

Differences in postoperative satisfaction between orthopedic and cosmetic patients

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SUMMARY

Undergoing any surgery can be impactful on a patient's emotional state and satisfaction. Surgeries can range from elective to emergency with the goal to improve functional or aesthetic outcomes. Specific types of surgeries may differentially affect a patient's contentment with outcomes. Given this significant and variable impact, it is valuable to investigate how different types of surgeries can impact a patient in different ways in hopes to improve individualized patient support. The current study aims to investigate differences in psychological outcomes from patients who have undergone either cosmetic surgery (e.g., liposuction, breast augmentation, breast reduction, tummy tuck) or orthopedic surgery (e.g., hip replacement, knee replacement, rotator cuff surgery). Data was retrospectively collected through self-report surveys completed by adult patients (aged 18 to 50) who underwent first-time surgery. Survey items requested participants to rank their level of satisfaction at different time points before and after surgery. We hypothesized that patients who had cosmetic surgery would be more satisfied after surgery than patients who had orthopedic surgery. Results of this study revealed cosmetic patients temporarily had more satisfaction than orthopedic patients 1-2 weeks after surgery. These findings may demonstrate a better understanding of patients' satisfaction with outcomes in varying types of surgeries. In this specific study, we might draw the inference that orthopedic patients were less satisfied because their mobility was compromised immediately post-operatively and they required time to recover. We may also infer that cosmetic patients were more satisfied shortly after surgery with higher expectations for their altered appearance.

INTRODUCTION

Surgery is a medical practice that is available to patients as a form of treatment for what both the patient and their physician deem fit. Undergoing surgery can be impactful on a patient's psychological state (1); therefore, it is of increasing importance to understand the psychological and physical impact of surgery on a patient. By understanding the impacts on patients throughout their surgical journey, the medical field can assess the patients possible discomfort depending on the type of surgery they undergo. Although an impression of a person's physical appearance can impact their

opportunities and lived experiences, the ability of the body to function is perhaps of even greater importance (2). When either appearance or mobility are compromised, individuals may become emotionally-affected (1). Individuals may have varying reactions to surgeries perceived as strictly cosmetic compared to those impacting mobility like orthopedic surgeries. Mobility is defined as a joints ability to move without any pain or strain (3). Often when surgery is considered, it is typically associated with the operation, and the recovery of the patient may be overlooked (4). It is important to understand how these operations may psychologically impact the patient differently and how this differential impact should be treated. Cosmetic surgery is a branch of surgery concerned with improving the function or appearance of physical parts of the body through reconstruction or cosmetic procedures (5). Cosmetic procedures can be elective or emergency procedures because some are performed to improve the physical appearance of the patient. The difference between elective surgery and emergency surgery is elective surgery is chosen by the participant because they wish to change something about their body (4). Emergency procedures are performed because the patient needs it and could possibly be faced with health issues or life-threatening problems (4). Other operations improve function or improve both function and physical appearance. For instance, one type of elective cosmetic surgery treats patients with a cleft lip. Having surgery may improve the lip's proficiency as well as possibly improving its appearance (5).

Honigman *et al.* found that most postsurgical cosmetic patients were satisfied with their bodies after surgery. Of those who underwent cosmetic procedures, the highest satisfaction was found in those who underwent mammoplasty, rhinoplasty, and facelift patients (6). However, the effects of rhinoplasty varied as some patients had less satisfaction since the rhinoplasty altered their physical appearance too drastically (6).

Expectation management of cosmetic surgery is an important aspect of the surgeon's role as patients tend to have unrealistic expectations regarding the outcome of the procedure (7). For example, cosmetic patients believe the surgery will be painless, easy, and the side effects won't be severe (e.g., inflammation, soreness, pain, major swelling), leading to disappointment in the postoperative setting and influencing the satisfaction with the patient's appearance (7). This research follows the satisfaction of patients throughout their surgery, uncovering possible variables influencing patient satisfaction, such as the discomfort a patient must endure while recovering.

Orthopedic surgery is a branch of surgery in which there is an elective or emergency procedure to improve the function of joints, bones, and tendons of the body through reconstructive

procedures. Some patients may have faced an injury which led them to be electively operated on. For instance, an athlete with a torn ACL is encouraged to be operated on in order to repair the injury. A patient may also have pain induced by an orthopedic abnormality, influencing the patient to choose surgery to mitigate pain. Postoperatively, orthopedic patients often face pain, anxiety, sleep disturbances, and depression (4).

Postsurgical outcomes are measurements of the impact on a patient after undergoing surgery, including mortality, morbidity, operation results, operative numbers, recovery time, and repeat rates (8). A review conducted by Maillard *et al.* tested patients on their preoperative mental component summary (MCS) and preoperative physical component summary (PCS) (1). MCS scores were higher postoperatively compared to preoperatively, while PCS scores were higher preoperatively compared to postoperatively. Maillard explains these two aspects provide a holistic view of the patient's well-being preoperatively and postoperatively (1). The measure of PCS and MCS scores found in Maillard's review is similar to the measure of satisfaction of the patients preoperatively and postoperatively within the current research.

This study aimed to investigate differences in satisfaction outcomes of patients who have undergone cosmetic surgery (e.g., liposuction, breast augmentation, breast reduction, tummy tuck) or orthopedic surgery (e.g., hip replacement, knee replacement, rotator cuff surgery). We hypothesized patients who have had cosmetic surgery would be less satisfied preoperatively and have a higher amount of satisfaction postoperatively. Orthopedic patients would be more satisfied preoperatively and have a smaller amount of satisfaction postoperatively. Our research revealed that cosmetic patients reported higher satisfaction with their surgery 1-2 weeks after surgery than orthopedic patients.

RESULTS

We surveyed 27 patients who had undergone either orthopedic or cosmetic surgery. We asked them to rate their satisfaction on a scale of 1-5 at various timepoints before and after surgery. Participants in this study ranged in age from 18 to 65+. The participants who reported their demographics identified as either a female (88.89% of total sample) or male (11.11% of total sample). Participants included the following ethnicities: Asian or Asian American (7.41% of total sample), Hispanic or Latino (11.11% of total sample), Native Hawaiian or other Pacific Islander (3.70% of total sample), White or Caucasian (74.07% of total sample), and Other (3.70% of total sample). The cosmetic survey received 11 respondents and the orthopedic survey received 16 respondents (**Table 1**). For orthopedic demographic data, participants spent an average of 1 minute completing a survey for orthopedic surgeries. Out of the 16 respondents, 14 identified as a female (87.50% of orthopedic sample) and 2 identified as male (12.50% of orthopedic sample). The majority of the orthopedic sample, 13 respondents, were White or Caucasian (81.25% of orthopedic sample). Most participants were within the age range of 55-64 (37.50% of orthopedic sample) (**Table 1**).

For cosmetic demographic data, the 11 respondents completed the cosmetic survey in an average of 2 minutes. From the cosmetic sample, 10 identified as female (90.91% of cosmetic sample) and one identified as a male (9.09% of cosmetic sample). For ethnicity, most respondents, a total

of 7, identified as White or Caucasian (63.64% of cosmetic sample). For age, most participants reported age ranges between 35-44 (45.45% of cosmetic sample) (**Table 1**).

Orthopedic patients had an average satisfaction of 2.69 (SD = 1.18) on a scale of 1 to 5 (1 being unsatisfied and 5 being very satisfied) before surgery, decreasing to 1.94 (SD = 1.00) when the patients reached 1-2 weeks after their procedure (**Figure 1**). This increased to an average of 2.84 (SD = 1.27) in satisfaction 3 months after surgery. The data also showed that 7 participants (43.75% of the orthopedic sample) had not reached 3 months in recovery time, so they did not rate their satisfaction 3 months after surgery. The average continued to increase at 6 months to 3 (SD = 1.58) in average satisfaction and the average remained at 3 (SD = 1.41) at one year after surgery. Out of 16 participants, 10 (62.50% of the orthopedic sample) had not reached 6 months (68.75% of the orthopedic sample) in recovery time after surgery and 11 participants had not reached 1 year in recovery time after surgery (**Figure 1, Table 1**). Therefore, they did not respond to those time frames.

For cosmetic patients, the average satisfaction before surgery was 2.36 (SD = 1.12). At 1-2 weeks after surgery, the average was 3.18 (SD = 1.54) in satisfaction (**Figure 1**). There was an increase of average satisfaction at 3 months after surgery to 4.11 (SD = 0.78). Two participants (18.18% of cosmetic sample) had not reached 3 months of recovery at the time they completed the survey. At 6 months after surgery the satisfaction average was 4.5 (SD = 0.55) and remained at 4.5 (SD = 0.55) at one year after surgery. Also, 5 participants (45.45% of cosmetic sample) had not reach 6 months in recovery and 1 year in recovery (**Figure 1, Table 1**).

Then there were the numerical differences in self-reported levels of satisfaction at different timepoints before and after surgery. According to Mann-Whitney U tests, 11 participants who had undergone cosmetic surgery reported feeling similar satisfaction (median = 2) to 16 participants who had undergone orthopedic surgery (median = 3) immediately prior to surgery ($U = 73.5, p = 0.48$). At 1-2 weeks after surgery, participants who underwent cosmetic surgery ($n = 11$, median = 4) felt significantly more satisfied with their body than orthopedic patients ($n = 16$, median = 2) ($U = 48, p = 0.04$). Cosmetic surgery participants ($n = 6$, median = 3) did not differ in satisfaction from orthopedic surgery participants ($n = 9$, median = 3) at 3 months post surgery ($U = 25.5, p = 0.12$). Lastly, this test statistic also revealed similar satisfaction ratings between groups (cosmetic $n = 6$, median = 4.5; orthopedic $n = 5$, median = 3) for 6 months after surgery and 1 year after surgery ($U = 6, p = 0.10$).

In total, there was a statistically significant difference in satisfaction between the two parties 1-2 weeks post operatively. Demographic variables were also considered for the outcome of the study, including age, race/ethnicity, and gender. Information was self-reported by 27 participants through a survey that questioned the patient's satisfaction at different points before and after surgery. The primary outcome measure of the current study was the difference in satisfaction between participants of the orthopedic surgery group and participants of the cosmetic surgery group. This experiment allows a better understanding of how the two categories of surgery can lead patients to feeling different levels of satisfaction after surgery. Cosmetic patients had an average of 3.18 (SD = 1.54) in satisfaction the first two weeks after surgery.

	Cosmetic Patients	Orthopedic Patients
n	11	16
Gender		
Female	10	14
Male	1	2
Age		
18-24	0	1
25-34	0	1
35-44	5	2
45-54	4	3
55-64	2	6
65+	0	3
Race		
Another race	0	1
Asian or Asian-American	0	2
Hispanic or Latino	3	0
Native Hawaiian or other Pacific Islander	1	0
White or Caucasian	7	13
Average Satisfaction		
Before Surgery	2.4	2.7
1-2 weeks After Surgery	3.2	1.9
3 Months After Surgery	3.7	2.9
6 Months After Surgery	4.5	3.0
1 Year After Surgery	4.5	2.8

Table 1: Demographic Data for Orthopedic and Cosmetic surgical patients.

Orthopedic patients had an average of 1.94 (SD = 1.00) in satisfaction the first two weeks after surgery.

DISCUSSION

The goal of our study was to determine whether there is a difference of post-surgical outcome between cosmetic and orthopedic patients. The difference in recovery between the two types of surgeries is relevant because they impact two different factors. Cosmetic post-surgical recovery impacts the physical appearance of the patient. As the patient recovers from a cosmetic surgery, their level of satisfaction with their looks will vary. On the other hand, orthopedic post-surgical recovery impacts the mobility of the patient. As a result, the satisfaction of the surgery will vary based on how easily the patient is able to move after the surgery.

We hypothesized that patients who have had cosmetic surgery would be less satisfied preoperatively and have a higher amount of satisfaction postoperatively and that orthopedic patients would be more satisfied preoperatively and have less satisfaction postoperatively. The outcomes of our research indicate that cosmetic patients had more satisfaction 1-2 weeks after surgery than orthopedic patients. This may be caused by the satisfaction a cosmetic patient feels knowing their appearance is changed to their preference. Although cosmetic patients reported higher satisfaction within the first 1-2 weeks postoperatively, orthopedic patients and cosmetic patients had very similar amounts of satisfaction 3 months postoperatively, 6 months postoperatively, and one year postoperatively. Interestingly, orthopedic patients were slightly more satisfied with their bodies before surgery

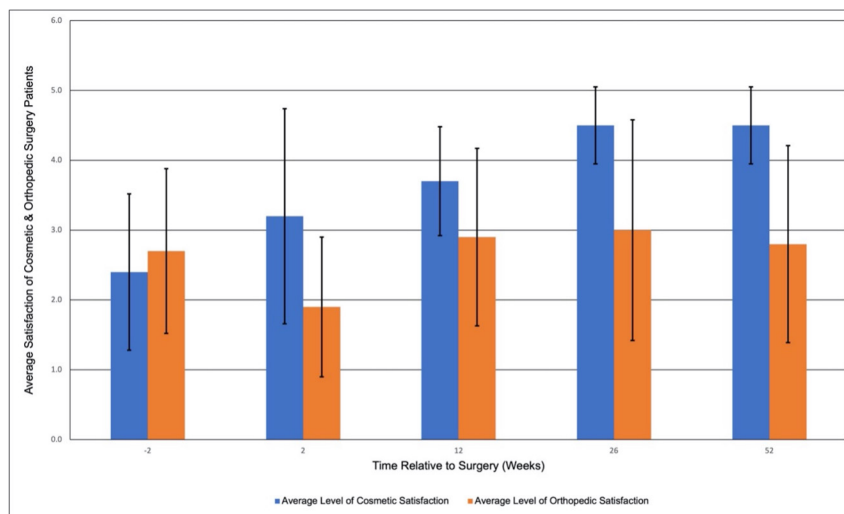


Figure 1: Average Satisfaction of Cosmetic and Orthopedic Surgery Patients vs. Time Relative to Surgery (Weeks). Figure 1 shows the difference in average satisfaction between orthopedic and cosmetic patients at 5 different time points. Patients were questioned on their satisfaction 1-2 weeks before surgery, 1-2 weeks after surgery, 3 months after surgery, 6 months after surgery, and 1 year after surgery. Error bars show Standard Deviation. There is a significant statistical difference in satisfaction between cosmetic and orthopedic patients 1-2 weeks post operatively ($p = 0.04$). Cosmetic patients had an average of 3.18 (SD = 1.54) in satisfaction the first two weeks after surgery. Orthopedic patients had an average of 1.94 (SD = 1.00) in satisfaction the first two weeks after surgery.

whereas cosmetic patients were more unsatisfied with their bodies before surgery. However, the difference in satisfaction between the two parties is not statistically significant. As for similarities in satisfaction, the levels of satisfaction within the 3rd month of recovery could be caused by many factors such as reduced inflammation, the patients' adjustment to the pain of the operation, or seeing improvements in their body due to the surgery.

Previous research conducted by Honigman *et al.* found mammoplasty patients, rhinoplasty patients and facelift patients were satisfied with their appearance post surgery. (4) However, rhinoplasty patients, or cosmetic patients, were less satisfied post operatively since the procedure changed their physical appearance too drastically (2). Our hypothesis was validated by the previous findings that cosmetic patients tend to have more satisfaction with their bodies within the first couple weeks after surgery. The studies of Jafferany *et al.* did not support the founding's of the current study, he found that many patients tend to have unrealistic expectations of the procedure which leads to disappointment post operatively (3). If these findings are true, cosmetic patients' progression of satisfaction may have decreased post operatively. As a result, it is possible that these smaller increased levels of satisfaction allowed the satisfaction of orthopedic patients and cosmetic patients to become a more equal level of satisfaction within the three months postoperatively, six months postoperatively, and one year postoperatively.

The current study also revealed orthopedic patients were slightly more satisfied with their body pre surgery. Orthopedic patients had an average of 2.69 on a scale from 1-5 in satisfaction before surgery. Cosmetic patients were less satisfied with their body pre surgery with an average of 2.36 on a scale from 1-5. Since most patients who undergo cosmetic surgery are unhappy with their bodies, it correlates with why cosmetic patients are less satisfied with their bodies before surgery than orthopedic patients. Orthopedic patients tend to be happy with the mobility of their body before surgery, however they need

the surgery to fix an issue in their bones. Although the difference is not statistically significant, it is possible orthopedic patients were less satisfied with their surgery because it did not fix the issue the surgery was intended to fix. Additionally, recovery times for the two different surgeries could be different, which can impact the amount of satisfaction during the participant's recovery.

Our study found that cosmetic patients had higher satisfaction than orthopedic patients in the first weeks following surgery. However, there are limitations to this data. Since satisfaction was self-reported, the levels of satisfaction are biased to the patient and what they deem is adequate in terms of the surgery results and possibly the pain the surgery caused. These biases can make the results less generalizable. Since the data was recalled through memory of the participants, there is a chance the level of satisfaction within one point in time could be misremembered. The participant could recall one point in time as more satisfying or less satisfying than it may have been in the moment. Moreover, many orthopedic patients had not reached three months in recovery time and therefore were not able to rate their satisfaction at three months, six months, and/or one year after surgery. This may have changed the amount of satisfaction of the orthopedic patients if more had reached three months, six months, or one year in recovery. Additional data is needed from patients who have recovered at least a year after surgery. Since most of the respondents were women, we are unable to generalize these findings to the male population. Additionally, the cosmetic data was taken by mostly Caucasian women, therefore this also cannot be generalized to the entire population.

Based on the current study, patients who underwent cosmetic surgery were less satisfied preoperatively and were more satisfied during the first 1-2 weeks postoperatively. Additionally, orthopedic patients were satisfied preoperatively and were less satisfied during the first 1-2 weeks postoperatively. To expand the findings of this study, future work will include more participants to make the data stronger and more gen-

eralizable. By understanding the differences in recovery between different surgeries, like orthopedic and cosmetic surgeries, patients will be able to be assisted properly to have an optimal level of satisfaction post operatively.

MATERIALS AND METHODS

First-time surgical patients having undergone either orthopedic surgery or cosmetic surgery were included in the subject population. Participants include men and women that were over 18 years of age at the time of surgery. Data was only recorded from patients that had orthopedic or cosmetic surgeries. Patients that did not fall under these requirements were excluded from the study population.

Data was collected using the password-protected, survey-collecting database Survey Monkey prior to exportation into a secured excel document, which was only accessible to the lead researcher and adult sponsor for analysis (9). Two surveys were created, an orthopedic survey and a cosmetic survey, using Survey Monkey and the data was collected in a password protected account made by the lead researcher. These surveys were shown in specialized Facebook groups for those who have had either an orthopedic surgery or cosmetic surgery. All participants provide informed consent to participate in an online survey. Patients completed one of two surveys for either orthopedic surgery or cosmetic surgery. All patient information was obtained through these surveys between May 1st, 2022, and June 1st, 2022.

Both surveys consisted of the same questions. Prior to survey completion, potential participants were asked their age and surgical status. Patients who did not meet the eligibility criteria were excluded. To acknowledge consent, participants signed their names and then were given the questions of the survey (**Appendix A**).

These surveys were displayed online, as a post on Facebook from the personal account of the research lead (**Appendix B**). Posts were displayed in Facebook groups that supported persons who had or will have a cosmetic procedure or orthopedic procedure (**Appendix C**). To reach a wide variety of participants who have undergone the surgeries of interest, the research lead carefully considered appropriate social media groups for adequate distribution of the survey.

Analysis of data was processed through descriptive statistics using Excel Version 16.66. Because the dependent variables were ordinal (variables rated via Likert scale) and the variances were unequal with a non-normal score distribution, Mann-Whitney U tests were performed to compare satisfaction scores between groups. Therefore, differences in satisfaction score distributions between groups were calculated for each time point, including preoperative, 1-2 weeks after surgery, 3 months after surgery, 6 months after surgery, and 1 year after surgery.

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Appendix A

The following questions and possible responses were included in the survey and were displayed in this order.

- Question 1: "What is your age group?". Possible responses: "18-24", "25-34", "35-44", "45-54", "55-64", and "65+"
- Question 2: "What is your gender?". Possible responses: "Male", "Female", "Another gender", and "Prefer not to say"
- Question 3: "What is your ethnicity?". Possible responses: "American Indian or Alaska Native", "Another Race", "Asian or Asian American", "Black or African American", "Hispanic or Latino", "Native Hawaiian or other Pacific Islander", and "White or Caucasian".

Questions one to five allow possible findings related to the study and may reveal how those categories may be related to their surgery and satisfaction. The following questions ask for the satisfaction of the patient on a scale to 1-5 with 1 being very unhappy/unsatisfied and 5 being very satisfied/happy.

- Question 4: "How satisfied/happy were you with your body BEFORE surgery, on a scale of 1-5 with 1 being very unhappy/unsatisfied and 5 being very satisfied/happy?"
- Question 5: "How satisfied/happy were you with your body 1-2 WEEKS AFTER surgery, on a scale of 1-5 with 1 being very unhappy/unsatisfied and 5 being very satisfied/happy?"
- Question 6: "How satisfied/happy were you with your body 3 MONTHS AFTER surgery, on a scale of 1-5 with 1 being very unhappy/unsatisfied and 5 being very satisfied/happy?"
- Question 7: "How satisfied/happy were you with your body 6 MONTHS AFTER surgery, on a scale of 1-5 with 1 being very unhappy/unsatisfied and 5 being very satisfied/happy"
- Question 8: "How satisfied/happy were you with your body 1 YEAR AFTER surgery, on a scale of 1-5 with 1 being very unhappy/unsatisfied and 5 being very satisfied/happy?"

However, if the patient has not reached recovery within particular time frames, there is the option to select: "Have not reached 3 months after surgery", "Have not reached 6 months after surgery", and "Have not reached 1 year after surgery".

Appendix B

Facebook Post: Hi, my name is Jasmine Lanza and I am a high school student. I am posting a survey that will help me collect information for a research study that I am leading. This survey is to be completed by either an orthopedic postoperative patient or cosmetic postoperative patient. I am answering a research question on how the two different types of surgeries impact patients differently psychologically. The total time needed to read the consent form and complete the survey will only take about 5-10 mins. Your participation would be greatly appreciated. However, the criteria for completing this survey is: 1) you must be over 18, and 2) this must be your first and only surgery. If you anticipate that questions regarding your surgery may cause you, the participant, any discomfort please exit the survey. Thank you for your time and consideration!

If you have undergone cosmetic surgery, please click the following link:

<https://www.surveymonkey.com/r/XSBLPNK>

If you have undergone orthopedic surgery, please click the following link:

<https://www.surveymonkey.com/r/DD8JYGG>

Appendix C

The following are the Facebook groups where the survey was posted: Shoulder Surgery & Support Group, Cosmetic Aesthetics & Plastic Surgery Support and chat men/women, Orthopedic surgery, Plastic and Reconstructive Surgery, Support Group for Gastric Sleeve or

Gastric Bypass, Knee Surgery Support Group, Tummy Tuck BBL Lipo 360 and more, Plastic Surgery, Surgery Sisters, Orthopedic in short notes, Knee and Joint Health, Medicine and Surgery, Periacetabular Osteotomy (PAO), Surgery for Baddies, Periacetabular Osteotomy (PAO) UK based group, Pregnancy Post – Periacetabular Osteotomy (PAO), Femoral Osteotomy (FO) Support Group, Plastic Surgery over 40, Knee Injuries and Surgeries, Plastic and Cosmetic surgery Liposuction in Abdominoplasty Amritsar, Knee surgery support group, Hip PAO, BBL surgery groups: we share and support our BBL journey!, total knee replacement and recovery group.