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Cosmetic surgery among women – a cross-sectional study

ORIGINAL ARTICLE

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Background

Studies from 2003 and 2008 indicated that 7–8 % of adult women in Norway had undergone cosmetic surgery. As there is little research available on the current situation, the main purpose of this study was to map the use of, desire for and social acceptance of cosmetic surgery. We also wanted to identify differences in demographic and psychosocial factors between women who have undergone cosmetic surgery, those who desire such surgery and those who do not.

Material and method

A sample of 3071 women aged between 18 and 60 years was recruited from the research panel used by the Ipsos/MMI market research company. Of these, 3055 were included in the study. Structured telephone interviews were conducted in December 2022.

Results

A total of 526 participants (17 %) answered that they had undergone at least one cosmetic procedures, while 1588 (52 %) reported that they were likely to have cosmetic surgery, and 535 (18 %) stated that cosmetic surgery had been recommended to them. The women who had undergone or desired cosmetic surgery reported a lower level of education, less satisfaction with their body and appearance, more frequent recommendations for cosmetic surgery, and greater use of appearance-focused social media compared to those who had no wish for cosmetic surgery.

Interpretation

The study indicated an increase in the use of cosmetic surgery among adult women over the last 20 years, from 8 % to 17 %, as well as an increase in both the desire for and social acceptance of cosmetic surgery.

Main findings

From a sample of 3055 women, 17 % responded that they had undergone cosmetic surgery, while 52 % responded that they were likely to undergo cosmetic surgery in the future. Women who had undergone or desired to undergo cosmetic surgery, reported lower levels of education than those who did not desire surgery.

Use of appearance-focused social media and having been recommended cosmetic surgery by others were more common among women who had undergone or desired to undergo such procedures.

In a society where the feminine beauty ideal is a youthful appearance, cosmetic surgery may represent a route to approaching the ideal (1, 2). In this context, *cosmetic surgery* refers to 'surgical procedures that seek to change or improve a patient's physical appearance' (3). Medically indicated plastic surgery can also have a cosmetic component.

Internationally, a marked increase has been observed in cosmetic surgery (4–6), but there is limited recent research available that sheds light on current prevalence and motivation for cosmetic surgery in Norway. A study from 2003 and figures from the 2008 Living Conditions Survey indicated that 7–8 % of adult women in Norway had undergone cosmetic surgery (7, 8). A smaller study from 2022 reported a prevalence of 14.7 %, which may suggest rising numbers in Norway (9).

International research overviews show that women's motivation for undergoing cosmetic surgery is a complex matter that is influenced by social, inter-personal and individual factors. These include personal body image, the importance of being attractive, a fear of ageing, a desire for greater self-esteem, perceived attitudes to cosmetic surgery, and personal finances, as well as marketing and access to cosmetic procedures (1, 2).

One of the main findings of the Norwegian study from 2003 (7, 10) was that social acceptance, e.g. knowing someone who has undergone cosmetic surgery or having been recommended it, plays a greater role than personal body image and social background when it comes to desiring and/or having cosmetic surgery. Investigating whether social acceptance of cosmetic surgery has increased since 2003, is therefore interesting.

Over the last two decades, the emergence of social media is likely one of the most significant social changes that has contributed to an increase in cosmetic surgery. Research has shown that exposure to and comparisons with body ideals presented in social media, combined with the interactive aspect of sharing, commenting and 'liking', is associated with body dissatisfaction and a stronger desire for cosmetic surgery (1, 11).

The main objective was to map the use of, desire for and social acceptance of cosmetic surgery among women in Norway in the 18 - 60 age range. We also wanted to investigate differences in sociodemographic factors, body image, use

of appearance-focused social media and community acceptance of cosmetic surgery, between women who had undergone cosmetic surgery and women with no personal experience of such procedures who either desired or did not desire cosmetic surgery.

Material and method

The study participants were women aged between 18 and 60 years who had been recruited in December 2022 by the Ipsos/MMI market research company from their own research panel consisting of some 97,000 members. Members of the panel receive weekly invitations to take part in various surveys based on the client's desired demographic profile. As an incentive to participate, panel members collect points that can be exchanged for gift vouchers.

Commissioned by the research team, Ipsos/MMI recruited a sample of 3000 women who fitted the national demographic distribution identified by Statistics Norway in respect of age, education and geography. The sample size was based on discretion; no power or sample size calculations were carried out. To ensure that the sample was a representative as possible with respect to education levels, data were weighted using the so-called *Random Iterative Method* (RIM).

Ipsos/MMI comply with EU's general data protection regulations (GDPR) (2016/679) in respect of data security and research ethics. No application was submitted to the regional committees for medical and health research ethics (REK), and participation was voluntary and anonymous.

Questions and telephone interviews

The interview was based on a structured interview guide with set response categories.

Cosmetic surgery: Participants who answered *yes* to the question 'Have you ever had cosmetic surgery (e.g. breast enlargement, liposuction, eye lid lift)?' were asked to specify the relevant body part(s) and the year of their most recent procedure.

Only for the breasts were there three different surgical procedures listed: *breast enlargement*, *breast reduction* and *breast uplift*. The other response options (with examples provided) were *stomach (tuck or lift, liposuction of stomach or waist)*, *other parts of the body (liposuction of thighs/buttocks/upper arms, shaping/augmentation/lift of buttocks, legs)*, *eyes (eye lid lift)*, *nose reshaping*, *other parts of the face/neck (face lift, brow lift, chin-cheek augmentation)* and *genitalia (labiaplasty, vaginoplasty)*. Other responses were assigned to existing response categories as appropriate: for example, *correction of protruding ears* was recorded as a procedure to *other parts of the face/neck*, while *laser operation of eyes* was not recorded as *cosmetic surgery*.

Desiring cosmetic surgery: participants considered the likelihood of them undergoing cosmetic surgery on various parts of the body by choosing a response from these categories: *1 = highly unlikely, 2 = fairly unlikely, 3 = somewhat likely, 4 = fairly likely and 5 = highly likely*. A dichotomous variable

was constructed to differentiate between those who expressed a desire for surgery (by answering *somewhat, fairly* or *highly likely* in respect to at least one part of the body), and those who expressed no such desire (by answering *fairly unlikely* or *highly unlikely* to all).

Social acceptance of cosmetic surgery in the participants' social circles was measured by two questions (7): 'Do you know people who have undergone cosmetic surgery?' and 'Have you ever been recommended to have cosmetic surgery by someone you know?', both answered by *yes/no*.

Social media. The degree of engagement with social media that focus on appearance was measured using a Norwegian translation of the *Appearance-Related Social Networking* scale (11). The introductory sentence 'I use social media to ...' was followed by five statements (for example '... follow influencers who focus on beauty, make-up or cosmetic treatments'), with response options ranging from *1 = never* to *5 = daily*. A higher average score suggested more frequent activity.

Body image was measured using the Norwegian version of the *Appearance Evaluation* scale, which includes seven statements (for example 'I like my looks just the way they are') from the Multidimensional Body-Self Relations Questionnaire (12, 13). The response categories ranged from *1 = definitely disagree* to *5 = definitely agree*, where a higher average score indicated a degree of satisfaction with own body and appearance.

Body mass index (BMI) was based on self-reported weight (kg) and height (m), and was calculated using the formula BMI = kg/m^2.

Sociodemographic variables: The registered variables were age, marital status, level of education, gross household income and region. Centrality, based on Statistics Norway's classification in respect of distance to jobs and services, was categorised by Ipsos/ MMI and ranked from *1 = municipalities at the highest centrality level* to *6 = municipalities at the lowest centrality level*.

Statistical analyses

All analyses were conducted on weighted data.

Chi-square tests were performed to determine differences in the distribution of sociodemographic variables between three groups: i) those who had undergone cosmetic surgery; and those who had not undergone cosmetic surgery and ii) desired cosmetic surgery, or iii) did not desire surgery.

A two-way analysis of covariance (ANCOVA) was conducted to determine mean differences between these three groups' (adjusted for age) body image and use of social media.

Participants who did not respond to one or more questions (= no data), were excluded from analyses that involved that question. *P*-value < 0.01 was the chosen significance level.

Results

A total of 3071 women accepted the invitation to take part in a telephone interview. Of these, 16 did not wish to answer the question about cosmetic surgery and were excluded. Demographic variables for the 3055 women who were included in the analyses are summarised in Table 1.

Table 1

The characteristics of 3055 women who took part in a telephone interview about cosmetic surgery in December 2022, all members of the Ipsos/MMI market research organisation's research panel. The number (*n*) that responded, broken down by response category. Women who did not answer a question were not included in the percentage calculation for that response category.

Sociodemographic variables	Number *n* (%)
Age (years) (*n* = 3 055)	
18–29	829 (27)
30–39	762 (25)
40–49	727 (24)
50–60	737 (24)
Partner status (*n* = 3 055)	
Single	963 (32)
Long-term partner	2092 (68)
Education (*n* = 3 055)	
Lower/upper secondary school	1554 (51)
University/ university college (bachelor's degree)	1065 (35)
University, university college (master's degree/PhD)	436 (14)
Income (NOK) (*n* = 2,643)	
Low (< 400,000)	608 (23)
Medium (400,000–1,200,000)	1589 (60)
High (> 1,200,000)	446 (17)
Region (*n* = 3055)	
Oslo	522 (17)
Eastern Norway (except Oslo)	1076 (35)
Western Norway	811 (27)
Central Norway	456 (15)
Northern Norway	190 (6)

Sociodemographic variables	Number *n* (%)
Centrality (*n* = 3040)	
Low centrality	311 (10)
Moderate centrality	1168 (38)
High centrality	1561 (52)
Body mass index (kg/m^2) (*n* = 2715)	
Underweight (< 20)	283 (10)
Normal weight (20–24.9)	1092 (40)
Overweight (25–29.9)	773 (29)
Obese (≥ 30)	567 (21)
Knows others who have had cosmetic surgery (*n* = 3044)	
No	795 (26)
Yes	2249 (74)
Has been recommended cosmetic surgery (*n* = 3036)	
No	2501 (82)
Yes	535 (18)

A total of 526 women (17 %) responded that they had undergone cosmetic surgery. Of these, 370 had undergone a single procedure, while 155 had undergone between 2 and 6 procedures. The most common combinations involved a procedure in the abdominal area along with another part of the body excluding the breasts (*n* = 37), stomach and breast reduction (*n* = 28), or stomach and breast lift (*n* = 24). One respondent did not specify the type of procedure.

Table 2 shows that participants had undergone a total of 754 procedures, which equals 25 procedures per 100 respondents. The most common procedure was breast surgery (*n* = 326, 43 %), followed by procedures in the abdominal area (*n* = 140, 18 %) and around the eyes (*n* = 117, 16 %). Time since the most recent procedure varied between 0 and 37 years, and out of the 670 procedures for which a year was specified, 253 (38 %) had been performed in the last five years.

Table 2

Percentage distribution of types of procedure as specified by women who had undergone cosmetic surgery (*n* = 526) and/or desired such procedures (*n* = 1588). The sample was recruited from a research panel of women (*n* = 3055) aged between 18 and 60 years. They responded by telephone to a survey on cosmetic surgery conducted in December 2022.

	Procedures performed (n = 754)	Procedures performed in the last 5 years (n = 253)	Desired procedures (n = 3617)
Types of cosmetic surgery procedure	*n* (%)	*n* (%)	*n* (%)
Breasts: all procedures	326 (43)	83 (33)	689 (19)
Breast enlargement	139 (18)	33 (13)	-
Breast reduction	120 (16)	20 (8)	-
Breast lift	67 (9)	30 (12)	-
Stomach: tuck, lift, liposuction of stomach or waist, other	140 (18)	47 (19)	669 (18)
Other parts of the body: liposuction of thighs/buttocks/upper arms, shaping/augmentation/lift of buttocks, other	80 (11)	38 (15)	462 (13)
Eyes: eye lid lift, other	117 (16)	46 (18)	994 (27)
Nose reshaping	35 (5)	18 (7)	264 (7)
Other parts of the face/neck face lift/brow lift, chin/cheek augmentation, correction of protruding ears, other	40 (5)	15 (6)	355 (10)
Genitalia: labiaplasty, vaginoplasty, other	16 (2)	6 (2)	184 (5)

A total of 1588 (52 %) participants responded that it was *somewhat to highly likely* that they would undergo cosmetic surgery in the future, of which 888 (56 %) indicated a desire for a procedure to be performed on two or more parts of their body. Many of those who had previously undergone cosmetic surgery stated that they also desired further surgery in the future: 412 out of 526 (78 %). This was a larger proportion than for those who had never undergone such a procedure: 1176 out of 2529 (46 %) ($p < 0.001$). The women desired a variety of different procedures: 994 (27 %) women desired cosmetic surgery around the eyes, while 184 (5 %) desired genital surgery (Table 2).

A total of 2249 (74 %) participants responded that they knew someone who had undergone cosmetic surgery, and 535 (18 %) had been recommended cosmetic surgery by someone they knew (Table 1).

Table 3 shows that, except for partner status, there were significant group differences in the distribution of all study variables between women who had undergone cosmetic surgery and those who had not, and between those in the latter group that desired, or did not desire, such surgery. Uptake of cosmetic surgery increased with age: 184 people (25 %) aged between 50 and 60 had undergone cosmetic surgery, compared to 94 (11 %) of the 18–29-year-olds. A total of 317 women (20 %) with a basic level of education (lower/upper secondary school) had undergone cosmetic surgery, compared to 209 (14 %) of the women with a higher education.

Table 3

The characteristics of the 3055 women in the sample who took part in a telephone survey about cosmetic surgery in December 2022. The data are distributed by those who had undergone cosmetic surgery and those who had not, and by whether these desired or did not desire cosmetic surgery. The number (*n*) that responded, broken down by response category. Women who did not answer a question were not included in the calculation for that response category or question.

	Undergone cosmetic surgery (*n* = 526)	Not undergone cosmetic surgery (*n* = 2529)		
		Not desiring cosmetic surgery	Desiring cosmetic surgery	
Sociodemographic variables	*n* (%)	*n* (%)	*n* (%)	*P* value[1]
Total (*n* = 3055)	526 (17)	1353 (44)	1176 (39)	
Age (*n* = 3054)				
18–29	94 (11)	424 (51)	311 (38)	
30–39	123 (16)	332 (44)	306 (40)	
40–49	124 (17)	322 (44)	281 (39)	
50–60	184 (25)	275 (37)	278 (38)	< 0.001
Partner status (*n* = 3055)				
Single	153 (16)	417 (43)	393 (41)	
Long-term partner	373 (18)	935 (45)	784 (37)	0.16
Education (n = 3055)				
Basic level (lower/upper secondary school)	317 (20)	599 (39)	638 (41)	
Higher level (university/university college)	209 (14)	754 (50)	539 (36)	< 0.001
Income (NOK) (*n* = 2642)				
Low (< 400,000)	85 (14)	256 (42)	267 (44)	
Medium (400,000–1,200,000)	318 (20)	663 (42)	608 (38)	
High (> 1,200,000)	71 (16)	226 (51)	148 (33)	< 0.001
Region (*n* = 3055)				
Oslo	76 (14)	256 (49)	190 (37)	
Eastern Norway (except Oslo)	216 (20)	441 (41)	419 (39)	
Western Norway	147 (18)	368 (45)	296 (37)	
Central Norway	64 (14)	191 (42)	201 (44)	
Northern Norway	23 (12)	97 (51)	70 (37)	< 0.001
Centrality (*n* = 3040)				
Low centrality	58 (19)	133 (42)	121 (39)	

	Undergone cosmetic surgery (*n* = 526)	Not undergone cosmetic surgery (*n* = 2529)		
		Not desiring cosmetic surgery	Desiring cosmetic surgery	
Moderate centrality	235 (20)	464 (40)	468 (40)	
High centrality	228 (15)	748 (48)	585 (37)	< 0.001
Body mass index (kg/m2) (*n* = 2715)				
Underweight (< 20)	41 (15)	139 (49)	103 (36)	
Normal weight (20–24.9)	190 (17)	535 (49)	367 (34)	
Overweight (25–29.9)	154 (20)	321 (41)	298 (39)	
Obese (≥ 30)	87 (15)	194 (34)	286 (51)	< 0.001
Knows others who have had cosmetic surgery (*n* = 3044)				
No	53 (7)	500 (63)	242 (30)	
Yes	469 (21)	849 (38)	931 (41)	< 0.001
Has had surgery recommended (*n* = 3036)				
No	297 (12)	1261 (50)	943 (38)	
Yes	221 (41)	88 (17)	226 (42)	< 0.001

[1]Group differences tested using chi-square

Out of the 2249 women who knew someone who had undergone cosmetic surgery, 469 (21 %) had undergone cosmetic surgery themselves, compared to 53 (7 %) of the 795 who did not know anybody who had undergone such procedures. A total of 221 of the 535 women (41 %) who had been recommended cosmetic surgery by someone they knew, had undergone cosmetic surgery, compared to 297 of the 2501 women (12 %) who had not received such a recommendation.

A covariance analysis adjusted for age showed that on average ($\bar{x}$), women who had undergone surgery and women who desired surgery, were more frequent users of appearance-focused social media ($\bar{x}$ = 2.2 and $\bar{x}$ = 2.1 respectively) than women who did not desire cosmetic surgery ($\bar{x}$ = 1.8; $p < 0.001$). On average, those who did not desire surgery were more satisfied with their body and appearance ($\bar{x}$ = 3.4) than women who had undergone surgery ($\bar{x}$ = 3.2), who in turn were more satisfied than those who desired cosmetic surgery ($\bar{x}$ = 3.0; $p < 0.001$).

Discussion

Of the women between 18 and 60 years of age who took part in the survey, 17 % had undergone cosmetic surgery. When combined with another recent but smaller study, the findings indicate a considerable increase in the use of cosmetic surgery in Norway, compared to 7.7 % in a study from 2003 which asked the same questions (7, 10).

The findings also suggest an increase in social acceptance of cosmetic surgery over the same period. As many as 74 % of respondents reported that they knew someone who had undergone cosmetic surgery, a rise from 56 % in 2003 (7). Over the same period, the share of women who had been recommended cosmetic surgery by people they knew rose from 6 % to 18 %. The results also showed an increase in the share of women who desired cosmetic surgery, from 23 % to 52 %, although this question was phrased slightly differently.

An interesting finding is that as many as 78 % of the women who had undergone cosmetic surgery considered it likely that they would undergo another procedure, compared to approximately half the women who had never had cosmetic surgery. Most women report that they are satisfied with the results of cosmetic surgery (14), which may explain their positive attitude towards further procedures. Alternatively, this finding may suggest that a subset of women who desire repeat cosmetic procedures suffer from body dysmorphic disorder (1).

Changes in the interest for and the prevalence of various types of cosmetic procedures may be a reflection of medical and technological developments, as well as shifts in marketing and body ideals. Cosmetic breast surgery was the most common surgical procedure at both reference points: 49 % in 2003 (7) and 43 % in 2022. About a third of the women who stated that they were *somewhat to highly likely* to undergo procedures, desired cosmetic eye surgery. This interest can potentially be explained by the increased use of video meetings, which has led to a greater focus on the face (1, 2), and a wish to counteract signs of ageing, like drooping eye lids, for cosmetic and/or medical reasons. Although genital cosmetic surgery accounted for 5 % of the desired procedures, only 2 % of all procedures performed were of this type. This may suggest that genital surgery remains uncommon, despite media posts suggesting the opposite (15).

Several of the factors that were associated with having undergone cosmetic surgery procedures or desiring such procedures in 2003 (7, 10), were also key in 2022, such as social acceptance of cosmetic surgery and a negative body image. In addition to these factors, we found a correlation between regular use of appearance-focused media, irrespective of age, and having undergone or desiring cosmetic surgery. Overall, the findings underpin the importance of social norms and media influence. The media and social networks play a role in conveying prevailing body ideals and provide examples of ways to attain these ideals for those who are dissatisfied with their body. Talking about cosmetic

surgery with acquaintances and engaging with social media can normalise the decision to undergo such procedures, lessen perceived risks and spread information about new cosmetic procedures (1, 2, 11).

In terms of body image and social media use, there were few differences between women who had undergone cosmetic surgery and those who desired such surgery. However, there were differences between the two groups when it came to social acceptance. This may suggest that knowing other people who have undergone cosmetic surgery and receiving recommendations for cosmetic surgery could be contributing factors in the decision to have surgery.

In this study, women who had undergone or desired cosmetic surgery were older, and had lower levels of education, than those who did not desire surgery. A lower level of education was also found by Margraf et al. (16), and has been associated with reduced health literacy, i.e. the capacity to obtain and understand health information, and being more easily influenced by marketing (17). Somewhat surprisingly, no differences were found in the use of cosmetic surgery in relation to partner status, despite this having been found in other studies (1, 2, 16).

It is a weakness of the study that the sample was recruited from a research panel, as this makes it difficult to assess how the use of cosmetic surgery has changed over time. This recruitment pool differs from the two earlier Norwegian studies, which recruited their sample from the National Population Register (7) and Statistics Norway's population database (8). Self-selection can contribute to over-estimation in studies about cosmetic surgery (7–9), and systematic differences in such samples involving other characteristics and variables cannot be ruled out. For example, it is possible that telephone interviewing made it difficult for some participants to answer questions about genital surgery. Furthermore, the response rate was lower for questions about body weight and income, as we have found in other surveys.

Another limitation of the study was that cosmetic surgery was categorised by areas of the body rather than by type of procedure, such as liposuction. Participants were also not asked whether procedures were performed on medical or aesthetic grounds, or both, or if the procedure was performed in the private or public sector.

Increasing exposure to virtually unachievable body ideals in social media, particularly in younger cohorts, combined with normalisation and fiercer marketing of cosmetic surgery (18, 19), suggest a greater need for further research as well as preventive measures. Measures that boost the capacity to resist media influences have proved promising in preventing body dissatisfaction, withstanding body-image pressures, and reducing young women's desire to alter their appearance (20).

The article has been peer-reviewed.

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