feedback and the fact that customer length of service matches that of the service providers’ results is quite remarkable. The aforementioned method yields consistent results across age groups and BMI categories, justifying its continued

use. The use of this combined approach in a tertiary care treatment unit. Future investigations should be multicenter. Many more attempts were made to establish a follow-up period of 1 year or longer to refine our understanding of long-term effects further.

ETHICAL APPROVAL

Ethical approval was obtained from the Ethical Committee/Institutional Review Board of Combined Military Hospital (CMH), Rawalpindi (Ref letter No: 938). All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/ or national research committee and the Helsinki Declaration

CONSENT FOR PUBLICATION

Written informed consent was obtained from the participants.

AVAILABILITY OF DATA

The data set may be acquired from the corresponding author upon a reasonable request.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGEMENTS

Declared none.

AUTHORS' CONTRIBUTION

RK: Substantial contributions to the conception or design of the work, and the acquisition, analysis, or interpretation of data for the work.

TM and AM: Drafting the work or revising it critically for important intellectual content, and final approval of the version to be published.

IJ, RN, MI: Agreement to be accountable for all aspects of the work.

All authors read and approved the final manuscript and agree to be accountable for all aspects of the work.

REFERENCES

1. Sørensen TIA, Martinez AR, Jørgensen TSH. Epidemiology of obesity. *Handb Exp Pharmacol* 2022; 274: 3-27. DOI: https://doi.org/10.1007/164_2022_581 PMID: 35419622
2. Nagi MA, Ahmed H, Rezq MAA, Sangroongruangsri S, Chaikledkaew U, Almalki Z, *et al.* Economic costs of obesity: a systematic review. *Int J Obes (Lond)* 2024; 48(1): 33-43. DOI: <https://doi.org/10.1038/s41366-023-01398-y> PMID: 37884664
3. Kloock S, Ziegler CG, Dischinger U. Obesity and its comorbidities, current treatment options and future perspectives: Challenging bariatric surgery? *Pharmacol Ther* 2023; 251:108549. DOI: <https://doi.org/10.1016/j.pharmthera.2023.108549> PMID: 37879540
4. Azeem S, Khan U, Liaquat A. The increasing rate of diabetes in Pakistan: A silent killer. *Ann Med Surg (Lond)* 2022; 79:103901. DOI: <https://doi.org/10.1016/j.amsu.2022.103901> PMID: 35860160
5. González-Fernández E, Xandri-Martínez R, Gómez-Díaz M, Navas-López J. Nutritional and psychosocial intervention to improve the self-concept of body image and increase the self-esteem of overweight and obese individuals: a quasi-experimental study. *Nutrients* 2024; 16(16): 2708. DOI: <https://doi.org/10.3390/nu16162708> PMID: 39203844
6. Gómez-Sámamo MÁ, Guerrero-Castillo AP, Abarca-Arroyo JA, Albuja-González EC, García-Bonilla HA, Espinosa-Salazar HD, *et al.* Effect of liposuction on body weight and serum concentrations of leptin, lipids, glucose, and insulin: a meta-analysis. *Plast Reconstr Surg* 2023; 151(3): 402e-11e. DOI: <https://doi.org/10.1097/prs.0000000000009913> PMID: 36399662
7. De La Cruz E. Lipoplasty in the overweight patient. *Clin Plast Surg* 2024; 51(1): 29-43. DOI: <https://doi.org/10.1016/j.cps.2023.06.010> PMID: 37945074
8. Raghuram AC, Yu RP, Gould DJ. The addition of partial or circumferential liposuction to abdominoplasty is not associated with a higher risk of skin necrosis. *Aesthet Surg J* 2021; 41(6): NP433-44. DOI: <https://doi.org/10.1093/asj/sjaa251> PMID: 32856688
9. Sayed AT, Hota AE, Elbhery AZ. Liposuction assisted abdominoplasty (re-visit). *Al-Azhar Int Med J* 2020;1(6):9. DOI: <https://doi.org/10.21608/aimj.2020.28808.1210>
10. Brokelman RBG, Haverkamp D, van Loon C, Hol A, van Kampen A, Veth R. The validation of the visual analogue scale for patient satisfaction after total hip arthroplasty. *Eur Orthop Traumatol* 2012; 3(2): 101-5. DOI: <https://doi.org/10.1007/s12570-012-0100-3> PMID: 22798966
11. Abad-Jiménez Z, Vezza T. Obesity: a global health challenge demanding urgent action. *Biomedicines* 2025; 13(2): 502. DOI: <https://doi.org/10.3390/biomedicines13020502> PMID: 40002915
12. Islam ANMS, Sultana H, Refat MNH, Farhana Z, Kamil AA, Rahman MM. The global burden of overweight-obesity and its association with economic status, benefiting from STEPs survey of WHO member states: A meta-analysis. *Prev Med Rep* 2024; 46:102882. DOI: <https://doi.org/10.1016/j.pmedr.2024.102882> PMID: 39290257
13. Vargas JC, Barrios MC, De la Cruz Ku G. Impact of body mass index on outcomes of patients undergoing liposculpture in private practice. *Plast Reconstr Surg Glob Open* 2024; 12(11): e6291. DOI: <https://doi.org/10.1097/GOX.0000000000006291> PMID: 39568686
14. Ciudad P, Bustos VP, Escandón JM, Flaherty EG, Mayer HF, Manrique OJ. Outcomes of liposuction techniques for management of lipedema: a case series and narrative review. *Ann Transl Med* 2024; 12(6): 115. DOI: <https://doi.org/10.21037/atm-24-165> PMID: 39817245

15. Al-Aibi AR, Ismail M. The cultural evolution and social pressures of liposuction among Iraqi women: navigating modern beauty standards amidst conservative traditions. *Cureus* 2024; 16(5): e61440. DOI: <https://doi.org/10.7759/cureus.61440> PMID: 38947642
16. Pearlman RL, Wilkerson AH, Cobb EK, Morrisette S, Lawson FG, Mockbee CS, *et al.* Factors associated with likelihood to undergo cosmetic surgical procedures among young adults in the United States: A narrative review. *Clin Cosmet Investig Dermatol* 2022; 15: 859-77. DOI: <https://doi.org/10.2147/ccid.s358573> PMID: 35592730
17. Park S, Hwang J, Woo S, Kim J, Kim S, Woo HG, *et al.* Association of post-liposuction edema on body composition and weight reduction efficiency. *Sci Rep* 2025; 16(1): 524. DOI: <https://doi.org/10.1038/s41598-025-29903-5> PMID: 41476101
18. Mironica A, Popescu CA, George D, Tegzeşiu AM, Gherman CD. Social media influence on body image and cosmetic surgery considerations: a systematic review. *Cureus* 2024;16(7): e65626. DOI: <https://doi.org/10.7759/cureus.65626> PMID: 39205749
19. Albash LA, Alyahya T, Albooshal SS, Busbait SA, Alkhateeb AK, Alturaiki BY. Social media influencers and their impact on society in performing cosmetic procedures among Al-Ahsa community. *Cureus* 2024; 16(9): e68374. DOI: <https://doi.org/10.7759/cureus.68374> PMID: 39355480
20. Swanson E. Prospective outcome study of 360 patients treated with liposuction, lipoabdominoplasty, and abdominoplasty. *Plast Reconstr Surg* 2012; 129(4): 965-78. DOI: <https://doi.org/10.1097/prs.0b013e318244237f> PMID: 22183499
21. Chaker SC, Hung YC, Saad M, Perdakis G, Grotting JC, Higdon KK. Complications and risks associated with the different types of abdominoplasties: an analysis of 55,956 patients. *Aesthet Surg J* 2024; 44(9): 965-75. DOI: <https://doi.org/10.1093/asj/sjae060> PMID: 38494872
22. Matarasso A. Liposuction as an adjunct to a full abdominoplasty. *Plast Reconstr Surg* 1995; 95(5): 829-36. PMID: 7708866
23. Matarasso A, Matarasso DM, Matarasso EJ. Abdominoplasty: classic principles and techniques *Clin Plast Surg* 2014; 41(4): 655-72. DOI: <https://doi.org/10.1016/j.cps.2014.07.005> PMID: 25283453
24. Matarasso A. Abdominoplasty. In: Rubin P and Neligan PC, Eds. *Plastic surgery*, 5th Ed, Vol. 2 Aesthetic, Elsevier Inc., Philadelphia, PA, 2023: pp. 732-74.
25. Rosen JC, Reiter J. Development of the body dysmorphic disorder examination. *Behav Res Ther* 1996; 34(9): 755-66. DOI: [https://doi.org/10.1016/0005-7967\(96\)00024-1](https://doi.org/10.1016/0005-7967(96)00024-1) PMID: 8936758