

# Aesthetic Procedures and Psychological Wellbeing in Saudi College Students: An In-Depth Exploration

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**Purpose:** Minimally invasive aesthetic procedures are widely popular among the youth. Despite their prevalence, there is a significant gap in the research concerning the relationship between these procedures and psychological wellbeing, as well as an insufficient exploration of the barriers and motivators influencing their adoption, this study aims to address these gaps.

**Methods:** This cross-sectional study has utilized a secure online survey directed at Saudi university students as the target population. The survey was consisting of 18-item electronic questionnaire including of 4 parts (demographical data, history of psychological illness and screening of current psychological wellbeing using WHO-5 well-being tool, history of doing cosmetic procedure, or willingness to do in the future, barriers and motivators to do cosmetic procedures), and it was distributed across multiple social media platforms.

**Results:** A total of 8443 college students completed the study questionnaire. Exactly 1096 (13%) of the students underwent a cosmetic procedure. The most reported procedures were laser hair removal (9.1%), filler (5.3%), skin boosters (2.8%), and Botulinum toxin A injections (Botox) (2.6%). The most ranked motivators were being painless, with no side effects (8.8 out of 10), followed by being free (8.0 out of 10) and enhancing self-confidence (7.4 out of 10).

**Conclusion:** No significant difference recorded at the overall psychological well-being score between who underwent cosmetic procedures and who did not.

**Keywords:** aesthetic procedures, cosmetic dermatology, cosmetic dermatologic procedures, psychological wellbeing, mental health, college students, Saudi Arabia

## Introduction

Aesthetic procedures were initially employed for imperative purposes such as facial reconstruction and the treatment of injuries or nasal fractures. However, the advent of non-invasive techniques, including filler injections, Botox, laser therapy, and micro-needling, has significantly elevated the popularity of these procedures. Categorically, aesthetic procedures can be distinguished into surgical and non-surgical interventions, such as filler injections and laser treatments.<sup>1</sup> Traditionally, aesthetic procedures have demonstrated a higher prevalence among women.<sup>1</sup> The literature indicates a positive association between aesthetic procedures and psychological well-being, particularly when coupled with pre-existing high self-esteem.<sup>1</sup> Conversely, in male individuals, younger demographics, those motivated by relationship concerns, and notably those with a history of depression, anxiety, personality disorders, or body dysmorphic disorders, aesthetic procedures have been linked to poorer psychological well-being.<sup>2</sup> In general, minimally invasive aesthetic procedures, such as filler injections, exhibit stronger associations with improved psychological and social well-being compared to invasive procedures.<sup>3</sup>

Globally, the acceptance of cosmetic procedures has surged, especially among young adults, particularly females.<sup>4</sup> This trend is mirrored in the Saudi population, where willingness and acceptance of aesthetic procedures have risen in recent years.<sup>5</sup> Nevertheless, there is a dearth of research addressing the attitudes and willingness of Saudi undergraduate university students toward aesthetic procedures. A study conducted in the eastern province of Saudi Arabia identified older students, those with a history of undergoing aesthetic procedures, and students from the College of Engineering as more predisposed to these interventions.<sup>6</sup>

Several factors, including age, gender, relationship status, and psychological considerations, can influence the decision to undergo aesthetic procedures and subsequent psychological well-being.<sup>6</sup> This investigation concentrates on non-surgical procedures, with a particular focus on Botox, hyaluronic acid injections, and laser hair removal.<sup>6</sup> The primary aim in our study is to investigate the relationship between aesthetic procedures and psychological well-being among undergraduate university students in Saudi Arabia. Additionally, this will explore the willingness, barriers, and motivators associated with the adoption of these procedures in this demographic.

## Materials and Methods

### Study Design

This cross-sectional study has utilized a secure online survey directed at Saudi university students as the target population. The survey was disseminated across multiple social media platforms during July 2023.

### Sample Size

Convenience sampling was employed, with the sample size determined based on a 95% significance level and 5% margin of error. According to the Saudi Arabian General Authority of Statistics, our study population is 8,996,269 (Saudi and non-Saudi people aged 18–30 years living in Saudi Arabia). EPI info 7 program has been used to determine the sample size. Based on our study population and using a confidence interval of 95%, 5% margin of error, and a P value of 0.05, our goal is to collect a minimum of 384 responses. The study included 8443 participants, meeting the projected sample size requirements.

### Study Tool

An 18-item electronic questionnaire consisting of 4 parts (demographical data, history of psychological illness and screening of current psychological wellbeing using WHO-5 well-being tool, history of doing cosmetic procedure, or willingness to do in the future, barriers and motivators to do cosmetic procedures) is distributed. WHO-5 Well-Being Index is a tool that is used to assess psychological well-being and it has been tested in non-clinical young adults from six Arab countries and found to be valid and reliable.<sup>7</sup> An expert panel assessed the survey's content validity. In a face validity test, the questionnaire was sent to 30 participants via email, and their feedback prompted necessary adjustments. Notably, the final analysis did not include data from these participants.

### Demographic Information

The demographic section encompassed eleven questions, region of residence, covering age (in years), gender, university academic year, nationality, marital status, family income (in Saudi riyals), university field of specialty, paternal educational level, maternal educational level, and whether the patient had been diagnosed with a psychiatric condition.

### WHO-5 Psychological Well-Being

The second section included the WHO-5 Well-Being Index, which serves as a validated tool employed for evaluating psychological well-being. Its efficacy has been assessed in non-clinical young adults across six Arab countries, demonstrating both validity and reliability in its application.<sup>7</sup>

## Previous or Future Consideration of Aesthetic Procedures

The third section comprised a two-part inquiry concerning the engagement of college students in aesthetic procedures and their future intentions in this regard. Respondents indicating affirmative responses were prompted to specify the particular procedures through the use of checkboxes.

## Motivators to Undergo Aesthetic Procedures

The last section consisted of the main motives to undergo aesthetic procedures using a (0–10) scale where 0: nil, 5: neutral, and 10: most definite. The motives mentioned being to appear more attractive, enhance self-confidence, free of charge, painless with no side effects, and to grab a partner's attention.

## Ethical Consideration

This study was conducted in compliance with the ethical principles of the Declaration of Helsinki. Approval was obtained from the Institutional Review Board of the College of Medicine, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia. Each participant approved through an online questionnaire after being informed about the study's purpose and their right to withdraw at any time without obligation to the study team. Furthermore, participant anonymity was ensured by refraining from collecting identifying data. No incentives or rewards were provided to the participants.

## Statistical Data Analysis

The data were collected, reviewed and then fed to Statistical Package for Social Sciences version 21 (SPSS: An IBM Company). All statistical methods used were two tails with alpha level of 0.05 considered significant if P value less than or equal to 0.05. Descriptive analysis was done by prescribing frequency distribution and percentage for study variables including demographic data, parent's data, while aesthetic procedure done and planned procedures were graphed. Also, Motivators to perform cosmetic procedures were tabulated. Students psychological well-being was calculated by summing up all items' discrete scores that ranged from 0 to 5 for each and the overall ranged from 0 to 25 which was multiplied by 4 to be from 0 to 100.<sup>8</sup> The mean score with standard deviation and range was assessed for different psychological well-being domains and the overall score. Students with an overall score more than 60% of the total were considered to have good psychological well-being.<sup>9</sup> Cross tabulation to assess all relations for categorical data using Pearson chi-square test and exact probability test for small frequency distributions. Also, the mean scores were compared using independent samples *t*-test and One-Way ANOVA test. Multiple stepwise logistic regression analysis was used to assess the most significant predictors of good psychological well-being (>60) based on backward LR method.

## Results

A total of 8443 college students completed the study questionnaire, 1962 (24.1%) from the Eastern region, 1819 (22.4%) from Western region, 1778 (21.9%) from the Southern region and others from other different regions. Students' ages ranged from 16 to more than 30 years with a mean age of  $23.5 \pm 6.4$  years old. Exactly 6101 (72.3%) were males. As for the academic year, 42.5% were in their first to third years, while the vast majority of the students (94.3%) was Saudi. A total of 6579 (77.9%) were single and 1244 (14.7%) were married. Monthly income less than 5000 SR was reported among 1344 (15.9%), while 4514 (53.5%) had monthly income for families exceeding 10,000 SR. The most reported specialties were health care (47%), literacy (11%), scientific (10.1%), and Business and Administrative (9.6%). A total of 3678 (45.2%) of students' fathers had a bachelor degree compared to 3613 (44.4%) of their mothers. With regard to the history of psychiatric disorders, the vast majority (85.6%) said "No", while 13.8% had mood disorders and 0.5% had psychotic disorders (Table 1).

Figure 1 Prevalence of college students who did aesthetic procedures and those who planned to do. Exactly 1096 (13%) of the students underwent a cosmetic procedure. The most reported procedures were laser hair removal (9.1%), filler (5.3%), skin boosters (2.8%), and Botulinum toxin A injections (Botox) (2.6%). Also, 2591 (30.7%) students plan

**Table 1** Socio-Demographic Data of Study College Students in Saudi Arabia (n = 8443)

| Socio-Demographic Data                 |                                     | No   | %     |
|--|-------------------------------------|------|-------|
| <b>Region</b>                          | Central                             | 1414 | 17.4% |
|  | Western                             | 1819 | 22.4% |
|  | Eastern                             | 1962 | 24.1% |
|  | Northern                            | 1164 | 14.3% |
|  | Southern                            | 1778 | 21.9% |
| <b>Age in years</b>                    | <20                                 | 1174 | 13.9% |
|  | 20–22                               | 3474 | 41.1% |
|  | 23–24                               | 2011 | 23.8% |
|  | 25+                                 | 1784 | 21.1% |
| <b>Gender</b>                          | Male                                | 6101 | 72.3% |
|  | Female                              | 2342 | 27.7% |
| <b>University academic year</b>        | 1st year                            | 951  | 11.3% |
|  | 2nd year                            | 1154 | 13.7% |
|  | 3rd year                            | 1478 | 17.5% |
|  | 4th year                            | 1779 | 21.1% |
|  | 5th year                            | 1243 | 14.7% |
|  | 6th year                            | 713  | 8.4%  |
|  | 7th year                            | 1125 | 13.3% |
| <b>Nationality</b>                     | Saudi                               | 7965 | 94.3% |
|  | Non-Saudi                           | 478  | 5.7%  |
| <b>Marital status</b>                  | Single                              | 6579 | 77.9% |
|  | Engaged                             | 470  | 5.6%  |
|  | Married                             | 1244 | 14.7% |
|  | Divorced                            | 117  | 1.4%  |
|  | Widowed                             | 33   | 0.4%  |
| <b>Family income (in Saudi riyals)</b> | <5000 SR                            | 1344 | 15.9% |
|  | 5000–10,000 SR                      | 2585 | 30.6% |
|  | >10,000 SR                          | 4514 | 53.5% |
| <b>University speciality field</b>     | Healthcare                          | 3822 | 47.0% |
|  | Literately                          | 893  | 11.0% |
|  | Scientific                          | 819  | 10.1% |
|  | Business and Administrative         | 785  | 9.6%  |
|  | Engineering                         | 638  | 7.8%  |
|  | Technology and Information          | 591  | 7.3%  |
|  | Law                                 | 346  | 4.3%  |
|  | Design                              | 244  | 3.0%  |
| <b>Father's education level</b>        | Illiterate (does not read or write) | 296  | 3.6%  |
|  | Elementary or middle school         | 1085 | 13.3% |
|  | High school                         | 1971 | 24.2% |
|  | Bachelor's degree                   | 3678 | 45.2% |
|  | Higher education                    | 1107 | 13.6% |
| <b>Mother's education level</b>        | Illiterate (does not read or write) | 627  | 7.7%  |
|  | Elementary or middle school         | 1463 | 18.0% |
|  | High school                         | 1867 | 22.9% |
|  | Bachelor's degree                   | 3613 | 44.4% |
|  | Higher education                    | 567  | 7.0%  |

(Continued)

**Table 1** (Continued).

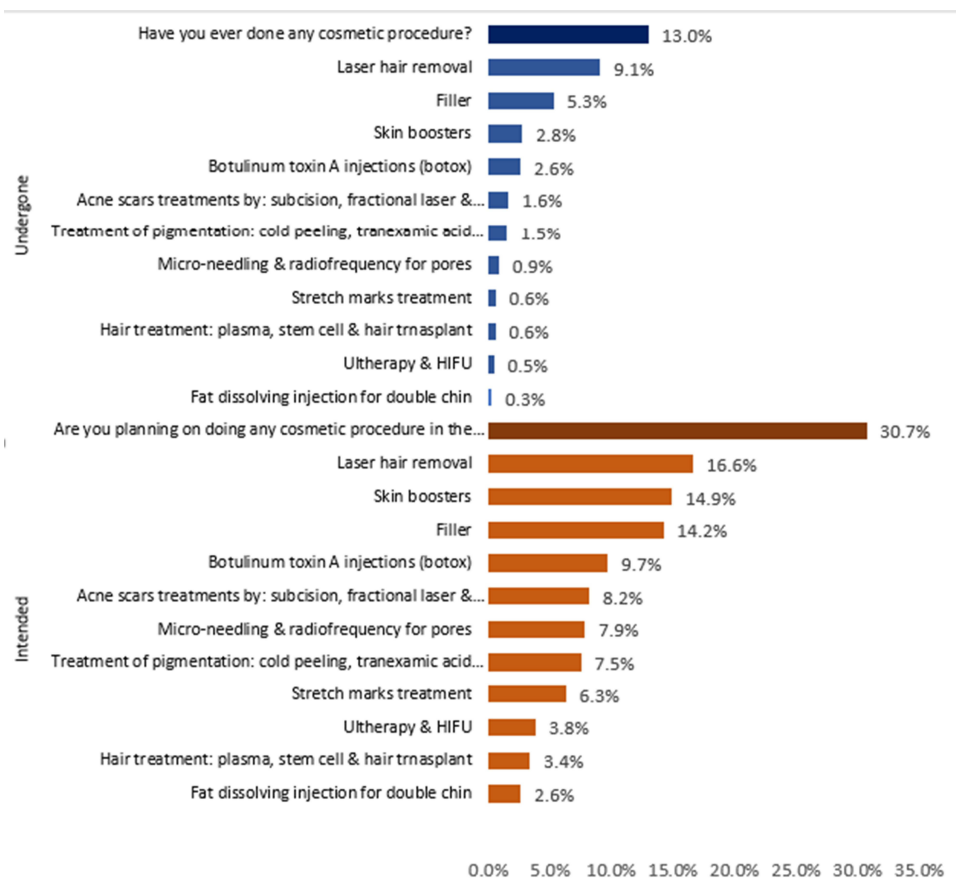
| Socio-Demographic Data                                  |   | No   | %     |
|---|---|------|-------|
| Have you even been diagnosed with psychiatric disorder? | No  | 7229 | 85.6% |
|   | Mood disorders (ie Anxiety or Depression) | 1169 | 13.8% |
|   | Psychotic disorders (ie Schizophrenia)    | 44   | 0.5%  |

to do a cosmetic procedure in the future, mainly laser hair removal (16.6%), skin boosters (14.9%), filler (14.2%), and Botox (9.7%).

**Table 2.** Motivators to do cosmetic procedures among college students in Saudi Arabia. The most ranked motivators were painless, with no side effects (8.8 out of 10), followed by being free (8.0 out of 10), and enhancing self-confidence (7.4 out of 10). Appearing more attractive (5.9 out of 10) and to grab partner’s attention (5.8 out of 10) were the least ranked motivators.

Considering the college students psychological well-being (**Table 3**), the highest score was for feeling cheerful in good spirits (3.1 out of 5), followed by daily life has been filled with things that interest students (3.0 out of 5), feeling calm and relaxed (2.9 out of 5), and feeling active and vigorous (2.7 out of 5), and woke up feeling fresh and rested (2.6 out of 5). Totally, the overall psychological well-being score was  $56.8 \pm 21.0$  out of 100 (56.8%).

**Table 4.** The distribution of undergoing cosmetic procedures by college student’s demographic data. A total of 19.8% of central region students underwent cosmetic procedure versus 8.8% of southern region students with a recorded statistical significance ( $P = 0.001$ ). Also, 16.5% of students aged 25 years or more did any of the cosmetic procedures



**Figure 1** Prevalence of college students who did aesthetic procedures and those who planning to do them.

**Table 2** Motivators to Do Cosmetic Procedures Among College Students in Saudi Arabia

| Motivators                                     | Mean | SD  | Rank |
|--|------|-----|------|
| If they were painless and with no side effects | 8.8  | 3.0 | 1    |
| If they were free                              | 8.0  | 3.5 | 2    |
| Enhance self-confidence                        | 7.4  | 3.4 | 3    |
| Appear more attractive to others               | 5.9  | 3.5 | 4    |
| To grab my partner's attention                 | 5.8  | 3.7 | 5    |

**Table 3** WHO-5 Psychological Well-Being Scores Among College Students in Saudi Arabia

| Psychological Well-Being Domain                            | Range | Mean | SD   |
|--|-------|------|------|
| I have felt cheerful in good spirits                       | 0–5   | 3.1  | 1.2  |
| I have felt calm and relaxed                               | 0–5   | 2.9  | 1.3  |
| I have felt active and vigorous                            | 0–5   | 2.7  | 1.3  |
| I woke up feeling fresh and rested                         | 0–5   | 2.6  | 1.3  |
| My daily life has been filled with things that interest me | 0–5   | 3.0  | 1.3  |
| <b>Overall psychological well-being score</b>              | 0–100 | 56.8 | 21.0 |

**Table 4** The Distribution of Undergoing Cosmetic Procedures by College Student's Demographic Data

| Demographic Data      | Have you Ever Done any Cosmetic Procedure? |       |      |       | p-value             |
|-----------------------|--|-------|------|-------|---------------------|
|                       | Yes  |       | No   |       |                     |
|                       | No   | %     | No   | %     |                     |
| <b>Region</b>         |  |       |      |       | 0.001*              |
| Central               | 280  | 19.8% | 1133 | 80.2% |                     |
| Western               | 229  | 12.6% | 1590 | 87.4% |                     |
| Eastern               | 270  | 13.8% | 1692 | 86.2% |                     |
| Northern              | 161  | 13.8% | 1003 | 86.2% |                     |
| Southern              | 156  | 8.8%  | 1622 | 91.2% |                     |
| <b>Age in years</b>   |  |       |      |       | 0.001*              |
| <20                   | 89   | 7.6%  | 1084 | 92.4% |                     |
| 20–22                 | 405  | 11.7% | 3069 | 88.3% |                     |
| 23–24                 | 307  | 15.3% | 1703 | 84.7% |                     |
| 25+                   | 295  | 16.5% | 1489 | 83.5% |                     |
| <b>Gender</b>         |  |       |      |       | 0.001*              |
| Male                  | 972  | 15.9% | 5127 | 84.1% |                     |
| Female                | 124  | 5.3%  | 2218 | 94.7% |                     |
| <b>Marital status</b> |  |       |      |       | 0.001* <sup>^</sup> |
| Unmarried             | 846  | 12.0% | 6201 | 88.0% |                     |
| Married               | 223  | 17.9% | 1021 | 82.1% |                     |
| Divorced/Widowed      | 27   | 18.0% | 123  | 82.0% |                     |
| <b>Nationality</b>    |  |       |      |       | 0.164               |
| Saudi                 | 1044                                       | 13.1% | 6920 | 86.9% |                     |
| Non-Saudi             | 52   | 10.9% | 425  | 89.1% |                     |

(Continued)

**Table 4** (Continued).

| Demographic Data   | Have you Ever Done any Cosmetic Procedure? |       |      |       | p-value             |
|--|--|-------|------|-------|---------------------|
|  | Yes  |       | No   |       |                     |
|  | No   | %     | No   | %     |                     |
| <b>Family income (in Saudi riyals)</b>                         |  |       |      |       | 0.001*              |
| <5000 SR   | 113  | 8.4%  | 1231 | 91.6% |                     |
| 5000–10,000 SR   | 251  | 9.7%  | 2334 | 90.3% |                     |
| >10,000 SR   | 732  | 16.2% | 3780 | 83.8% |                     |
| <b>University speciality field</b>                             |  |       |      |       | 0.118               |
| Healthcare speciality  | 520  | 13.6% | 3300 | 86.4% |                     |
| Non-health care speciality                                     | 576  | 12.5% | 4045 | 87.5% |                     |
| <b>Father's education level</b>                                |  |       |      |       | 0.001*              |
| Below high school  | 128  | 9.3%  | 1253 | 90.7% |                     |
| High school  | 222  | 11.3% | 1749 | 88.7% |                     |
| Bachelor's degree  | 563  | 15.3% | 3115 | 84.7% |                     |
| Higher education   | 183  | 16.5% | 923  | 83.5% |                     |
| <b>Mother's education level</b>                                |  |       |      |       | 0.001*              |
| Below high school  | 207  | 9.9%  | 1883 | 90.1% |                     |
| High school  | 232  | 12.4% | 1635 | 87.6% |                     |
| Bachelor's degree  | 562  | 15.6% | 3050 | 84.4% |                     |
| Higher education   | 95   | 16.8% | 472  | 83.2% |                     |
| <b>Have you even been diagnosed with psychiatric disorder?</b> |  |       |      |       | 0.001* <sup>^</sup> |
| No   | 882  | 12.2% | 6346 | 87.8% |                     |
| Mood disorders (ie Anxiety or Depression)                      | 202  | 17.3% | 967  | 82.7% |                     |
| Psychotic disorders (ie Schizophrenia)                         | 12   | 27.3% | 32   | 72.7% |                     |

Notes: P: Pearson  $\chi^2$  test. <sup>^</sup>: Exact probability test. \*P < 0.05 (significant).

compared to 7.6% of others below the age of 20 years ( $P = 0.001$ ). Cosmetic procedure was done among 15.9% of male students compared to 5.3% of females ( $P = 0.001$ ). Likewise, 18% of divorced/widow students underwent any of the procedures versus 12% of unmarried students ( $P = 0.001$ ) and also 16.2% of

those with high income did versus 8.4% of students with low monthly income ( $P = 0.001$ ). A higher percent of students with highly educated parents underwent a cosmetic procedure versus others with low parents' educational level ( $P = 0.001$ ). Also, 27.3% of students with Psychotic disorders did any cosmetic procedure compared to 12.2% of psychologically free students ( $P = 0.001$ ).

**Table 5.** The distribution of psychological well-being by college student's demographic data. The mean psychological well-being score was significantly higher among married students than among divorced students ( $57.4 \pm 20.8$  vs  $54.7 \pm 20.9$ ;  $P = 0.049$ ). Also, it was significantly higher among students of highly educated parents than among others with low parents' education ( $57.3 \pm 21.2$  vs  $55.9 \pm 20.9$  and  $57.7 \pm 22.0$  vs  $55.9 \pm 20.9$ , respectively;  $P < 0.05$ ).

**Table 6.** Relationship between aesthetic procedures and psychological wellbeing of college students, Saudi Arabia. Only calm and relaxed and waking up feeling fresh and rested were significantly higher among students undergoing any of the cosmetic procedures (2.91 and 2.66 vs 2.85 and 2.58, respectively). No significant difference recorded at the overall psychological well-being score (57.5 vs 56.7).

**Table 7.** Correlation between motivators to do aesthetic procedure and psychological well-being among college students. There was a significant positive weak correlation between feeling calm and relaxed with "Appear more attractive to others" ( $r = 0.04$ ;  $P = 0.046$ ) and with "being painless" ( $r = 0.05$ ;  $P = 0.019$ ). Also, daily life has been filled with things that showed a significant positive weak correlation with being painless as a motivator ( $r = 0.05$ ;  $P = 0.029$ ).



**Table 5** The Distribution of Psychological Well-Being by College Student's Demographic Data

| Demographic Data   | Psychological WB > 60%<br>(3748; 44.4%) |       | Psychological Well-Being<br>Score |      | p-value            |
|--|---|-------|-----------------------------------|------|--------------------|
|  | No                                      | %     | Mean                              | SD   |                    |
| <b>Region</b>  |   |       |                                   |      | 0.554              |
| Central  | 640                                     | 45.3% | 57.4                              | 21.7 |                    |
| Western  | 850                                     | 46.7% | 57.3                              | 20.7 |                    |
| Eastern  | 878                                     | 44.8% | 56.9                              | 20.8 |                    |
| Northern   | 513                                     | 44.1% | 56.9                              | 21.2 |                    |
| Southern   | 758                                     | 42.6% | 56.3                              | 21.0 |                    |
| <b>Age in years</b>  |   |       |                                   |      | 0.995              |
| <20  | 506                                     | 43.1% | 57.0                              | 20.5 |                    |
| 20–22  | 1564                                    | 45.0% | 56.8                              | 21.2 |                    |
| 23–24  | 888                                     | 44.2% | 56.8                              | 20.8 |                    |
| 25+  | 790                                     | 44.3% | 56.8                              | 21.4 |                    |
| <b>Gender</b>  |   |       |                                   |      | 0.206 <sup>§</sup> |
| Male   | 2661                                    | 43.6% | 56.6                              | 21.1 |                    |
| Female   | 1087                                    | 46.4% | 57.3                              | 20.7 |                    |
| <b>Marital status</b>  |   |       |                                   |      | 0.049*             |
| Unmarried  | 3118                                    | 44.2% | 56.8                              | 21.1 |                    |
| Married  | 571                                     | 45.9% | 57.4                              | 20.8 |                    |
| Divorced/Widowed   | 59                                      | 39.3% | 54.7                              | 20.9 |                    |
| <b>Nationality</b>   |   |       |                                   |      | 0.957 <sup>§</sup> |
| Saudi  | 3530                                    | 44.3% | 56.8                              | 21.0 |                    |
| Non-Saudi  | 218                                     | 45.6% | 56.8                              | 21.3 |                    |
| <b>Family income (in Saudi riyals)</b>                         |   |       |                                   |      | 0.195              |
| < 5000 SR  | 581                                     | 43.2% | 55.9                              | 21.4 |                    |
| 5000–10,000 SR   | 1145                                    | 44.3% | 57.0                              | 20.9 |                    |
| >10,000 SR   | 2022                                    | 44.8% | 57.0                              | 21.0 |                    |
| <b>University speciality field</b>                             |   |       |                                   |      | 0.620 <sup>§</sup> |
| Healthcare speciality  | 1678                                    | 43.9% | 56.7                              | 21.2 |                    |
| Non-health care speciality                                     | 2070                                    | 44.8% | 56.9                              | 20.9 |                    |
| <b>Father's education level</b>                                |   |       |                                   |      | 0.035*             |
| Below high school  | 588                                     | 42.6% | 55.9                              | 20.9 |                    |
| High school  | 863                                     | 43.8% | 56.3                              | 21.0 |                    |
| Bachelor's degree  | 1688                                    | 45.9% | 57.5                              | 21.1 |                    |
| Higher education   | 500                                     | 45.2% | 57.3                              | 21.2 |                    |
| <b>Mother's education level</b>                                |   |       |                                   |      | 0.048*             |
| Below high school  | 891                                     | 42.6% | 55.9                              | 20.9 |                    |
| High school  | 872                                     | 46.7% | 57.1                              | 21.2 |                    |
| Bachelor's degree  | 1618                                    | 44.8% | 57.3                              | 20.9 |                    |
| Higher education   | 258                                     | 45.5% | 57.7                              | 22.0 |                    |
| <b>Have you even been diagnosed with psychiatric disorder?</b> |   |       |                                   |      | 0.788              |
| No   | 3223                                    | 44.6% | 56.9                              | 21.2 |                    |
| Mood disorders (ie Anxiety or Depression)                      | 508                                     | 43.5% | 56.6                              | 20.1 |                    |
| Psychotic disorders (ie Schizophrenia)                         | 17                                      | 38.6% | 55.3                              | 21.5 |                    |

Notes: P: One Way ANOVA. <sup>§</sup>Independent samples t-test. \*P < 0.05 (significant).



**Table 6** Relationship Between Aesthetic Procedures & Psychological Wellbeing of College Students, Saudi Arabia

| Psychological Well-Being Domains                           | Have you Ever Done any Cosmetic Procedure? |       |       |       | p-value |
|--|--|-------|-------|-------|---------|
|  | Yes  |       | No    |       |         |
|  | Mean                                       | SD    | Mean  | SD    |         |
| I have felt cheerful in good spirits                       | 3.09                                       | 1.20  | 3.10  | 1.18  | 0.872   |
| I have felt calm and relaxed                               | 2.91                                       | 1.24  | 2.85  | 1.27  | 0.048*  |
| I have felt active and vigorous                            | 2.71                                       | 1.28  | 2.69  | 1.27  | 0.689   |
| I woke up feeling fresh and rested                         | 2.66                                       | 1.36  | 2.58  | 1.35  | 0.049*  |
| My daily life has been filled with things that interest me | 3.01                                       | 1.33  | 2.96  | 1.30  | 0.211   |
| Overall psychological well-being score                     | 57.50                                      | 21.23 | 56.73 | 21.00 | 0.255   |

Notes: P: Independent samples t-test. \*P < 0.05 (significant).

**Table 7** Correlation Between Motivators to Do Aesthetic Procedure and Psychological Well-Being Among College Students

| Motivators                                     |         | Psychological Well-Being             |                              |                                 |                                    |  |                                |
|--|---------|--------------------------------------|------------------------------|---------------------------------|------------------------------------|--|--------------------------------|
|  |         | I Have Felt Cheerful in Good Spirits | I Have Felt Calm and Relaxed | I Have Felt Active and Vigorous | I Woke Up Feeling Fresh and Rested | My Daily Life has Been Filled with Things That Interest Me | Psychological Well-Being Score |
| Appear more attractive to others               | r       | 0.01                                 | 0.04*                        | 0.04                            | 0.02                               | 0.03   | 0.03                           |
|  | p-value | 0.565                                | 0.046                        | 0.073                           | 0.425                              | 0.099  | 0.106                          |
| Enhance self-confidence                        | r       | 0.01                                 | 0.03                         | 0.01                            | -0.01                              | 0.02   | 0.01                           |
|  | p-value | 0.927                                | 0.120                        | 0.691                           | 0.625                              | 0.403  | 0.598                          |
| If they were free                              | r       | -0.01                                | 0.02                         | -0.02                           | -0.02                              | -0.01  | -0.01                          |
|  | p-value | 0.678                                | 0.447                        | 0.363                           | 0.286                              | 0.788  | 0.639                          |
| If they were painless and with no side effects | r       | 0.03                                 | 0.05*                        | 0.02                            | 0.02                               | 0.05*  | 0.04                           |
|  | p-value | 0.216                                | 0.019                        | 0.267                           | 0.233                              | 0.029  | 0.052                          |
| To grab my partner's attention                 | r       | -0.02                                | 0.03                         | 0.00                            | 0.01                               | 0.01   | 0.01                           |
|  | p-value | 0.459                                | 0.213                        | 0.928                           | 0.967                              | 0.584  | 0.781                          |

Notes: r: Pearson correlation coefficient. \*P < 0.05 (significant).

**Table 8.** Multiple logistic regression model for predictors of psychological well-being among college students in Saudi Arabia. Among all included demographic factors, undergoing aesthetic procedures and reasons for doing so, the factors in the table were the most significant predictors. Female students showed significantly 30% higher likelihood for high

**Table 8** Multiple Logistic Regression Model for Predictors of High Psychological Well-Being (>60%) Among College Students in Saudi Arabia

| Predictors                        | p-value | AOR  | 95% CI |       |
|-----------------------------------|---------|------|--------|-------|
|                                   |         |      | Lower  | Upper |
| Female gender                     | 0.034*  | 1.30 | 1.02   | 1.67  |
| High father education             | 0.005*  | 1.10 | 1.03   | 1.18  |
| Free aesthetic procedures         | 0.046*  | 1.21 | 1.01   | 1.47  |
| Painless and with no side effects | 0.022*  | 1.04 | 1.01   | 1.07  |

Note: \* P < 0.05 (significant).

Abbreviations: AOR, adjusted odds ratio; CI, Confidence interval.

psychological well-being (>60%) than males (OR = 1.30), students with high father education showed 10% higher likelihood for high psychological well-being (OR = 1.10), being free procedures increased the likelihood for high well-being by about 21% (OR = 1.21), and being painless increased the likelihood by 4% (OR = 1.04).

## Discussion

The acceptance of cosmetic procedures has surged globally, especially among young adults and females.<sup>4</sup> This trend is mirrored in the Saudi population, where willingness and acceptance of aesthetic procedures have also risen in recent years.<sup>5</sup> The primary objective of the present study was to explore the relationship between aesthetic procedures and psychological well-being among undergraduate university students in Saudi Arabia. In addition to exploring the willingness, barriers, and motivators associated with the adoption of these procedures in this demographic. In the present study, the prevalence of college students who underwent aesthetic procedures was 13%. In a recent cross-sectional study conducted among Saudi females, 10% of the participants were found to have undergone cosmetic procedures, including operative and non-operative procedures.<sup>10</sup> In another study conducted in 2012 in Jeddah, Saudi Arabia, only 2.2% of female college students surveyed had undergone cosmetic surgery.<sup>11</sup> This overall increase in the prevalence of cosmetic surgery among college students is reflected in the literature.<sup>4</sup> Globally, the number of cosmetic treatments increased from 20.1 to 25 million between 2015 and 2019, according to data from the International Society of Aesthetic Plastic Surgery (ISAPS).<sup>12</sup> Furthermore, Saudi Arabia came in at number 29 out of the top 30 nations with the fastest-growing rates of cosmetic surgery performed globally in 2019.<sup>13</sup> Laser hair removal was the most common aesthetic procedure performed in our sample (9.15). Similarly, laser hair removal was found to be the most common procedure reported in a study conducted among the general population in the western region of Saudi Arabia, followed by fillers.<sup>14</sup> In fact, with more than 1.1 million treatments performed in 2014, laser hair removal was among the top five non-invasive procedures performed in the United States.<sup>15</sup> Although lasers do not permanently remove hair, their popularity stems from their ability to selectively target hair follicles, reduce treatment time, prolong hair-free intervals, and provide fewer adverse effects. Up to 90% of hair can be removed with multiple treatments, and the effects can last up to a year. Additionally, a single treatment can reduce hair by 10%–40%.<sup>16</sup>

In the present study, older participants (25 years and above) were more likely to receive aesthetic procedures ( $P = 0.001$ ). Attitudes toward cosmetic surgery are greatly influenced by age, with notable distinctions found between the younger and older age groups. For example, individuals aged 18–30 are more likely to consider cosmetic procedures compared to those aged 31–50 or over 50.<sup>17</sup> Moreover, according to Chen, Hong, and Todd Jackson, a greater proportion of patients between the ages of 18 and 40 were considering cosmetic surgery than patients beyond the age of 60 and those between the ages of 41 and 60.<sup>17</sup> This shows that attitudes toward cosmetic surgery are significantly shaped by age, with notable distinctions seen between younger and older age groups. As for the gender distribution in the present study, interestingly, males reported higher prevalence in received aesthetic procedures compared to females. About 15.9% of male students underwent aesthetic procedures compared to only 5.3% of females ( $P = 0.001$ ). The body of evidence in the literature reports an overall female predominance when it comes to aesthetic procedures. According to the American Society for Aesthetic Plastic Surgery's 2015 annual report, women made up 90.6% of nonsurgical cosmetic procedures and 89.7% of surgical operations.<sup>18</sup> This discrepancy may be attributed to the fact that males make up the majority of the participants in the present study. Interestingly, in the present study, no significant difference was recorded between the overall psychological well-being score among participants who underwent aesthetic procedures and those who did not (57.5 vs 56.7). By exploring the motivators for undergoing aesthetic surgery expressed by the participants in our study, we might have a better understanding of this indifference.

Participants in our study were more likely to undergo an aesthetic procedure if it was painless and had no side effects and if it was offered free of charge (mean scores of 8.8 and 8.0 respectively). It is possible that psychological well-being is more affected by factors other than physical appearance among college students or is minimally affected by such non-operative procedures. In a prospective study conducted among individuals seeking non-operative aesthetic procedures using fillers and Botox, authors found that psychological and social functioning significantly improved among the participants and their appearance-related distress decreased after receiving aesthetic treatment with injectables.<sup>3</sup> In this study, however, the mean age of the participants was  $45.9 \pm 13.8$  years compared to  $23.5 \pm 6.4$  years in our study. The

impact of aesthetic procedures in older individuals is potentially greater than younger individuals as age-related skin changes are more evident in the older group. In a recent cross-sectional study conducted among Saudi females, only 8.1% of the participants believed that psychological well-being may be positively impacted by cosmetic procedures.<sup>19</sup> In the present study, significant predictors of psychological well-being among the participants were female gender, students with high paternal education level, free procedures, and procedures being painless. Being a female increased the likelihood for high psychological well-being (>60%) by 30% compared to males. This observation may be attributed to the fact that females are more concerned with their physical appearance than males.<sup>20</sup> Generally, males tend to have fewer body image concerns compared to females. Possibly because males perceive a wider spectrum of socially acceptable body image compared to females.<sup>19</sup> There are some limitations to the present study. The questionnaire used for data collection is subjective due to being self-assessed, which poses a potential for selection bias. Additionally, cultural and religious factors influencing attitudes towards aesthetic procedure were not investigated. Subsequent studies are needed to investigate the impact of these factors, especially in such a relatively conservative population.

## Conclusion

This study revealed that 13% of the students underwent a cosmetic procedure, and 30.7% are planning to do them in the future. The most reported procedures were laser hair removal, filler, skin boosters, and Botulinum toxin A injections (Botox). The most frequent motivators were being painless and with no side effects, followed by being free and enhancing self-confidence. On the other hand, the least frequent motivators were for appearing more attractive and to grab partner's attention. Merely calm and relaxed and waking up feeling fresh and rested were significantly higher among students undergoing any of the cosmetic procedures. However, no significant difference recorded at the overall psychological well-being score between who underwent cosmetic procedures and who did not.

## Acknowledgments

We would like to thank the participants who contributed samples to the study.

## Disclosure

The authors report no conflicts of interest in this work.

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