

Factors Associated with Likelihood to Undergo Cosmetic Surgical Procedures Among Young Adults in the United States: A Narrative Review

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Introduction/Goals: Over the past decade, cosmetic surgical procedures have become increasingly popular. This trend has been driven by procedural innovations as well as access to Internet and social media. Consequently, patients have been seeking cosmetic surgical procedures at younger ages. In this narrative review, studies assessing attitudes towards cosmetic surgical procedures among college-aged young adults were evaluated.

Methods: A search identified 20 studies published from 2002 to 2021 that focused on cosmetic surgical procedures among young adults. Each study used survey-based data to determine attitudes, acceptance, interests, perceptions, and beliefs about cosmetic surgical procedures among college-aged students in the United States.

Results: The proportion of college-aged participants who had undergone cosmetic surgical procedures ranged from 1.3% to 6.4% with surveys reporting that between 21 and 43% were interested in procedures in the future. In general, young women were more likely to express interest in cosmetic surgical procedures than young men. Studies consistently demonstrated an inverse relationship between body satisfaction and use of aesthetic procedures among this patient population. Other factors associated with acceptance and approval of cosmetic surgical procedures included importance of appearance to self-worth, concern with social standing and attractiveness, investment in appearance, media influence on body image, and positive attitudes towards celebrities. Exposure to cosmetic surgery advertising was correlated with increased approval of cosmetic surgical procedures, especially the perception that advertising influences “others” more than survey respondents themselves.

Conclusion: Interest in cosmetic surgical procedures continues to grow among young adults in the United States. In the future, this cohort is likely to become an increasingly important demographic to target for education, advertising, and research regarding cosmetic surgical procedures.

Keywords: college students, young adults, cosmetic procedure, cosmetic surgery, factors, review

Introduction

Interest in cosmetic surgical procedures in the United States has steadily increased in recent years.^{1,2} The American Society of Plastic Surgeons (ASPS) reported that its members performed a total of 15,595,955 cosmetic surgical procedures in 2020. This total comprised approximately 2,314,720 cosmetic surgical procedures including augmentation mammoplasty, blepharoplasty, rhytidectomy, liposuction, and rhinoplasty and 13,281,235 minimally invasive cosmetic surgical procedures including neuromodulator injections, soft tissue filler injections, and chemical peels.³ Cosmetic surgical procedures are focused on creating balanced body features, as well as enhancing personal appearance.⁴

Compared to minimally invasive techniques, surgeries require longer recovery time and are often performed under sedation. Thus, minimally invasive techniques are desired by patients due to their ability to create a youthful appearance with less risk and postoperative downtime compared to surgical techniques.⁵

The 2018 Plastic Surgery Statistics Report found that 92% of all cosmetic surgical procedures were performed on women. While the most popular cosmetic surgical procedures performed on women were breast augmentation and liposuction, men more commonly underwent rhinoplasty and blepharoplasty. The most common minimally invasive cosmetic surgical procedure performed was neurotoxin injection (eg, Botox, Dysport, Xeomin). The ASPS calculated a total of 6,984,566 women and 452,812 men received neurotoxin injections in 2018.⁶ These numbers reflect the reported procedures from members of the ASPS alone. Meanwhile, the American Society for Dermatologic Surgery (ASDS) reported about 2.1 million neurotoxin injections by dermatologists in 2018.¹ Other physicians and physician-extenders also perform many of these procedures each year with recent surveys finding that 22% of primary care physicians are offering cosmetic surgical procedures in their office.⁷

While cosmetic surgery has traditionally been associated with middle-aged patients, many cosmetic surgery patients today are younger. In 2018, the ASPS reported approximately 3,966,419 patients who underwent either cosmetic surgery or a minimally invasive procedure were 39 years old or younger.⁶ Of these, 831,775 were between the ages of 20 and 29, representing a 1% increase from 2017. Breast augmentation, rhinoplasty, and liposuction were the top three most common cosmetic surgeries in this age group. Laser hair removal, neurotoxin injection, and soft tissue fillers were the most common minimally invasive cosmetic surgical procedures sought by this age group.^{3,6} The 2020 Aesthetic Plastic Surgery Statistics corroborated these findings showing that the top surgery performed in patients from ages 17–35 was breast augmentation with a total of 127,431 patients in this age range.⁸ One study of millennial-aged patients (ie born 1981–1996) in a New York-based private practice found a greater than 50% increase in the average number of minimally invasive cosmetic surgical procedures performed on this age group from 2015 to 2020. Regarding neurotoxin injections, the authors suggest that young patients have recently become interested in the concept of “pretreatment” of facial rhytids to prevent static rhytid formation in the future.⁹

This trend was likely accelerated by an increasing diversity and availability of procedures, decreasing costs, and expanding representation of these procedures on the Internet and social media.¹⁰ In 2005, many individuals were regularly accessing the Internet, but only a miniscule 5% of Internet consumers were using social media. By 2011, that number had risen to include half of Americans. Today, around 72% of Americans use social media.¹¹ Access to social media, combined with the increased visibility of cosmetic dermatologists and plastic surgeons, resulted in potential patients having substantial access to information about procedures.⁹ A recent Google trend search of key cosmetic terms and procedures from January 2004 to December 2017 showed increasing popularity of searching terms such as “dermatologist,” “Botox,” and “Juvederm.” Use of these terms was significantly associated with use of both Facebook and Instagram platforms.¹⁰

Both psychological and emotional factors likely play a role in motivation to undergo cosmetic surgery.¹² Societal acceptance appears to be a common motivator that prompts patients to seek cosmetic surgical procedures.¹³ With increasing availability of media, viewers are bombarded with societal opinions of beauty as well as attitudes towards cosmetic surgical procedures. Of note, the probability of a patient undergoing a cosmetic surgical procedure varies with the type of procedure selected.¹² A common theme found in these patients was that those who rated themselves lower on the attractiveness scale were more likely to undergo cosmetic surgical procedure. Boosting self-confidence through improvement in body image is a major motivator for the use of cosmetic surgical procedure.^{14,15}

A number of studies have investigated the attitudes, interests, and beliefs related to cosmetic surgical procedures among college-aged students in the United States. This review attempts to collate these findings among this unique cohort. Understanding the psychological and social determinants of attitudes towards cosmetic surgical procedure will help guide future progress towards providing adequate and appropriate cosmetic options to this age group. This paper presents a narrative review of research relating to the attitudes about cosmetic surgical procedure among college students in the United States to investigate the factors influencing college students’ intentions to undergo cosmetic surgical procedure and provide a clear direction for future research in this area.

Methods

The following inclusion criteria were used for study selection: 1) all study designs were considered; 2) study participants were United States college students; 3) the studies measured the elements leading to acceptance of cosmetic surgical procedures; 4) there were no constraints on the date of publication; 5) there was consideration of only English studies; 6) only publications in peer-reviewed journals were selected; and 7) the studies consisted of complete data for extraction. Study exclusion criteria included the following: 1) studies in duplicate; 2) literature reviews; 3) ongoing studies or incomplete studies; 4) conference abstracts; 5) clinical features or treatment-centered studies; and 6) studies that did not sample United States college students.

Two independent reviewers used a myriad of search strategies to locate studies in June 2021. To ensure every possible study was obtained, previous literature related to cosmetic procedures was explored in order to derive applicable keywords; combinations of the following keywords were used in the search: “cosmetic procedures,” “cosmetic surgery,” “college students,” and “aesthetic procedures.” Three bibliographic electronic databases (ie, PubMed, NCBI, ScienceDirect) were used to perform a comprehensive search and identify potentially pertinent articles. The University of Mississippi library databases and Google Scholar were additionally used to confirm no studies were inadvertently overlooked.

The full texts, including the titles and abstracts, were reviewed to determine if studies met the inclusion and exclusion criteria. The primary literature citations were inspected as a potential extra source of studies related to cosmetic surgical procedures. After all search options were exhausted and an extensive number of articles obtained, the final compilation of relevant literature was screened to ensure study eligibility based on previously established criteria. The two independent reviewers discussed any discrepancies between study eligibility. Once a consensus was reached, the two reviewers read through the selected studies in their entirety and selected the relevant information from each article. Once again, the two reviewers came together to analyze the independently gathered data and discuss any inconsistencies.

A total of 485 references were identified from the previously discussed electronic-based studies. Of these, 66 articles remained after removing duplicates and scanning the titles and abstracts for applicability to the study. Using previously established eligibility criteria, the 66 studies read in full text were further narrowed down, removing 47 studies from the pool. At the conclusion of this search, 20 articles were determined to meet all inclusion criteria. The literature search process is illustrated in [Figure 1](#). Study outcomes were organized and analyzed into the following categories: 1) factors associated with likeliness to pursue cosmetic surgical procedure; 2) positive and negative attitudes toward cosmetic surgical procedure; 3) acceptance of cosmetic surgical procedure; and 4) perception of others who undergo cosmetic surgical procedure, the surgical profession, and representation of cosmetic surgery by the media.

Results

A total of 20 studies published from 2002 to 2021 were reviewed.^{16–35} [Table 1](#) presents detailed information extracted from each study.

Sample Size and Demographics

All 20 studies used survey-based data collection methods to determine attitudes, acceptance, interests, perceptions, and/or beliefs about cosmetic surgical procedure among college students in the United States. Sample size ranged from 101 to 2057.^{27,34} Nine studies included only female college students in the sample,^{19,20,23,24,26,27,33–35} whereas the remaining 11 studies^{16–18,21,22,25,28–32} had predominantly female samples, ranging from 54%^{31,32} to 75%³⁰ of the sample identifying as female. Regarding race and ethnicity, 13 studies included predominantly white samples,^{16,17,19,24–31,34,35} with as low as 54%¹⁹ to as high as 86.8%²⁶ of the sample identifying as white.

Factors Associated with Likeliness to Pursue Cosmetic Surgical Procedure

Five studies reported the proportion of participants who had undergone cosmetic surgical procedures for both cosmetic and reconstructive purposes,^{18,20,29,33,34} from as few as 1.3%¹⁸ to as high as 6.4%.³⁴ Participants' interest in receiving cosmetic surgery in the future was assessed in 16 studies ([Table 1](#)).^{22,23,27–29,31–35} Among participants who had not

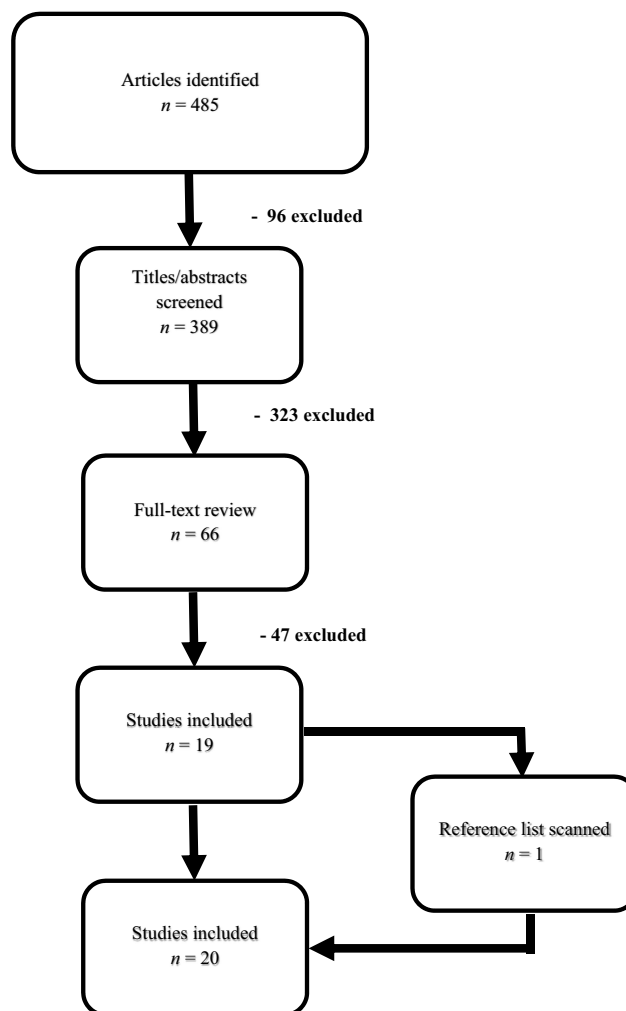


Figure 1 Literature search process.

undergone cosmetic surgical procedures, the proportion interested in pursuing cosmetic surgical procedure in the near future ranged from 21%²⁰ to 43%.²⁷ In one study, 4.8% of the participants expressed interest in receiving cosmetic surgical procedure if their partner encouraged the procedure, and 28.4% agreed that they would have cosmetic surgical procedure if they had an unlimited amount of money.³³

Considerations associated with future intention to undergo cosmetic surgical procedure varied. These factors were categorized into demographic, intrapersonal, interpersonal, and societal. Among demographic factors, gender and racial identity were found to be associated with intention to pursue cosmetic surgical procedure in a few of the reviewed studies. In three studies,^{17,21,22} women were more likely than men to express interest in cosmetic surgical procedure. Only one study²² found an association between racial identity and intention to pursue cosmetic surgical procedures, where participants who identified as Latin American/Hispanic reported greater interest in pursuing cosmetic surgical procedure when compared to participants who identified as Asian American, Asian, or Pacific Islander.

Intrapersonal characteristics and perceptions were associated with increased intentions to pursue cosmetic surgical procedures, including the importance of virtue, or “doing the right thing,” to self-worth,²⁰ perfectionism,²⁰ self-consciousness,²⁰ realism,²¹ fear of becoming unattractive,²⁵ appearance rejection sensitivity,^{31,32} body mass index (BMI),^{23,24} and appearance fixing coping.¹⁸ Further, several individual weight-related behaviors and perceptions were associated with increased intentions such as body dissatisfaction,^{18,23,26,27} body shame,²³ dieting,¹⁹ and disordered eating.^{19,23} Conversely, in one study,²⁸ body satisfaction was found to be associated with lower intention to pursue cosmetic surgical procedure.

Table 1 Summary of Studies Reviewed

First Author and Year	Sample Size and Demographics	Attitudes, Acceptance, Interests, Perceptions, and Beliefs	Considerations, Practices, and Intentions	Salient Findings
Bazner, 2002 ¹⁷	College students, $n=356$, 44% male, 56% female, mean age=19 years, 80% Caucasian-American	Men are significantly more accepting than women of cosmetic surgery for social reasons such as career development ($P=0.01$)	Women are significantly more likely than men to consider having cosmetic surgery themselves ($P=0.001$)	Overall similarities in women and men's acceptance of cosmetic surgery suggest both are affected by cultural standards for attractiveness For both women and men, there were similar positive relationships between the Social and Consider factors of the ACSS, and Body Surveillance ($P<0.01$), Body Shame (women $P<0.01$, men $P<0.05$), and Public Self-Consciousness ($P<0.01$)
Delinsky, 2005 ²⁰	Female college students, $n=294$, mean age=19 (SD±1.86) years, BMI=22.53kg/m ² (SD±3.73), BSQ=90.82 (SD±34.56) 29.9% Asian 10.2% African American 5.4% Hispanic 0.3% Native American 43.2% White 5.4% Mixed 5.4% Other	Approval of cosmetic surgery increased with increasing media exposure ($P=0.007$), increasing importance of appearance to self-worth ($P=0.000$), increasing global self-esteem ($P=0.017$), and increasing vicarious experience of cosmetic surgery ($P=0.037$) The mean likableness rating for adjectives selected to describe individuals who undergo cosmetic surgery was negative (M=228.84, SD ±58.84) The adjective that participants endorsed most frequently to describe individuals who undergo cosmetic surgery was materialistic (84%), followed by self-conscious (76%), and perfectionistic (63%)	2.7% Had personally undergone a cosmetic surgical procedure Responded "Probably yes" or "Definitely yes" to the following (%): Would you have elective cosmetic surgery? (21%) Do you plan to have elective cosmetic surgery? (3.8%) Future likelihood of cosmetic surgery increased with internalization of sociocultural attitudes toward appearance ($P=0.000$), importance of virtue to self-worth ($P=0.000$), media exposure ($P=0.001$), vicarious experience of cosmetic surgery ($P=0.048$), and importance of appearance to self-worth ($P=0.022$)	Future likelihood of cosmetic surgery decreased with increasing importance of virtue to self-worth ($P=0.002$)

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Table I (Continued).

First Author and Year	Sample Size and Demographics	Attitudes, Acceptance, Interests, Perceptions, and Beliefs	Considerations, Practices, and Intentions	Salient Findings
Henderson-King, 2005 ²⁵	<p>Study 2: College students, $n=261$, 149 female, 112 male, mean age 19 years 69% White 10% African American 14% Asian 5% Hispanic 2% Other/undisclosed</p> <p>Study 3: College students, $n=168$, 99 female, 69 male, mean age 19 years 60% White 5% African American 13% Asian 8% Hispanic 5% Asian Indian</p> <p>Study 4: Female college students, $n=44$, mean age 22.9 years 89% White</p>	<p>The lower a person's appearance and social self-esteem, the more likely she/he is to accept cosmetic surgery (women $P<0.01$, men $P<0.001$)</p> <p>The following were associated with increased acceptance of cosmetic surgery: Endorsement of makeup use (women $P<0.001$, men $P<0.01$) Concern with social standing (women $P<0.01$, men $P<0.001$) Concern with one's attractiveness (women $P<0.01$, men Social subscale $P<0.01$, men Consider subscale $P<0.001$)</p> <p>The more participants feared becoming unattractive the more accepting they were of cosmetic surgery for social reasons ($\beta=0.36$, $SE=0.12$, $P<0.005$) and for intrapersonal reasons ($\beta=0.30$, $SE=0.13$, $P<0.05$)</p>	<p>Fear of becoming unattractive was a positive predictor of willingness to consider having cosmetic surgery ($\beta=0.35$, $SE=0.13$, $P=0.01$)</p> <p>Body Shame was correlated with both the Intrapersonal subscale ($P<0.01$) and the Social subscale ($P<0.05$)</p>	<p>For men, the lower their BMI, the more accepting they were of cosmetic surgery ($P<0.01$)</p> <p>The more men hoped to become attractive the less likely they were to consider cosmetic surgery ($\beta=-0.54$, $SE=0.23$, $P<0.05$)</p>
Sarwer, 2005 ³³	<p>Female college students, $n=559$, mean age=20.5 (SD\pm3.6) years, mean height=64.8 (SD\pm2.7) inches, mean weight=133.4 (SD\pm24.7) pounds, mean BMI=22.3 kg/m² (SD\pm3.6)</p> <p>65% European American 10% African American 9% Hispanic American 9% Asian American 6% Native American, East Indian, or other ethnicity 28% Freshman 24% Sophomore 27% Junior 21% Senior</p>	<p>"Agree" or "Strongly Agree" with the following (%): I approve of persons undergoing cosmetic surgery to increase their self-esteem (40.2%) I think cosmetic surgery is a waste of money (32.9%) If I had cosmetic surgery, I would be embarrassed to tell people other than family and close friends (53.6%) I approve of people surgically changing their appearance to feel better about themselves (45.1%) I think people should do whatever they want to look good (43.3%)</p>	<p>26 Women reported undergoing a single procedure and four women had undergone multiple procedures (range=2-6)</p> <p>40% would consider having a cosmetic procedure in the near future 48% would consider having cosmetic surgery when they reached middle age 33% would consider doing so when they reached their 60s</p> <p>"Agree" or "Strongly Agree" with the following (%): I would have cosmetic surgery if my partner wanted me to (4.8%) If I had an unlimited amount of money, I would have cosmetic surgery (28.4%)</p>	<p>Attitudes about surgery were positively related to investment in appearance, the mass media's influence on body image, concern with being overweight ($P=0.000$), and physical comparisons to others ($P=0.003$)</p> <p>Those with more body dysmorphic disorder symptoms could envision having more cosmetic procedures in the future ($P<0.01$)</p>

<p>Albright, 2009¹⁶</p>	<p>College students, n=662, 65% female, 35% male, mean age=20.59 years 55% Caucasian 10% African American 15% Asian or Asian Pacific 10% Hispanic 9% Mixed race</p>	<p>Sex was significantly related to whether or not the participant felt the women were more beautiful after their transformation ($\chi^2=14.74$, $P<0.01$) Participants responding to whether the women featured were more beautiful after CS Response: "Often" (70% women, 30% men) Response: "Never" (40% women, 60% men)</p>	<p>Five participants (1%) had considered applying to be on a plastic surgery makeover show</p>	<p>Those who viewed more plastic-surgery reality television shows reported more anxiety about their bodies and specific appearance features Women were more likely than men to say that the women on these shows who were transformed by plastic surgery were more beautiful afterward Women in general, and women from western New York in particular, indicated higher levels of viewing plastic-surgery makeover shows, and were more dissatisfied with their body and specific body parts, compared to Angelenos and men</p>
<p>Henderson-King, 2009</p>	<p>Female college students, n=218, mean age 18.4 (SD±1.23, range=17–26) years, mean BMI=23.12 kg/m² (SD ±40.07) 86% White 7% African American 2% Latina 2% Asian American 4% Other</p>	<p>The more women internalized societal standards of attractiveness and the more materialist they were, the more accepting they were of the use of cosmetic surgery for internal psychological reasons ($P<0.001$) The more women internalize societal standards of attractiveness and the more they pursue materialist goals, the stronger their acceptance of cosmetic surgery as a way of enhancing social and career prospects ($P<0.001$) The more appearance focused their fathers were, the more women accepted cosmetic surgery for social reasons ($P<0.001$)</p>	<p>Three procedures were desired by more than 10% of the participants: 11.9% would like to have breast augmentation 11.9% would like to have dermabrasion/facial peel 14.2% would like to have liposuction Women who internalize sociocultural messages of attractiveness and those who pursue materialist goals are more likely to consider having cosmetic surgery themselves ($P<0.001$) Paternal attitudes and BMI were positive predictors, indicating that the more appearance focused their fathers were ($P<0.001$), and the heavier they were ($P<0.01$), the greater number of cosmetic surgery procedures the participants said they would like to have</p>	<p>Women who were higher on internalization and materialism were more likely to accept cosmetic surgery for intrapersonal reasons and for social reasons, to consider having cosmetic surgery, and to report a desire for more cosmetic surgery procedures ($P<0.001$)</p>

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Table 1 (Continued).

First Author and Year	Sample Size and Demographics	Attitudes, Acceptance, Interests, Perceptions, and Beliefs	Considerations, Practices, and Intentions	Salient Findings
Markey, 2009 ²⁷	Female college students, $n=101$, mean age=20 (SD±4.79) years, mean BMI=24.52 kg/m ² (SD±5.69) 55% Euro-American 15% African American 15% Asian American 12% Hispanic/Latina 3% Other	Women who were dissatisfied with their bodies were more interested in pursuing cosmetic surgery to alter their bodies than were women who were relatively satisfied with their bodies; this relationship remained significant even when weight status was statistically controlled ($P<0.001$) Women who were more likely to internalize media messages about physical appearance issues were also more likely to desire cosmetic surgery than their peers who internalized these messages to a lesser degree ($P<0.01$)	43% of the participants indicated they would definitely or probably consider at least one of the cosmetic surgery procedures queried	Weight status, media influences, and teasing about physical appearance were all related to women's interest in obtaining cosmetic surgery The effects of weight status ($P<0.05$), media influence ($P<0.05$) teasing about physical appearance ($P=0.05$) and interest in cosmetic surgery were mediated by body dissatisfaction
Nabi, 2009 ²⁸	Study 1: College students, $n=170$, 56% female, 72% Caucasian, mean age=22 (SD±3.49) years, mean BMI=23.6kg/m ² (SD±40.09) Study 2: Female college students, $n=271$, 69% Caucasian, mean age=20 (SD±1.78) years, mean BMI=22kg/m ² (SD±3.15)	Cosmetic surgery makeover program viewing positively associated with all three measures of cosmetic enhancement ($P<0.05$) Those with higher overall body satisfaction were less likely to express desire for invasive procedures ($P=0.003$) and those with higher body area satisfaction were less likely to indicate desire for invasive ($P<0.001$) minimally invasive ($P=0.001$) and noninvasive ($P=0.02$) enhancements	Cosmetic surgery makeover program viewing significantly and positively associated with likelihood of undergoing invasive ($P=0.05$), and minimally invasive procedures ($P=0.03$) Social comparison to program participants related to desiring invasive ($P<0.001$), minimally invasive ($P=0.04$), and noninvasive ($P=0.01$) procedures Greater identification ($\beta=0.18$, $P=0.02$) and positive outcome perception ($\beta=0.20$, $P=0.008$) both associated with increased likelihood of undergoing invasive cosmetic enhancements	Cosmetic surgery makeover program viewing associates directly with desire for invasive procedures as well as indirectly through its effects on social comparison and perception of positive outcomes
Park, 2009 ³¹	College students, $n=133$, 54% female, 46% male, mean age=19.15 (SD±1.60) years 70% White 19% Asian American 6% Black 5% Other	Participants with high Appearance Rejection Sensitivity reported greater interest in changing their appearance via cosmetic surgery following the appearance threat versus appearance boost condition ($P \leq 0.05$)	–	Men and women with high Appearance-RS felt more alone and rejected and showed greater interest in cosmetic surgery after recalling a time when they were teased versus complimented on their looks

Sperry, 2009 ³⁴	Female college students, $n=2057$, mean age=20.75 (range=18–61, $SD\pm 3.87$) years, mean BMI=24.19 kg/m^2 ($SD\pm 50.07$) 64.3% Caucasian 12.6% African American 12.7% Hispanic 4.9% Asian 1.5% Arab 4% Other	Viewership of reality cosmetic makeover shows was related to cosmetic surgery attitudes ($P<0.001$), history of cosmetic surgery ($P=0.001$), and perceived pressure to have cosmetic surgery ($P<0.001$) Viewership of reality cosmetic surgery programming was significantly related to perceived safety of surgery ($P<0.001$)	6.4% ($n=103$) reported having undergone a cosmetic procedure in the past, including Laser hair removal ($n=54$) Breast augmentation ($n=37$) Chemical peel ($n=24$) Rhinoplasty ($n=18$) Breast reduction ($n=13$) Lipoplasty ($n=9$) Cellulite treatment ($n=4$) Abdominoplasty ($n=3$) Botox ($n=3$) Facelift ($n=2$) 71.5% wished to undergo a procedure in the near future 64.6% would consider having cosmetic surgery when they reach middle age 40.5% would consider a cosmetic procedure when they are “old”	Women who frequently watched reality cosmetic surgery makeover shows perceived surgery as safer than those who watched less often ($P<0.001$) Reality cosmetic surgery viewership was uniquely associated with cosmetic surgery attitudes ($P<0.001$), pressures to undergo cosmetic surgery ($P<0.001$), and actual history of cosmetic surgery ($P=0.001$)
Park, 2010 ³²	College students, $n=229$ (54% female, 46% male), ages 17–46, mean age=19.30 ($SD\pm 2.56$) years	–	Appearance rejection sensitivity was significantly related to consideration of cosmetic surgery ($P<0.001$), and to both social ($P<0.001$), and intrapersonal reasons ($P<0.01$) for endorsing cosmetic surgery	The more sensitive participants are to rejection based on appearance, the more likely they are to report symptoms of body dysmorphic disorder ($P<0.001$) and to consider and endorse cosmetic surgery for both social ($P<0.001$) and intrapersonal ($P<0.01$) reasons

(Continued)

Table 1 (Continued).

First Author and Year	Sample Size and Demographics	Attitudes, Acceptance, Interests, Perceptions, and Beliefs	Considerations, Practices, and Intentions	Salient Findings
Park, 2010 ³⁰	College students, n=298, 75% female, mean age=20.20 (SD±1.37) years 75.5% White 14.4% Hispanic-American 5.7% African American 3% Asian-American	Subjects with more media exposure reported higher perceived risks of cosmetic surgery ($\beta=0.36$, $P<0.01$) and more positive socio-cultural attitudes toward appearance ($\beta=0.22$, $P<0.01$) Perceived risks of cosmetic surgery had a strong negative relationship with attitudes ($\beta=-0.66$, $P<0.01$) Having more interpersonal experiences resulted in lower perceived risks of cosmetic surgery ($\beta=-0.63$, $P<0.01$), and more positive sociocultural attitudes toward appearance ($\beta=0.036$, $P<0.01$) Attitudes were positively associated with future intention for cosmetic surgery ($\beta=0.59$, $P<0.01$) Subjects with stronger recognition and internalization of the socially approved standards of appearance tended to report more positive attitudes toward cosmetic surgery ($\beta=0.44$, $P<0.01$)	Interpersonal experiences influence intention for cosmetic surgery through two paths; by reducing the perceived risks of cosmetic surgery ($P<0.01$) and raising socio-cultural attitudes toward appearance ($P<0.01$)	Once primed, patients' vicarious experiences will tend to reduce their perceptions of the physical and psychological risks of cosmetic surgery Having low self-esteem led to higher levels of socio-cultural attitudes toward appearance ($P<0.01$), which resulted in positive attitudes toward cosmetic surgery

<p>Callaghan, 2011¹⁸</p>	<p>College students, $n=544$, 69% female, 31% male, 31.4% mean age=19.32 (range=18–52, $SD\pm 3.1$) years 24.3% White/Caucasian 34.2% Asian 5.3% Black/African American 19.3% Hispanic/Latino/Spanish 0.2% American Indian 1.5% Pacific Islander 15.2% Other or Multiple</p>	<p>–</p>	<p>Two participants (0.36%) endorsed having already had elective cosmetic surgery and an additional five participants (0.92%) stated they previously received surgery for reconstructive reasons Body image problems ($P<0.05$) and a specific type of coping called Appearance Fixing ($P<0.001$) predict participants' consideration of seeking elective cosmetic surgery Diagnosable BDD cases ($n=24$ of 55 cases, 44%) were proportionately more likely to have considered elective cosmetic surgery than those who were not diagnosable with BDD (85 of 488 non-cases, 17%), $\chi^2=21.18$, $P<0.001$</p>	<p>Proportionately more participants who were diagnosable with BDD have considered elective cosmetic surgery than those who were not diagnosable Participants with higher levels of body image disturbance who use Appearance Fixing as a coping strategy were more likely to have considered elective cosmetic surgery</p>
<p>Carrion et al, 2011¹⁹</p>	<p>Female college students, $n=163$, mean age=22.7 (range=19–35, $SD\pm 3.6$) years, mean BMI=24.0 kg/m^2 (range=16.6–43.1, $SD\pm 5.1$) 54% White 19% Black 11% as Asian 13% Hispanic 15% Other or “Do not know”</p>	<p>Greater Dieting ($P<0.05$), Bulimia ($P<0.05$), Disinhibition ($P<0.05$), and Hunger ($P<0.05$) were all associated with greater Intrapersonal scores Endorsement of cosmetic surgery for social reasons occurred in the Bulimia and Disinhibition models ($P<0.01$)</p>	<p>Greater Dieting ($P<0.05$), Bulimia ($P<0.01$), and Disinhibition ($P<0.05$) scores were associated with greater Consider scores</p>	<p>Participants with higher disordered eating scores were more likely to endorse cosmetic surgery for intrapersonal reasons in the models that included significance for disorder eating variables of Dieting, Bulimia, Disinhibition, and Hunger In almost all of the disordered eating models, lower BMI was associated with greater endorsement of cosmetic surgery for personal reasons (Dieting and Disinhibition $P<0.01$; Bulimia, Restraint, and Hunger $P<0.05$)</p>
<p>Fogel, 2014²¹</p>	<p>College students, $n=126$, mean age=22.8 ($SD\pm 3.15$) years, 70.6% female, 57.1% nonwhite race/ethnicity</p>	<p>Nonwhite race/ethnicity was significantly associated with decreased scores on the intrapersonal subscale; nonwhites perceive decreased self-oriented benefits of cosmetic surgery ($P=0.046$)</p>	<p>Women ($P=0.002$) and increased perceived realism scores ($P=0.03$) were significantly associated with increased subscales scores for considering plastic surgery</p>	<p>Increased perceived realism was significantly associated with increased scores on all three Acceptance of Cosmetic Surgery Scale subscales of social ($P=0.004$), intrapersonal ($P=0.03$), and consider ($P=0.03$)</p>

(Continued)

Table 1 (Continued).

First Author and Year	Sample Size and Demographics	Attitudes, Acceptance, Interests, Perceptions, and Beliefs	Considerations, Practices, and Intentions	Salient Findings
Jung, 2016 ²⁶	Female college students, $n=174$, mean age=20.33 (SD±2.43) years, mean BMI=21.74 kg/m ² (SD±3.12) 86.8% White 6.3% Asian 6.9% Other	Statistical significance was obtained with the level of body satisfaction and attitudes toward favorite celebrities being significantly associated with acceptance of cosmetic surgery ($P<0.001$) The level of body satisfaction was negatively associated with the acceptance of cosmetic surgery ($\beta=-0.287$, $P=0.001$) The attitude toward a favorite celebrity was positively associated with the acceptance of cosmetic surgery ($\beta=0.233$, $P=0.001$)	–	The more negative body image participants show the greater likelihood they will engage in cosmetic surgery ($P=0.001$) The more celebrity worship participants show the greater likelihood they will engage in cosmetic surgery ($P=0.001$)
Gillen, 2017 ²²	College students, $n=261$, mean age=20.16 (SD±3.68) years, 60.9% female, mean BMI males=24.52kg/m ² (SD±4.19), mean BMI females=24.12kg/m ² (SD±5.38) 44.4% European American/White 20.3% Asian American/Asian/Pacific Islander 17.6% African American/Black 80.0% Latin American/Hispanic 9.6% Other	Women were significantly more interested in cosmetic enhancements than men ($P<0.001$)	–	Latin Americans/Hispanics reported greater interest in cosmetic enhancements than Asian American/Asian/Pacific Islanders ($P=0.038$)

<p>Park, 2017²⁹</p>	<p>College students, $n=343$, mean age=21 (SD±2.94) years, 67% female, 33% male 81% Non-Hispanic Whites 13% Black 3% Hispanic 1% Asian</p>	<p>Cosmetic surgery advertising exposure was a significant predictor of perceived intrapersonal benefits of cosmetic surgery ($\beta=0.13$, $P=0.015$) and of perceived social benefits of cosmetic surgery ($\beta=0.13$, $P=0.013$) Gender was a significant predictor of perceived risk ($\beta=0.14$, $P=0.018$) Respondents exhibited lower confidence in 'people working in cosmetic surgery clinics/hospitals' (M=3.37, SD±0.86) than 'people working in the field of medicine in general' (M=3.98, SD±0.77, $P<0.001$) Respondents who were exposed to more cosmetic surgery advertisements agreed more to the statement, 'cosmetic surgeons always treat their patients with respect' ($P=0.007$) and expressed higher confidence in people working in cosmetic surgery clinics/hospitals ($P=0.038$) The high exposure group held neutral attitudes toward surgeon's portrait photo ($P<0.001$) office staff's photo ($P<0.01$), beautiful cosmetic surgery office photo ($P<0.01$), and information about celebrity cosmetic surgery ($P<0.05$); the low exposure groups considered these rather unhelpful Those who perceived higher risk of cosmetic surgery found the following information more helpful than those who perceived lower risk: Price ($P<0.05$) Financing options ($P<0.01$) Price discounts/special promotions ($P<0.05$) Surgeries/procedures available ($P<0.01$) Risks of surgeries/procedures ($P<0.05$) Hygiene practices ($P<0.01$) Medical emergency preparedness ($P<0.001$)</p>	<p>97% of the participants never had cosmetic surgery before (eg, collagen/Botox injections, nose job, face lift, cheek implants, tummy tuck, liposuction, breast implants, etc.) Cosmetic surgery advertising exposure was a significant predictor of cosmetic surgery intention ($\beta=0.09$, $P=0.016$) On average, respondents would find elements in cosmetic surgery advertisements 'helpful,' if they were a prospective patient who was seriously inquiring about a cosmetic surgery or procedure</p>	<p>Cosmetic surgery advertising exposure was related to higher perceived intrapersonal and social benefits of cosmetic surgery Women reported higher perceived risk of cosmetic surgery than men ($P<0.05$) Cosmetic surgeons were viewed less favorably than other physicians; confidence in people working in cosmetic surgery clinics and hospitals was also lower than confidence in people working in the field of medicine in general ($P<0.001$) Diverging perceptions of common elements in cosmetic surgery advertising were related to the level of CS advertising exposure and perceived risk of cosmetic surgery</p>
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(Continued)

Table I (Continued).

First Author and Year	Sample Size and Demographics	Attitudes, Acceptance, Interests, Perceptions, and Beliefs	Considerations, Practices, and Intentions	Salient Findings
Gillen, 2020 ²³	Female college students, $n=170$, mean age=20.27 (SD±3.90, range 18.00–59.25) years 20% African American/Black 40% European American/White 20% Asian American/Asian 10% Latina American/Hispanic 10% Other	Women with more body surveillance ($P<0.01$) and more body shame ($P<0.001$) were more interested in pursuing cosmetic procedures such as rhinoplasty and “tummy tucks” Unhealthy weight management behaviors predict interest in cosmetic surgery ($P<0.01$)	–	Women who were more interested in cosmetic surgery had a significantly higher BMI, higher body surveillance, higher body shame ($P\leq 0.05$), and engaged in more unhealthy weight management behavior ($P<0.01$) Multivariate analyses indicated that predictors such as body shame ($P<0.001$) were more central to women’s interest in cosmetic surgery than body appreciation
Zhao, 2021 ³⁵	Female college students, $n=346$, mean age=19.78 (SD±1.73) years 77.2% Caucasian 10.7% Asian 7.8% African American 4.3% Other	Greater exposure to cosmetic surgery media significantly related to more favorable attitudes toward cosmetic surgery ($\beta=0.10$, SE=0.05, $P<0.05$), after controlling for sexual orientation, height, weight, and age The higher the body esteem, the lower the perceived effects of cosmetic surgery media on self ($\beta=-0.62$, SE=0.12, $P<0.001$) and on others ($\beta=-0.17$, SE=0.08, $P<0.05$)	Greater exposure to cosmetic surgery media significantly related to higher intention to undergo those procedures ($\beta=0.37$, SE=0.10, $P<0.001$), after controlling for sexual orientation, height, weight, and age	Students who were more exposed to cosmetic media were more likely to approve of cosmetic surgery ($P<0.05$) and undergo invasive cosmetic enhancements ($P<0.001$) Participants perceived various media sources with cosmetic surgery messages to have more substantial impacts on other female individuals than on themselves for the general effects ($P<0.001$) Participants perceived that cosmetic surgery messages exert stronger influences on other female individuals’ likelihood of conducting invasive cosmetic surgery procedures than on themselves ($P<0.001$) As the magnitude of the third-person perception between the perceived cosmetic surgery media effects on other female individuals and themselves increased, individuals would be less likely to favor ($\beta=-0.24$, SE=0.04, $P<0.001$) or undergo ($\beta=-0.46$, SE=0.04, $P<0.001$) cosmetic surgery procedures

Increased intention was also associated with various interpersonal factors, including experiencing teasing about physical appearance,²⁷ interpersonal experiences with cosmetic surgical procedure,³⁰ and paternal attitudes towards cosmetic surgical procedures.²⁴ At the societal level, media exposure,^{20,27,35} internalization of sociocultural attitudes toward appearance,^{20,24} cosmetic surgery makeover programs,^{28,34} and celebrity worship²⁶ were all associated with increased intention to receive cosmetic surgical procedure.

Positive and Negative Attitudes Toward Cosmetic Surgical Procedure

Five studies assessed participants' attitude and beliefs towards cosmetic surgical procedure.^{29,30,33–35} Sarwer et al³³ reported positive attitudes towards undergoing cosmetic surgical procedure to increase self-esteem (40.2%) and to feel better (45.1%), as well as negative attitudes including beliefs that cosmetic surgical procedure is a waste of money (32.9%) and embarrassment to tell family and friends about undergoing cosmetic surgery (53.6%). Attitude towards cosmetic surgical procedure was found to be positively related to investment in appearance,³³ mass media influence on body image,³³ weight concerns,³³ physical comparison to others,³³ extreme makeover show viewing,³⁴ low self-esteem,³⁰ and exposure to cosmetic surgery media.³⁵ A negative relationship was associated with perceived risk.³⁰ Additionally, Park and Allgayer²⁹ assessed college students' attitudes towards cosmetic surgeons and found lower confidence and less favorable views about cosmetic surgeons when compared to other physicians. One study assessed beliefs about the risk of cosmetic surgical procedure and found women exhibited higher perceived risk when compared to men.²⁹

Acceptance of Cosmetic Surgical Procedure

Acceptance of cosmetic surgical procedure was assessed in seven of the reviewed studies.^{17,20,24–26,30,33} Factors positively associated with acceptance and approval of cosmetic surgical procedure were importance of appearance to self-worth,²⁰ low self-esteem,^{20,24,25,30} concern with social standing,²⁵ concern with own attractiveness,²⁵ approval of socio-cultural attitudes towards appearance,²⁶ concern with being overweight,³³ endorsement of makeup use,²⁵ investment in appearance,³³ mass media influence on body image,³³ physical comparison to others,³³ attitude towards favorite celebrities,²⁶ and vicarious experience of cosmetic surgery.²⁰ However, one study found a negative relationship between level of body satisfaction and acceptance of cosmetic surgical procedure.²⁶

A few studies analyzed factors associated with acceptance by gender identity. Men were found to be significantly more accepting of cosmetic surgical procedure for social reasons including relationship and career development when compared to women.¹⁷ For men, the lower their BMI, the more accepting they were of cosmetic surgical procedure.²⁵ Conversely, women were found to be more accepting of cosmetic surgical procedure when they internalized societal standards of attractiveness, exhibited increased pursuit of materialistic goals, and reported having appearance-focused fathers.²⁴

Perception of Others Who Undergo Cosmetic Surgical Procedure, the Surgical Profession, and Representation of Cosmetic Surgical Procedure in the Media

Three studies evaluated participants' perceptions about individuals who had cosmetic surgical procedure, cosmetic surgery as a medical profession, and media sources about cosmetic surgical procedure.^{20,21,29,35} Regarding perceptions about individuals who undergo cosmetic surgical procedure, participants viewed these individuals as materialistic, self-conscious, and perfectionistic.²⁰ In assessments of the cosmetic surgery profession, participants had lower confidence in people working in cosmetic surgery when compared to other medical professions.²⁹ Regarding cosmetic surgery media sources, Zhao³⁵ found that female college students perceived cosmetic surgery media sources to have little impact on themselves and stronger impact on other women to seek out invasive cosmetic surgical procedures. Additionally, another study found that increased exposure to cosmetic surgery advertising resulted in increased approval and confidence in people working in cosmetic surgical procedure.²⁹

Discussion

Interest in cosmetic procedures has soared over the past two decades. The total value of the cosmetic procedure industry was estimated to be around \$51 billion in 2018 with a projected average 3.6% compound annual growth rate through 2026.³⁶ Young adults are one of the fastest growing markets for injectables including neurotoxins and hyaluronic acid fillers. In one European market, the share of patients receiving injectables who were ages 18–25 increased from 2% in 2011 to 8% in 2017.³⁷ Additionally, this cohort represented over a quarter of cosmetic surgery cases in 2012.³⁸ These trends are evident in an environment of rapidly rising demand throughout the population and across national lines.³⁹ In light of these trends, it is critical to understand the factors underlying patient attitudes with regard to cosmetic surgical procedures in this cohort.

Several studies included in this review compared demographic differences with regard to interest in cosmetic surgical procedures. Among the college-aged samples in the review, women tended to be more interested in cosmetic enhancements than men.^{21,22} It is important to consider that many of the studies reviewed included only female cohorts. Other sources have indicated that interest in cosmetic surgical procedures among men has been steadily growing.⁴⁰ Patient race and ethnicity does not appear to consistently correlate with openness to cosmetic surgical procedures, although many of the studies likely lacked the diversity to accurately identify different statistical trends among races. Future research should consider the inclusion of more diverse samples, with respect to gender and race, in order to determine if any differences exist between groups.

Openness to cosmetic surgical procedures is dependent upon a multitude of factors. Park and Cho³⁰ hypothesized that three key elements informed patient readiness to undergo cosmetic surgical procedures: interpersonal experiences, self-esteem, and media exposure. The attitudes of friends and family sway patient perception of cosmetic surgical procedures. Sarwer et al³³ found that over half of participants in a survey of female college students would be embarrassed to tell people other than family and close friends. In fact, data suggest that social acceptance and support may be one of the strongest predictors of likelihood for patients to undergo cosmetic surgical procedures.¹³ Park and Cho observed that young adults with more interpersonal experiences with cosmetic surgical procedures, such as talking about procedures with friends, family, and acquaintances and knowing individuals who have undergone procedures, reduced the perceived risks and raised socio-cultural approval of elective cosmetic surgical procedures.³⁰

Body dissatisfaction is another known driver of consumption of aesthetic procedures.³⁹ Among college-aged adults in the United States, lower personal ratings of physical attractiveness are associated with increased likelihood of undergoing cosmetic surgical procedures.^{12,39} Similarly, body satisfaction is inversely related to desire for cosmetic surgical procedures.^{23,25–27,31} These findings mirror those identified in older cohorts.⁴¹ Several studies identified psychiatric pathologies including body dysmorphia and eating disorders as significant predictors of likelihood to consider cosmetic surgical procedures among this cohort.^{18,19,30} These results are unsurprising. Onset of anxiety and obsessive-compulsive spectrum disorders is common in young adulthood and likely the result of a complex interplay of biopsychosocial factors.⁴² It is critical for clinicians to identify patients with body dysmorphia, since these patients have high rates of dissatisfaction with cosmetic surgical procedure outcomes.⁴³

Body satisfaction is largely a cultural phenomenon, and specific elements influencing patient body satisfaction are dependent upon the influence of regional societal factors.⁴⁴ Western ideals of beauty are based upon conceptions of proportion and symmetry found in nature. Feminine facial beauty has been numerically analyzed by measuring facial proportions of Caucasian celebrities and models. Classically, the face is divided into thirds, and within each third are ideal ratios of facial features.⁴⁵ Male faces with masculinized features including wide-set jaws, prominent cheekbones, and highbrow ridges were rated as most attractive⁴⁶ by women. Similar anthropometric analyses of female digital silhouettes have been used to calculate the idealized proportions of waist-to-hip ratio, where the ideal hourglass figure regarding waist-to-hip ratio for females was found to be 0.7.⁴⁷ Recent data suggest that the idealized body composition among women may be lower than the healthy BMI.⁴⁸ These standards have been criticized for being Eurocentric and heteronormative in nature but likely influenced the participants investigated by the studies included in this review.⁴⁹

In the twenty-first century, media has played an increasing role in shaping societal beauty standards. Markey and Markey²⁷ used the Sociocultural Attitudes Toward Appearance Questionnaire (SATAQ) to evaluate the role of television and magazines on self-perception of beauty. They found that young women who are more influenced by media messages

are more likely to be dissatisfied with their bodies. Many of the studies in this review specifically examined the role of media in approval of cosmetic surgical procedures among young adults. Delinsky²⁰ found that most participants reported watching television programs about cosmetic surgery, and approval of cosmetic procedures increased with increasing media exposure. Sperry et al³⁴ further clarified that viewership cosmetic reality shows specifically correlated to perceived safety and actual history of undergoing cosmetic procedures. Park and Allgayer²⁹ found that cosmetic surgery advertising exposure resulted in higher perceived social benefits of cosmetic procedures. Zhao³⁵ broadly assessed the effect of media exposure on intentions of young women in the United States to undergo cosmetic surgical procedures and found that increasing total media consumption correlated to increasing intentions to undergo cosmetic surgical procedures. This study included television, magazine, newspaper, radio, Internet, and social media to form a composite score reflecting total media exposure and its effect on intentions in this cohort.³⁵

The emergence of social media introduced a new dimension of media influence, especially for young adults. As the most avid consumers of social media, young adults are especially susceptible to aesthetic trends. Industry research has demonstrated that US adults aged 18–29 prefer more visually orientated social media platforms including Instagram, Tik Tok, and Snapchat rather than more text-based platforms such as Facebook and Twitter.⁵⁰ The effect of social media on intentions and body satisfaction has been highlighted recently, with data suggesting that more social media use is associated with greater body dissatisfaction and greater intentions to undergo cosmetic surgical procedures.⁵¹ Not only does social media offer opportunities for consumption of direct and indirect consumer advertising but it also increases user's exposure to self-images. A study of 400 university students in 2017 found that more than half took one or more "selfie" style images per day.⁵² Every self-image is a chance to examine one's facial features, and more scrutiny is sure to reveal more imperfection. Gillen and Markey²³ examined this phenomenon in 2020 and noted that women with more "body surveillance" were significantly more interested in pursuing cosmetic surgery.

Body surveillance and assessment of self-images dramatically increased during the COVID-19 pandemic as most of the world economy was digitalized. The use of online conference software increased exposure to self-images. Some authors have labeled this phenomenon "Zoom Dysmorphia" and suggested that the move to video chat platforms increased the amount of time patients study their faces.⁵³ Increased body surveillance via video chat platforms may have contributed to the so-called "Zoom Boom" for the cosmetics industry with an estimated 10–20% increase in procedure volume in Western markets despite cessation of services for several months.⁵⁴

Limitations

Several limitations should be acknowledged when interpreting the findings from this narrative review. Among the studies included in the review, the samples were predominantly female and white, limiting the generalizability of the findings from the review to other gender and racial identities. Further, the sample sizes among the reviewed studies varied, with some studies containing small sample sizes. The sample size differences in the reviewed studies limit the ability to draw conclusions from the findings across studies. The review intended to assess cosmetic surgery attitude, acceptance, interest, perceptions, and beliefs. Operationalization of these variables was not consistent across the reviewed studies, which limits the ability to compare findings across multiple studies. The review was also restricted to three databases (ie, PubMed, NCBI, ScienceDirect), which may have inadvertently excluded studies from the review. However, to ensure all qualifying studies were included, the authors utilized a comprehensive list of search terms, did not restrict studies by date of publication, and cross-referenced Google Scholar to search for additional studies. Finally, although the review is comprehensive, only cross-sectional research studies were included, limiting any determination of causation from the findings in the review.

Conclusions

Pursuit of surgical and nonsurgical cosmetic surgical procedures has increased among adults, including college-age young adults in the United States. Demographic, intrapersonal, interpersonal and societal factors all play a role in pursuing cosmetic surgical procedures among this group of individuals, including factors related gender, self-perception, body weight, and the media. In general, heightened awareness of and dissatisfaction with one's self-image appears correlated with pursuit, positive attitudes, and acceptance of cosmetic surgery. Despite the demand for cosmetic surgery,

negative perceptions remain of individuals who undergo cosmetic surgery and of the cosmetic surgical profession. Future studies will be required to identify factors related to pursuit of surgical versus minimally invasive cosmetic surgical procedures and the targeting of specific anatomic areas among young adults in the United States.

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