Arch Health Sci Res. 2026;13:1-11
DOI: 10.5152/ArcHealthSciRes.2026.25140

Original Article

Mediating Role of Social Media and Body Image in Nursing Students' Cosmetic Surgery Acceptance: A Multicenter Structural Equation Modeling Study

Elif Budak ERTÜRK[1], Sevcan Avcı IŞIK[1], Nilgün ÖZBAŞ[2], Caner İNCEKAŞ[3]

[1]Department of Nursing, Başkent University Faculty of Health Sciences, Ankara, Türkiye
[2]Surgical Diseases Nursing, Akdağmadeni Health College Nursing Department, Yozgat Bozok University, Yozgat, Türkiye
[3]Department of Biostatistics, Başkent University Faculty of Medicine, Ankara, Türkiye

Cite this article as: Budak Ertürk E, Avcı Işık S, Özbaş N, İncekaş C. Mediating role of social media and body image in nursing students' cosmetic surgery acceptance: a multicenter structural equation modeling study. *Arch Health Sci Res.* 2026, 13, 0140, doi: 10.5152/ArcHealthSciRes.2026.25140.

What is already known on this topic?

- *Social media influences body image (BI) and cosmetic surgery attitudes in young adults.*
- *Body image concerns contribute to the decision to undergo cosmetic surgery.*
- *The link between social media, BI, and cosmetic surgery is known, but mediation in nursing students is unclear.*

What does this study add to the existing knowledge?

- *Appearance-focused social media consciousness directly and indirectly affects cosmetic surgery acceptance.*
- *Body image partially mediates this relationship through evaluation sensitivity and body change concerns.*
- *Findings highlight the need for media literacy and BI education in nursing programs.*

ABSTRACT

Objective: This study aimed to examine the mediating role of social media awareness of appearance and body image (BI) in accepting plastic surgery among nursing students with multicenter structural equation modeling.

Methods: This cross-sectional study was conducted between May 25, 2024, and June 30, 2024, with a total of 379 students at 2 universities (1 public and 1 private) located in metropolitan and rural areas of Türkiye. Data were collected with a sociodemographic questionnaire, Acceptance of Cosmetic Surgery (ACS) Scale, BI Scale, and Appearance-Related Social Media Consciousness (ASMC) Scale and then analyzed.

Results: Structural equation modeling revealed that ASMC exerted significant direct effects on the subdimensions of ACS (standardized β: ACS-Thoughts = −0.623, $P < .001$; ACS-Social = −0.270, $P = .025$; ACS-Personal = −0.613, $P < .001$). Bootstrap mediation analyses demonstrated that ASMC also produced significant indirect effects on ACS through BI (ACS-Thoughts: β = 1.051, 95% CI [0.585, 1.917], $P < .001$; ACS-Social: β = 0.809, 95% CI [0.428, 1.489], $P < .001$; ACS-Personal: β = 0.991, 95% CI [0.573, 1.750], $P < .001$). Appearance-related social media consciousness significantly predicted BI1, BI2, and BI4, whereas BI3 was nonsignificant, indicating that mediation primarily occurred through BI2 and BI4, while the contribution of other BI pathways was negligible. The model demonstrated acceptable fit indices ($\chi^2/df = 2.91$; Comparative Fit Index = 0.84; root mean square error of approximation = 0.071; standardized root mean square residual = 0.079), thereby supporting the partial mediation hypothesis.

Conclusion: The findings highlight the significant influence of social media awareness on the ACS, partially mediated by BI, suggesting the need for educational interventions addressing media literacy and body perception among nursing students.

Keywords: Body image, cosmetic surgery, nursing students, social media, structural equation modeling

Introduction

Cosmetic procedures are among the most commonly utilized and effective methods for altering physical appearance.[1] Individuals who have negative perceptions about their physical appearance and body often seek cosmetic procedures as a way to cope with these concerns and enhance their quality of life.[2] These procedures encompass both surgical and non-surgical approaches. According to the Aesthetic Plastic Surgery National Databank,[3] the number of surgical procedures increased by 2.9% between 2022 and 2023 and by 10.2% between 2019 and 2023. The data further indicate that the majority of all procedures

Corresponding author: Elif Budak Ertürk, e-mail: elifbudakerturk@gmail.com

Content of this journal is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

Received: May 30, 2025
Revision Requested: 1August 11, 2025
Last Revision Received: February 10, 2026
Accepted: July 1, 2026
Publication Date: September 15, 2026

were performed on women. The most common age group undergoing cosmetic surgical procedures was 35-50 years (40%), followed by 51-64 years (27.7%) and 18-34 years (19.5%).[3]

Acceptance of cosmetic surgery (ACS) is shaped by a range of psychological and demographic factors, including age,[4] father's education status,[4] residence before enrollment at university,[4]prior experiences with cosmetic procedures,[1,4] social appearance anxiety,[1] BI, self-esteem,[1] and depression.[1] Understanding these factors is essential, as they provide insights into why individuals may choose to undergo cosmetic interventions. A study conducted by Seo & Kim[1] identified age, body mass index, employment status, previous cosmetic surgery experiences, and intentions for future procedures as significant predictors of cosmetic surgery acceptance among individuals in their 20s and 30s. In addition to these personal and demographic variables, the influence of social media has become increasingly prominent in shaping individuals' BI perceptions and attitudes toward cosmetic surgery.[2,5] As digital platforms continue to reinforce appearance-related ideals, they may contribute to growing interest in surgical and non-surgical cosmetic enhancements.

Social media engagement plays a significant role in shaping individuals' perspectives and motivations regarding cosmetic surgery. As social media platforms continue to influence societal norms and beauty standards, understanding their impact on BI dissatisfaction and acceptance of cosmetic procedures is increasingly important.[2,5] Unlike traditional media, social media allows for dynamic interaction, comparison, and discussion, which can significantly influence individuals' BI and interest in cosmetic surgery.[6,7] Recent studies indicate that greater exposure to aesthetically enhanced images on social media may increase individuals' willingness to consider cosmetic procedures.[5,8,9] Body dissatisfaction and social appearance anxiety are recognized as key drivers behind the decision to undergo physical alterations.[5] Studies have shown that both women[10] and men[11] are increasingly dissatisfied with specific body areas, which may lead them to consider cosmetic surgery. Frequent selfie-taking and the use of photo-editing applications, particularly among younger populations, may further exacerbate body dissatisfaction.[5]

Social media is a powerful platform shaping beauty ideals and norms related to physical appearance, particularly among young individuals.[5,6] Nursing students, due to both their age and their academic background in health and aesthetics, may be particularly vulnerable to the beauty standards frequently portrayed on social media.[12,13] Awareness of social media content may heighten individuals' engagement with idealized images, fostering a stronger desire to conform to these socially constructed norms.[5] Constant exposure to flawless body and facial features on social media can prompt individuals to engage in upward comparisons with these ideals. Such comparisons may lead to negative changes in BI, diminished self-confidence, and greater dissatisfaction with one's appearance.[8,14] Individuals who develop negative BI perceptions may seek solutions to enhance their physical appearance. At this point, cosmetic surgery may emerge as a viable option, with individuals beginning to view it more positively as a means of addressing appearance-related concerns.[10,15] This tendency may be particularly pronounced among individuals with high levels of appearance-related social media awareness, as social media fosters an environment where cosmetic procedures are normalized and even encouraged.[10]

Nursing students, who represent a significant part of the future healthcare workforce, may be particularly sensitive to beauty standards on social media due to their young age and education in health and aesthetics.[12] Studies show that they often display heightened BI concerns, social appearance anxiety, and greater responsiveness to societal beauty ideals shaped by social media. For example, Ayar et al[12] reported above-average social appearance anxiety and increased desire for aesthetic procedures among nursing students influenced by social media, while Zhang et al[13] found low body appreciation and negative affect associated with longer social media use. These findings highlight the relevance of focusing on this group when examining the links between social media exposure, BI, and cosmetic procedure attitudes.

Despite growing research interest in this area, gaps remain in the literature, particularly regarding how young individuals with different demographic characteristics are affected by social media and the underlying psychological mechanisms involved. In this context, examining the relationships among nursing students' appearance-related social media awareness, BI perceptions, and attitudes toward cosmetic surgery represents a valuable contribution to the field. Moreover, by employing a multicenter sample and using structural equation modeling (SEM), the present study advances previous research by providing a comprehensive model that captures both direct and indirect pathways between key variables. This study analyzes the influence of appearance-related social media awareness and BI on the ACS among nursing students, employing a multicenter SEM approach. Based on the proposed research model, the following research questions were developed:

1. To what extent does appearance-related social media awareness influence the ACS among nursing students?
2. How does appearance-related social media awareness impact the BI of nursing students?
3. To what extent does BI influence the ACS among nursing students?
4. Does BI serve as a mediating factor in the relationship between appearance-related social media awareness and the ACS?

Methods

Aim

The present study aimed to examine the association among ACS, appearance-related social media awareness, and BI.

Design

This cross-sectional study was conducted between May 25, 2024, and June 30, 2024, at 2 universities (1 public and 1 foundation) located in both metropolitan and rural areas of Türkiye. A SEM was used. The reporting of this study adhered to the Strengthening the Reporting of Observational Studies in Epidemiology guidelines (Supplementary Material).

Participants and Procedures

The study population consisted of 532 nursing students enrolled in undergraduate programs at a foundation university (n = 322) and a public university (n = 210) in Türkiye during the 2023-2024 spring semester. A census sampling approach was used, including all students who met the inclusion criteria and agreed to participate. According to SEM guidelines, the required sample size was estimated to be 15 times the number of dimensions,[16] yielding a minimum of 120 participants. However, to ensure stable SEM estimates, a minimum sample size of 200 is recommended.[17] Considering a 20% non-response rate, the target sample size was set at 240. Data were collected from 379 participants, representing 71.2% of the population.

After obtaining the necessary permissions, the study purpose was explained to participants, and the electronic data collection form was distributed via mobile devices. Completion of the form required approximately 10 minutes. To increase participation, up to 2 reminders were sent at 1-week intervals. The system allowed only 1 submission

per participant to ensure accuracy. A pilot test with 20 students confirmed the clarity of the questionnaire; these data were included in the final analysis.

Measures

Four instruments were used: a sociodemographic questionnaire, the ACS Scale, the BI Scale, and the Appearance-Related Social Media Consciousness (ASMC) Scale.

Sociodemographic Questionnaire Form

Developed based on the literature,[2,4,18,19] this form included items on gender, family structure, income status, parental education level, consideration and history of plastic surgery, and social media use.

Acceptance of Cosmetic Surgery Scale

The ACS Scale, developed by Henderson-King & Henderson-King,[20] is a 15-item 7-point Likert-type scale assessing attitudes toward cosmetic surgery. The Turkish validity and reliability study was conducted by Karaca et al.[21] The scale includes 3 subscales: intrapersonal (e.g., personal appearance concerns), social (e.g., social acceptance), and consider (e.g., willingness to undergo surgery). Higher scores on subscales and the total scale (min: 15–max: 105) indicate more favorable attitudes toward cosmetic surgery. Item 10 is reverse-scored. The scale does not include a defined cutoff point for classification. The original scale reported high internal consistency (Cronbach's $\alpha = .91$-$.93$) and was also confirmed in the Turkish adaptation ($\alpha = .92$).[21] In the present study, Cronbach's alpha values were .94 (total), .93 (intrapersonal), .89 (social), and .86 (consider).

Body Image Scale

The BI Scale, developed by Saylan & Soyyiğit,[22] is a 21-item, 5-point Likert-type instrument assessing BI in adolescents and young adults. It comprises 4 subscales: negative body perception, evaluation sensitivity, positive body perception, and changing the body. Total scores range from 21 to 105, with higher scores reflecting a more negative BI. Items 4, 7, 15, 16, and 17 are reverse-scored. The original scale demonstrated good internal consistency in the original study (Cronbach's $\alpha = .88$).[22] In the present study, Cronbach's alpha was .86 (total), and .91, .88, .84, and .81 for the respective subscales.

The Appearance-Related Social Media Consciousness Scale

The ASMC Scale, developed by Choukas-Bradley et al,[23] is a 13-item, unidimensional measure evaluating appearance-focused social media awareness and behavior. It uses a 7-point Likert scale (1 = Never, 7 = Always), with higher scores (13-91) indicating greater engagement in appearance-related social media processes. The Turkish adaptation by Öngören et al.[24] reported high internal consistency (Cronbach's $\alpha = .90$). This study extends the scale's use to nursing students in Türkiye, and Cronbach's alpha was .93 for the total score.

Statistical Analysis

In this study, SEM with mediating variables was employed to examine the direct and indirect relationships among variables. The mediating effect of BI on the relationship between ASMC and ACS was evaluated. Analyses were conducted using IBM SPSS AMOS, version 25.

Basic model fit indices, including chi-square (χ^2) test, chi-square to *df* ratio (χ^2/df), Comparative Fit Index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR), were used to evaluate the goodness of fit of the model. The overall model fit was considered acceptable when $\chi^2/df \leq 3$, CFI ≥ 0.90, RMSEA ≤ 0.08, and SRMR ≤ 0.08. The statistical significance of path coefficients was tested at a 95% CI ($P < .05$). In addition, bootstrapping (5000 samples, 95% CI) was applied to assess the significance of mediating effects.

In line with reporting standards, the measurement quality was also assessed by reporting Cronbach's alpha and composite reliability (CR) for internal consistency, average variance extracted (AVE) for convergent validity, and applying the Fornell–Larcker criterion for discriminant validity (i.e., $\sqrt{AVE}$ > interconstruct correlations; AVE > maximum shared variance [MSV]/ASV), ensuring that path estimates rest on a reliable and valid measurement model.

Little's missing completely at random test was used to assess missing data, and the randomness of missingness was confirmed. The assumption of multivariate normality was evaluated using Mahalanobis distance and skewness–kurtosis values. Cronbach's alpha (α) was calculated to determine internal consistency. As the data showed a normal distribution, the Maximum Likelihood estimation method was used for covariance analysis. Finally, the measurement model, which included the ACS, BI, and ASMC scales, was tested before the structural model.

Ethical Considerations

The study was approved by the Social Sciences and Humanities Research Council of Başkent University (Approval no.: 17162298.600-136, Date: May 20, 2024). Permission to use the scales was obtained from the authors who originally established their validity and reliability. The study was conducted in accordance with the principles of the Declaration of Helsinki. Prior to participation, all students were informed about the purpose, scope, and procedures of the study, and informed consent was obtained online from those who agreed to participate.

Results

The descriptive characteristics of the participants are presented in Table 1. A total of 379 students were included in the study, with a mean age of 20.97 ± 1.71 years; 72.3% were male. Among them, 25.59% were first-year students and 10.29% were in their fourth year. Overall, 35.36% of the students chose the nasal region as the desired area to undergo cosmetic surgery, and 5.28% of the students stated they had undergone cosmetic surgery (Table 1).

Descriptive statistics of the ACS, BI, and ASMC scales are presented in Table 2.

To assess construct validity, separate confirmatory factor analyses were conducted for each scale included in the SEM. The 1-dimensional ASMC Scale demonstrated acceptable fit ($\chi^2/df = 3.2$; $P < .01$; Goodness of Fit Index (GFI) = 0.837; CFI = 0.898; RMSEA = 0.12; SRMR = 0.08). The 4-dimensional BI Scale showed good fit ($\chi^2/df = 3.182$; $P < .01$; GFI = 0.863; CFI = 0.909; RMSEA = 0.076; SRMR = 0.062), and the 3-dimensional ACS Scale also demonstrated acceptable fit ($\chi^2/df = 3.387$; $P < .01$; GFI = 0.910; CFI = 0.953; RMSEA = 0.079; SRMR = 0.054).

Subsequently, the measurement model comprising ASMC, BI, and ACS was tested within the SEM framework. The goodness-of-fit indices indicated an acceptable overall model fit ($\chi^2/df = 2.542$; $P < .01$; CFI = 0.89; GFI = 0.76; RMSEA = 0.064; SRMR = 0.07).

Internal consistency was evaluated using Cronbach's alpha, yielding coefficients of .934 for ASMC (13 items), .865 for BI (21 items), and .938 for ACS (15 items), indicating high reliability across all scales. Factor loadings were generally acceptable to high (most $\lambda \geq .60$), and all loadings were statistically significant ($P < .001$), supporting adequate indicator reliability. One item (ECKÖ10) within the ACS-Thoughts

Table 1. Descriptive Characteristics of the Participants (n = 379)

Variables		n (%)
Grade	1st grade	97 (25.59)
	2nd grade	131 (34.56)
	3rd grade	112 (29.55)
	4th grade	39 (10.29)
Age (mean ± SD; median; min-max)		20.97 ± 1.71; 21 (18-34)
Gender	Male	274 (72.30)
	Female	105 (27.70)
University	Baskent University	152 (40.11)
	Yozgat Bozok University	227 (59.89)
Mother's education level	Primary education	170 (44.85)
	High school	110 (29.02)
	Illiterate	35 (9.23)
	University and above	64 (16.89)
Father's education level	Primary education	143 (37.73)
	High school	142 (37.47)
	Illiterate	5 (1.32)
	University and above	89 (23.48)
Living arrangements	With family	173 (45.65)
	Home with friends	26 (6.86)
	Home alone	15 (3.96)
	Dormitory	165 (43.54)
Income level	Low	95 (25.07)
	High	60 (15.83)
	Moderate	224 (59.10)
Have you ever considered undergoing cosmetic (cosmetic) surgery?	Yes	140 (36.94)
	No	239 (63.06)
Which area(s) of your body would you consider for cosmetic surgery? (Select all that apply)	Nose	134 (35.36)
	Lips	8 (2.11)
	Breasts	15 (3.96)
	Other facial areas (chin, jawline, temples, eyebrows, cheeks)	15 (3.96)
	Eyes / Under-eye area	7 (1.85)
	Hair	1 (.26)
	Teeth	1 (.26)
	Body (Legs, abdominal area)	6 (1.58)
	Ears	4 (1.06)
Have you ever undergone cosmetic (cosmetic) surgery?	Yes	20 (5.28)
	No	359 (94.72)
Do you have any relatives or close acquaintances who have undergone cosmetic surgery?	Yes	152 (40.11)
	No	227 (59.89)
Do you use social media?	Yes	358 (94.46)
	No	21 (5.54)
How much time do you spend on social media per day (in hours)?	0-2 hours	85 (22.43)
	2-4 hours	133 (35.09)
	4-8 hours	144 (37.99)
	≥8 hours	10 (2.64)
	Several times per week	7 (1.85)
How often do you use filters before sharing a photo on social media?	Always	10 (2.64)
	Frequently	78 (20.58)
	Rarely	197 (51.98)
	Never	94 (24.80)
Do you follow cosmetic surgery physicians or clinics on social media?	Yes	68 (17.94)
	No	311 (82.06)

Table 2. Descriptive Statistics of Acceptance of Cosmetic Surgery and Body Image and Appearance-Related Social Media Consciousness Scales (n = 379)

Variables	Mean ± SD	Median (Min-Max)
ACS (Total)	55.81 ± 21.50	56 (15-105)
ACS (Intrapersonal)	21.22 ± 8.22	22 (5-35)
ACS (Social)	15.37 ± 7.91	14 (5-35)
ACS (Consider)	19.22 ± 8.39	19 (5-35)
BI total	54.28 ± 13.43	55 (21-92)
BI1	16.4 ± 5.68	16 (7-34)
BI2	14.48 ± 4.53	15 (5-25)
BI3	12.3 ± 3.78	12 (5-25)
BI4	11.1 ± 3.50	11 (4-20)
ASMC	47.94 ± 15.47	48 (13-91)

ACS, acceptance of cosmetic surgery; ASMC, appearance-related social media consciousness; BI, body image; BI1, negative body perception; BI2, evaluation sensitivity; BI3, positive body perception; BI4, changing the body.

subdimension showed a lower loading ($\lambda = .354$; $R^2 = .125$) but was retained based on theoretical considerations and sensitivity analyses assessing its impact on AVE and CR values (Table 3).

The results indicated high reliability across all constructs (CR ≥ .70). AVE values exceeded .50 and were lower than their corresponding CR values, supporting convergent validity. In addition, AVE values were greater than MSV and ASV for all constructs, and √AVE values exceeded interconstruct correlations, providing evidence for discriminant validity. Detailed results are presented in Tables 4 and 5.

Following confirmation of the measurement model, a structural model was specified to test the first hypothesis (H_1), with ASMC defined as the exogenous variable and ACS as the endogenous variable (ASMC → ACS). This model corresponded to testing the c path. Structural equation modeling results showed that ASMC significantly predicted all ACS subdimensions (β_thoughts = .50, β_social = .59, β_personal = .46; $P < .01$), supporting H_1.

Subsequently, a mediation model was specified to test the remaining hypotheses, in which the previously defined c path was denoted as c′. The results of this analysis are presented in Table 6 (Figure 1).

When BI was included as a mediating variable, ASMC significantly predicted BI1 (β = 0.47, $P < .001$), BI2 (β = 0.68, $P < .001$), and BI4 (β = 0.84, $P < .001$), but not BI3 (β = −0.04, $P = .483$), partially supporting H_2 (Table 6, path a). BI subdimensions significantly predicted most ACS outcomes ($P < .01$), supporting H_3 (path b). Despite the inclusion of BI, the direct paths from ASMC to ACS remained significant (ACS-Thoughts: β = −0.62, $P < .001$; ACS-Social: β = −0.27, $P = .025$; ACS-Personal: β = −0.61, $P < .001$), indicating partial mediation (Table 3, path c′). Together, ASMC and BI explained 88.7% of the variance in ACS-Thoughts, 71.8% in ACS-Social, and 74.4% in ACS-Personal.

The path analysis indicated that the model demonstrated an acceptable fit to the data (χ^2/SD = 2.91; CFI = 0.84; RMSEA = 0.071; SRMR = 0.079; GFI = 0.723). Although CFI and GFI were slightly below the conventional .90 cutoff, overall fit indices supported the adequacy and theoretical consistency of the model (Figure 2).

Bootstrap path analysis (5000 resamples) was conducted to test the mediating role of BI in the relationship between ASMC and ACS. The direct effects (path c′) showed that ASMC significantly predicted all ACS subdimensions: ACS-Thoughts (β = –1.193, $P < .001$), ACS-Social (β = −0.442, $P = .025$), and ACS-Personal (β = –1.039, $P < .001$). ASMC also significantly predicted all BI subdimensions (BI1-BI4; $P < .001$). However, BI1 did not significantly predict ACS-Personal ($P = .109$), and BI3 did not predict

Table 3. Confirmatory Factor Analysis: Standardized Factor Loadings, Indicator Reliability (R^2), and Significance Indices

			Item	Standardized Estimate	R^2	SE	CR	*P*
ACS1	<---	ACS (Personal)	ACS1	0.861	0.742	0.060	19.500	***
ACS14	<---	ACS (Personal)	ACS14	0.804	0.647			
ACS2	<---	ACS (Personal)	ACS2	0.892	0.795	0.055	20.466	***
ACS4	<---	ACS (Personal)	ACS4	0.805	0.647	0.055	17.660	***
ACS5	<---	ACS (Personal)	ACS5	0.841	0.708	0.054	18.813	***
ACS11	<---	ACS (Social)	ACS11	0.716	0.513	0.062	14.133	***
ACS12	<---	ACS (Social)	ACS12	0.724	0.524	0.065	14.308	***
ACS13	<---	ACS (Social)	ACS13	0.839	0.704	0.063	16.971	***
ACS15	<---	ACS (Social)	ACS15	0.860	0.740	0.064	17.438	***
ACS9	<---	ACS (Social)	ACS9	0.764	0.584			
ACS10	<---	ACS (Thoughts)	ACS10	0.354	0.125	0.062	6.892	***
ACS3	<---	ACS (Thoughts)	ACS3	0.835	0.697			
ACS6	<---	ACS (Thoughts)	ACS6	0.761	0.579	0.054	17.262	***
ACS7	<---	ACS (Thoughts)	ACS7	0.919	0.845	0.051	23.161	***
ACS8	<---	ACS (Thoughts)	ACS8	0.870	0.757	0.054	21.235	***
ASMC1	<---	ASMC	ASMC1	0.635	0.404			
ASMC10	<---	ASMC	ASMC10	0.803	0.645	0.101	13.049	***
ASMC11	<---	ASMC	ASMC11	0.636	0.404	0.100	10.840	***
ASMC12	<---	ASMC	ASMC12	0.707	0.500	0.092	11.821	***
ASMC13	<---	ASMC	ASMC13	0.617	0.381	0.093	10.571	***
ASMC2	<---	ASMC	ASMC2	0.738	0.545	0.075	16.595	***
ASMC3	<---	ASMC	ASMC3	0.756	0.571	0.108	12.454	***
ASMC4	<---	ASMC	ASMC4	0.760	0.577	0.098	12.490	***
ASMC5	<---	ASMC	ASMC5	0.813	0.661	0.103	13.159	***
ASMC6	<---	ASMC	ASMC6	0.679	0.461	0.100	11.439	***
ASMC7	<---	ASMC	ASMC7	0.655	0.430	0.102	11.115	***
ASMC8	<---	ASMC	ASMC8	0.762	0.581	0.100	12.543	***
ASMC9	<---	ASMC	ASMC9	0.729	0.531	0.099	12.109	***
BI10	<---	BI1	BI10	0.756	0.572			
BI12	<---	BI1	BI12	0.840	0.706	0.065	17.017	***
BI13	<---	BI1	BI13	0.792	0.627	0.061	15.907	***
BI14	<---	BI1	BI14	0.779	0.607	0.068	15.619	***
BI18	<---	BI1	BI18	0.726	0.528	0.068	14.421	***
BI6	<---	BI1	BI6	0.657	0.432	0.064	12.904	***
BI8	<---	BI1	BI8	0.782	0.612	0.063	15.687	***
BI1	<---	BI2	BI1	0.784	0.615	0.060	16.604	***
BI11	<---	BI2	BI11	0.750	0.562	0.058	15.681	***
BI2	<---	BI2	BI2	0.806	0.650			
BI21	<---	BI2	BI21	0.733	0.538	0.058	15.251	***
BI5	<---	BI2	BI5	0.779	0.606	0.056	16.457	***
BI15	<---	BI3	BI15	0.751	0.564			
BI16	<---	BI3	BI16	0.695	0.483	0.071	12.764	***
BI17	<---	BI3	BI17	0.803	0.644	0.068	14.611	***
BI4	<---	BI3	BI4	0.708	0.501	0.066	12.994	***
BI7	<---	BI3	BI7	0.635	0.404	0.074	11.648	***
BI19	<---	BI4	BI19	0.781	0.610	0.089	12.456	***
BI20	<---	BI4	BI20	0.714	0.510	0.092	11.639	***
BI3	<---	BI4	BI3	0.647	0.419			
BI9	<---	BI4	BI9	0.757	0.574	0.085	12.180	***

Loadings are standardized (λ). R^2 values are taken from AMOS squared multiple correlations. Reference items constrained to 1.000 do not have SE/CR/*P* reported. BI1–BI21 refer to the individual items of the Body Image Scale.

ACS, acceptance of cosmetic surgery; ASMC, appearance-related social media consciousness; BI, body image; BI1, negative body perception; BI2, evaluation sensitivity; BI3, positive body perception; BI4, changing the body.

ACS-Thoughts ($P = .334$) or ACS-Social ($P = .357$). In contrast, BI2 and BI4 significantly predicted ACS outcomes ($P < .05$), indicating partial mediation in the relationship between ASMC and ACS (Table 6, Figure 2).

Based on these bootstrap results, the indirect effects of ASMC on all ACS subdimensions were significant. The indirect effects on ACS-Thoughts (β = 1.051, 95% CI [0.585-1.917], $P < .001$), ACS-Social (β = 0.809, 95% CI [0.428-1.489], $P < .001$), and ACS-Personal (β = 0.991, 95% CI [0.573-1.750], $P < .001$) were all statistically significant, with CIs not including zero, supporting the presence of significant mediation. Accordingly, H_4 was supported (Table 7). However, some indirect pathways showed near-zero effects, indicating that

Table 4. Reliability and Validity Indices by Factor

Factors	CR	AVE	MSV	ASV	√AVE
BI1	0.907	0.583	0.523	0.214	0.764
BI2	0.880	0.594	0.518	0.264	0.771
BI3	0.843	0.527	0.203	0.042	0.726
BI4	0.817	0.528	0.523	0.318	0.727
ACS (Thoughts)	0.875	0.601	0.581	0.265	0.775
ACS (Social)	0.857	0.613	0.581	0.274	0.783
ACS (Personal)	0.924	0.708	0.581	0.221	0.841
ASMC	0.932	0.515	0.403	0.230	0.717

√AVE is the square root of AVE.
ACS, acceptance of cosmetic surgery; ASMC, appearance-related social media consciousness; ASV, average shared variance; AVE, average variance extracted; BI, body image; BI1, negative body perception; BI2, evaluation sensitivity; BI3, positive body perception; BI4, changing the body; CR, composite reliability; MSV, maximum shared variance.

the mediating influence of certain BI subdimensions on ACS was weak (Table 7).

Mediation analysis showed that BI1 and BI3 did not significantly mediate the relationship between ASMC and ACS. In contrast, the indirect effects of ASMC on ACS through BI2 and BI4 were significant. Accordingly, the direct effect of ASMC on ACS remained significant alongside indirect effects via BI2 and BI4, indicating partial mediation. Thus, the full mediation hypothesis was rejected, whereas the partial mediation hypothesis was supported (Figure 2).

Discussion

This study examines the relationships among ACS, ASMC, and BI using a structural equation model. Findings suggest that increased exposure to social media and the development of a negative self-perception while engaging with social media content are linked to greater BI

Table 5. Fornell–Larcker Discriminant Validity Matrix

	BI1	BI2	BI3	BI4	ACS (Thoughts)	ACS (Social)	ACS (Personal)	ASMC
BI1	(0.764)	0.632	−0.451	0.723	0.273	0.358	0.128	0.391
BI2	0.632	(0.771)	−0.177	0.72	0.378	0.407	0.429	0.635
BI3	−0.451	−0.177	(0.721)	−0.197	−0.002	−0.029	0.149	0.014
BI4	0.723	0.72	−0.197	(0.727)	0.528	0.567	0.393	0.628
ACS (Thoughts)	0.273	0.378	−0.002	0.528	(0.775)	0.762	0.762	0.447
ACS (Social)	0.358	0.407	−0.029	0.567	0.762	(0.783)	0.652	0.545
ACS (Personal)	0.128	0.429	0.149	0.393	0.762	0.652	(0.841)	0.405
ASMC	0.391	0.635	0.014	0.628	0.447	0.545	0.405	(0.717)

Values in parentheses on the diagonal are √AVE; off-diagonal entries are latent correlations. Discriminant validity is supported when each √AVE exceeds the corresponding row/column correlations.
ACS, acceptance of cosmetic surgery; ASMC, appearance-related social media consciousness; BI, body image; BI1, negative body perception; BI2, evaluation sensitivity; BI3, positive body perception; BI4, changing the body.

Table 6. Estimation Values for the Structural Model (n = 379)

			Standardized Estimate	Estimate	SE	CR	*P*	Label
BI1	<---	ASMC	0.468	0.382	0.050	7.581	***	***a***
BI2	<---	ASMC	0.682	0.567	0.060	9.404	***	
BI3	<---	ASMC	−0.041	−0.028	0.039	−0.702	.483	
BI4	<---	ASMC	0.835	0.715	0.070	10.271	***	
ACS (Thoughts)	<---	ASMC	−0.623	−1.193	0.259	−4.608	***	***c′***
ACS (Social)	<---	ASMC	−0.270	−0.442	0.197	−2.248	**.025**	
ACS (Personal)	<---	ASMC	−0.613	−1.039	0.218	−4.765	***	
ACS (Personal)	<---	BI1	−0.355	−0.737	0.108	−6.800	***	***b***
ACS (Social)	<---	BI1	−0.080	−0.161	0.100	−1.600	.109	
ACS (Thoughts)	<---	BI1	−0.225	−0.527	0.113	−4.657	***	
ACS (Personal)	<---	BI2	0.194	0.397	0.132	3.010	**.003**	
ACS (Social)	<---	BI2	−0.170	−0.336	0.130	−2.595	**.009**	
ACS (Thoughts)	<---	BI2	−0.104	−0.240	0.141	−1.703	.089	
ACS (Personal)	<---	BI3	0.145	0.361	0.112	3.234	**.001**	
ACS (Social)	<---	BI3	0.041	0.099	0.108	0.922	.357	
ACS (Thoughts)	<---	BI3	0.041	0.115	0.119	0.966	.334	
ACS (Personal)	<---	BI4	1.234	2.443	0.249	9.792	***	
ACS (Social)	<---	BI4	1.155	2.212	0.236	9.362	***	
ACS (Thoughts)	<---	BI4	1.472	3.292	0.314	10.500	***	

Label: Path identifiers in the structural model (a = ASMC→BI, b = BI→ACS, c′ = ASMC→ACS).
ACS, acceptance of cosmetic surgery; ASMC, appearance-related social media consciousness; BI, body image; BI1, negative body perception; BI2, evaluation sensitivity; BI3, positive body perception; BI4, changing the body; CR, critical ratio (Estimate / SE); SE, standard error of the estimate.
***$P < .001$. Bold values indicate statistical significance.

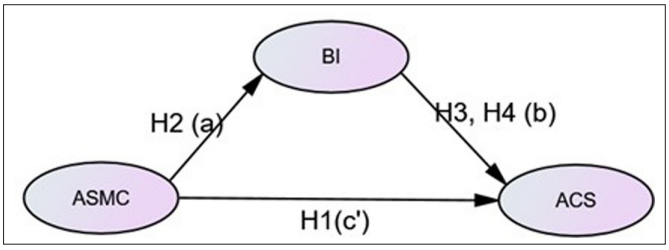


Figure 1. Mediated research model to be tested.

dissatisfaction, an increased inclination to consider cosmetic procedures, and heightened pressure to modify one's appearance. The results largely support the proposed hypotheses and align with existing literature on the subject.

Advertisements on social media, as well as posts shared by cosmeticians and plastic surgeons, play a significant role in individuals' decisions to undergo cosmetic surgery.[10,18,25] In this study, addressing the first research question, it was found that the ASMC score significantly predicted the ACS score. This finding highlights the strong influence of social media awareness on the tendency toward cosmetic surgery. Similarly, the literature suggests that time spent on social media and exposure to cosmetic norms increase individuals' interest in cosmetic procedures.[19,25,26] Therefore, this finding indicates that individuals' tendency to compare themselves with content they encounter in social settings may contribute to higher levels of ACS. Recent studies further demonstrate that algorithm-driven exposure to appearance-focused content and influencer-based promotion on social media platforms can normalize cosmetic procedures and directly shape individuals' intentions to undergo aesthetic interventions, even beyond the effects of traditional media channels.[27,28]

Unlike traditional media (e.g., TV, magazines), social media platforms frequently used by young people emphasize photo sharing, provide constantly updated posts, and offer filters designed to enhance appearance. These aspects contribute to raising beauty standards while potentially diminishing BI satisfaction among young individuals.[7,14] In this study, addressing the second research question, a significant association was found between the BI variable and ASMC. This result suggests that social media awareness influences BI perception, leading individuals to evaluate themselves based on the idealized body norms presented on social media platforms. A study revealed that Instagram's sexualized content contributes to increased body dissatisfaction among young women, reinforcing negative attitudes toward BI influenced by social media.[14] More specifically, body satisfaction and perceived attractiveness may be more strongly associated with social media content.[7,29] Recent systematic reviews and cross-sectional studies support these findings, indicating that frequent engagement with image-centric social media platforms is associated with increased appearance-based social comparison, body dissatisfaction, and appearance-related anxiety among young adults.[30,11] Therefore, for nursing students, who will play a critical role in healthcare delivery and patient recovery, it is essential to use social media consciously. By avoiding unrealistic expectations and promoting a healthy BI, they can offer accurate guidance to patients, disseminate reliable information, and serve as positive role models.

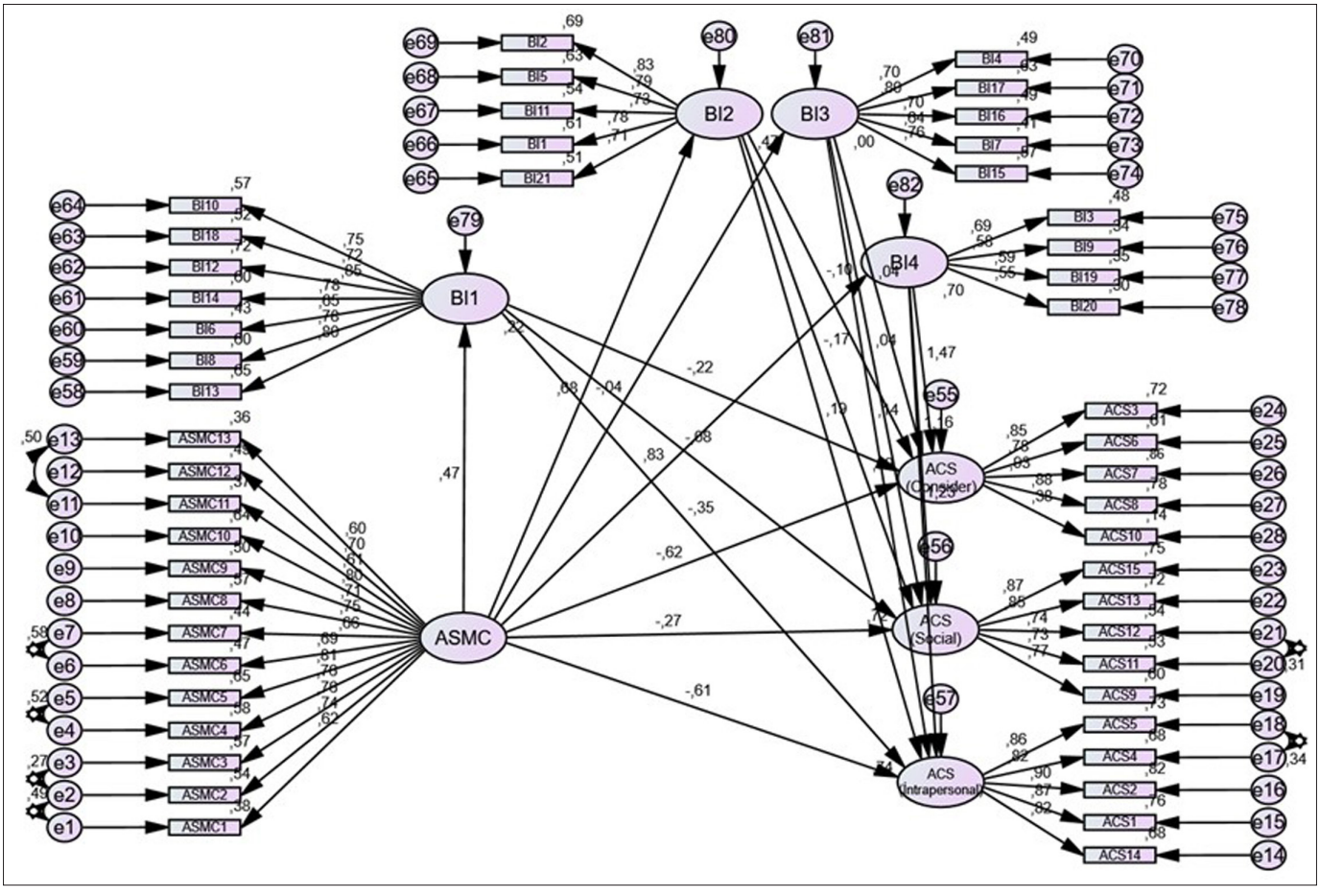


Figure 2. Path diagram of the mediated structural model.

Table 7. Indirect Effects of Appearance-Related Social Media Consciousness on Acceptance of Cosmetic Surgery via Body Image Dimensions (n = 379)

Indirect Effect			Standardized Estimate	Lower - Upper Bounds	Estimate	SE	*P*
ACS (Thoughts)	<---	ASMC	1.051	(0.585-1.917)	2.013	0.737	***
ACS (Social)	<---	ASMC	0.809	(0.428-1.489)	1.327	0.516	***
ACS (Personal)	<---	ASMC	0.991	(0.573-1.750)	1.681	0.583	***

Bootstrap resampling: 5000.
ACS, acceptance of cosmetic surgery; ASMC, appearance-related social media consciousness; BI, body image; BI1, negative body perception; BI2, evaluation sensitivity; BI3, positive body perception; BI4, changing the body; SE, standard error of the estimate.
***$P < .001$ indicates statistical significance.

In addressing the third research question and the mediation analysis related to the fourth, the findings indicate that BI plays a partial mediating role. Specifically, the effects of ASMC on ACS were found to be significant through BI evaluation sensitivity and body change subscales. This suggests that an individual's sensitivity to evaluating their BI and their perception of bodily change play a critical role in the relationship between social media awareness and ACS. Similarly, previous studies have reported that individuals with negative body perceptions are more open to cosmetic surgery[31] and that social media creates appearance-related pressures.[25] Recent empirical evidence further suggests that body dissatisfaction often functions as a proximal psychological mechanism through which social media exposure translates into ACS, particularly during young adulthood.[27,30] However, the lack of a mediating role for BI negative perception of the body and positive perception of the body subscales suggests that not all aspects of BI directly influence ACS. Instead, the impact of social environments, shared content, and others' opinions may be more influential in shaping these attitudes. A study found that while media portrayals contribute to men's body dissatisfaction, they do not influence ACS. Public self-awareness heightens dissatisfaction by reinforcing muscularity standards, whereas private self-awareness alleviates dissatisfaction and reduces the likelihood of undergoing surgery for social reasons.[32] Another study found a high ACS, particularly an increased interest in dermal fillers, which seems to be strongly shaped by celebrity culture and media exposure.[9] Recent gender-focused research further indicates that social media engagement may differentially influence cosmetic surgery acceptance among men and women, with men's attitudes being more selectively shaped by performance-oriented appearance norms and social comparison processes.[11] This finding underscores the complexity and multidimensional nature of BI, highlighting that, particularly during adolescence, peer influence and social media-related pressures may be more decisive factors in the ACS.

When examining the direct effects, it was found that the ASMC has a significant direct effect on ACS. This finding suggests that social media awareness influences ACS directly, even without the mediation of BI. Previous studies have also reported that exposure to cosmetic content on social media increases interest in cosmetic procedures.[7,25,33] Recent studies suggest that such direct effects may be reinforced by repeated algorithmic exposure and perceived social endorsement, facilitating the internalization of cosmetic norms independently of individual body satisfaction levels.[27,28] However, the lack of significant results for certain subscales in the mediation analysis suggests that this relationship may be shaped by individual and contextual factors that can vary across settings and populations.

Strengths and Limitations

This study has several strengths and limitations. It takes a comprehensive approach by examining BI, social media awareness, and cosmetic surgery attitudes among nursing students—key future healthcare providers. Conducting the study in 2 provinces (Ankara and Yozgat) is a strength, as the multicenter design increases the diversity of the sample and supports the generalizability of the findings. However, findings are still limited due to the focus on nursing students and a cross-sectional design, which prevents causal interpretations. Self-reported data may also involve social desirability bias, affecting accuracy.

Conclusion

In conclusion, this study revealed the influence of social media awareness on the ACS and highlighted the mediating role of BI in this process. The findings suggest that tendencies toward cosmetic procedures are shaped not only by social media use but also by individuals' body perceptions. Accordingly, future research should aim to develop more comprehensive models by considering variables such as individual differences, cultural factors, and the continuity of media exposure. Moreover, examining the impact of awareness programs that strengthen BI and enhance social media literacy on attitudes toward cosmetic surgery may provide valuable insights.

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

Artificial Intelligence Usage Statement: This study used ChatGPT (OpenAI) to improve language and edit grammar during the preparation of the manuscript.

Ethics Committee Approval: Ethical committee approval was received from the Ethics Committee of University of Başkent (Approval No.: 17162298.600-136; Date: May 20, 2024).

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

Peer-review: Externally peer-reviewed.

Acknowledgments: The authors thank the participants in this study.

Author Contributions: Concept – E.B.E, S.A.I.; Design – E.B.E, S.A.I. C.İ.; Supervision – E.B.E.; Resources – E.B.E, N.Ö.; Materials – E.B.E, S.A.I., C.İ.; Data Collection and/or Processing – E.B.E, N.Ö.; Analysis and/or Interpretation – E.B.E., S.A.I., C.İ.; Literature Search – E.B.E., S.A.I., N.Ö.; Writing Manuscript – E.B.E, S.A.I., N.Ö., C.İ.; Critical Review – E.B.E, S.A.I., N.Ö., C.İ.

Declaration of Interests: The authors declare that they have no competing interests.

Funding: The authors declare that this study received no financial support.

References

1. Seo YA, Kim YA. Factors affecting acceptance of cosmetic surgery in adults in their 20s–30s. *Aesthetic Plast Surg*. 2020;44(5):1881-1888. [CrossRef]
2. Okgün Alcan A, Çetin S. The Effect of social media use on women's attitudes towards aesthetic surgery. *Osmangazi J Med*. 2021. [CrossRef]
3. Aesthetic plastic surgery National databank statistics 2023. *Aesthet Surg J*. 2024;44(44)(suppl 2):1-25. [CrossRef]
4. Baksi A, Tuncer N. Examination of nursing students' acceptance levels for cosmetic surgery and affecting factors. *Int J Health Serv Res Policy*. 2021;6(1):60-72. [CrossRef]

5. Hermans AM, Boerman SC, Veldhuis J. Follow, filter, filler? Social media usage and cosmetic procedure intention, acceptance, and normalization among young adults. *Body Image*. 2022;43:440-449. [CrossRef]
6. Lau GSJ, Idang J. The relationship between selfie-editing, self-esteem, and social appearance anxiety among university students. *Intl J Adv Res Fut Ready Learning Edu*. 2022;26(1):1-8. [CrossRef]
7. Mironica A, Popescu CA, George D, et al. Social media influence on body image and cosmetic surgery considerations: a systematic review. *Cureus*. 2024;16(7):e65626. [CrossRef]
8. Sindi EE, Bondagji MF, Malibary JA, et al. An evaluation of the effect of social media platforms on the general population's decision-making about cosmetic procedures in Makkah City, Saudi Arabia. *Cureus*. 2023;15(6):e41093. [CrossRef]
9. Conboy L, Mingoia J. Social networking site use, self-compassion, and attitudes towards cosmetic surgery in young Australian women. *J Technol Behav Sci*. 2024;9(2):284-293. [CrossRef]
10. AlBahlal A, Alosaimi N, Bawadood M, et al. The effect and implication of social media platforms on plastic cosmetic surgery: a cross-sectional study in Saudi Arabia from 2021 to 2022. *Aesthet Surg J Open Forum*. 2023;5:ojad002. [CrossRef]
11. Truasheim S, Bonell S. Does social media engagement influence men's consideration of cosmetic surgery? *J Technol Behav Sci*. 2024;9(2):191-203. [CrossRef]
12. Ayar D, Aksu Ç, Polat F, et al. The effects of popularity perceptions and social appearance anxiety on the desire of young people to have aesthetic procedures on social media. *Curr Psychol*. 2025;44(5):3811-3820. [CrossRef]
13. Zhang T, Su D, Li S, et al. Person-centered evaluation of positive body image among Chinese nursing students: associations with body appreciation, self-concept clarity, and negative affect. *Front Psychol*. 2023;13:1088702. [CrossRef]
14. Guizzo F, Canale N, Fasoli F. Instagram sexualization: when posts make you feel dissatisfied and wanting to change your body. *Body Image*. 2021;39:62-67. [CrossRef]
15. Zhou Z. The influence of social appearance anxiety on impulsive consumption and acceptance of cosmetic surgery: evidence from the multiple mediation model. *Highl Bus Econ Manag*. 2023;6:432-436. [CrossRef]
16. Minglong W. *Structural Equation Model: Operation and Application of AMOS*. Chongqing, China: Chongqing University Press; 2009.
17. Bagozzi RP, Yi Y. Specification, evaluation, and interpretation of structural equation models. *J Acad Mark Sci*. 2012;40(1):8-34. [CrossRef]
18. Arab K, Barasain O, Altaweel A, et al. Influence of social media on the decision to undergo a cosmetic procedure. *Plast Reconstr Surg Glob Open*. 2019;7(8):e2333. [CrossRef]
19. Walker CE, Krumhuber EG, Dayan S, et al. Effects of social media use on desire for cosmetic surgery among young women. *Curr Psychol*. 2021;40(7):3355-3364. [CrossRef]
20. Henderson-King D, Henderson-King E. Acceptance of cosmetic surgery: scale development and validation. *Body Image*. 2005;2(2):137-149. [CrossRef]
21. Karaca S, Karakoç A, Onan N, et al. Validity and reliability of the Turkish version of the Acceptance of Cosmetic Surgery Scale (ACSS). *J Psychiatr Nurs*. 2017;8:17-22.
22. Saylan E, Soyyiğit V. Dimensions of body image: body Image Scale. *Turk Psychol Couns Guid J*. 2022;12(65):229-247. [CrossRef]
23. Choukas-Bradley S, Nesi J, Widman L, et al. The Appearance-Related Social Media Consciousness Scale: development and validation with adolescents. *Body Image*. 2020;33:164-174. [CrossRef]
24. Öngören B, Durdu Z, İpek Dongaz Öİ, et al. Adaptation of the appearance-related social media consciousness scale into Turkish: a validity and reliability. *Karya J Health Sci*. 2021;2(2):33-38.(in Turkish). [CrossRef]
25. Sonmez M, Esiyok E. The effect of social media usage, appearance-related social media pressure and body mass index on body appreciation of cosmetic procedure patients. *Aesthet Plast Surg*. 2023;47(6):2711-2718. [CrossRef]
26. Maldonado J D, Arriagada C, Conejero R A, et al. Social media and plastic surgery, the good, the bad, and where are we going? *Aesthet Plast Surg*. 2025;49(18):5224-5236. [CrossRef]
27. Alduosari M, Albuloshi T, Alsaber A, et al. Influence of social media on cosmetic facial surgeries among individuals in Kuwait: employing the theory of planned behavior. *Front Digit Health*. 2025;7:1546128. [CrossRef]
28. Eldeib O, Eldeib A, Harris L. Delayed surgical intervention for a self-inflicted left chest injury from a nail gun: addressing 28 nails six months post-incident. *Cureus*. 2024;16(3):e56789. [CrossRef]
29. Furnham A, Levitas J. Factors that motivate people to undergo cosmetic surgery. *Can J Plast Surg*. 2012;20(4):e47-e50. [CrossRef]
30. Torbey A, Yabroudi PN, Al Darra A, et al. The role of social media in shaping decisions to undergo cosmetic procedures: a nationwide cross-sectional study of the Syrian population. *Aesthet Surg J Open Forum*. 2025;7:ojaf103. [CrossRef]
31. Cihan B, Bozo Ö, Schaefer LM, et al. Psychometric properties of the Sociocultural Attitudes Towards Appearance Questionnaire-4-Revised (SATAQ-4R) in Turkish women. *Eat Behav*. 2016;21:168-171. [CrossRef]
32. Nerini A, Di Gesto C, Lo Bartolo M, et al. Self-awareness and social influences as predictors of body dissatisfaction and acceptance of cosmetic surgery for social reasons among men. *Aesthetic Plast Surg*. 2024;48(5):1016-1026. [CrossRef]
33. Montemurro P, Porcnik A, Hedén P, et al. The influence of social media and easily accessible online information on the aesthetic plastic surgery practice: literature review and our own experience. *Aesthet Plast Surg*. 2015;39(2):270-277. [CrossRef]

Supplementary Material

STROBE Statement—Checklist	Item No	Recommendation	Page No
STROBE Statement—Checklist of items that should be included in reports of cross-sectional studies			
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3-5
Objectives	3	State specific objectives, including any prespecified hypotheses	5-6
Method			
Study design	4	Present key elements of study design early in the paper	6
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6-7
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	6,7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7,8,9
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	*7,8,9*
Bias	9	Describe any efforts to address potential sources of bias	10
Study size	10	Explain how the study size was arrived at	7
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	7-9
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	9,10
		(*b*) Describe any methods used to examine subgroups and interactions	9,10
		(*c*) Explain how missing data were addressed	-
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	-
		(*e*) Describe any sensitivity analyses	-
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	11
		(b) Give reasons for non-participation at each stage	-
		(c) Consider use of a flow diagram	-
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	11
		(b) Indicate number of participants with missing data for each variable of interest	-
Outcome data	15*	Report numbers of outcome events or summary measures	10-14
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	10-14
		(*b*) Report category boundaries when continuous variables were categorized	-
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	-
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	-
Discussion			
Key results	18	Summarise key results with reference to study objectives	14-16
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	16,17
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	14-17
Generalisability	21	Discuss the generalisability (external validity) of the study results	14-17
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	Title page

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.