Original Article

Comparative Investigation of Genital Self-image and Sexual Function in Women with and Without a History of Female Genital Cosmetic Procedures: A Cross-sectional Study

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Abstract

Background: Despite the increasing growth of female genital cosmetic procedures, the long-term effects of these procedures are not clearly understood. This study was conducted to compare the genital self-image and sexual function in women with and without female genital cosmetic procedures.

Methods: This cross-sectional study was conducted on 315 participants (210 women without a history of genital cosmetic surgery and 105 women with it) in Alborz province, Iran, from early February 2023 to mid-May 2023. The sampling was done conveniently. Data collection instruments were Female Genital Self Image Scale and Female Sexual Function Index. Statistical analysis was done in SPSS 16 software using t-test, chi-square, and logistic regression, and $P<0.05$ was considered statistically significant.

Results: The use of laser to tighten the vagina with 77.77% and Perineoplasty with 29.2% were the main cosmetic procedures. The mean duration passed from the surgical procedures was 4.79±3.60 years, while it was 1.13±0.74 years for non-surgical procedures. Women with a history of genital procedures had a higher mean age (39.45±10.38, $P=0.023$). However, they were lower regarding the level of education ($P<0.001$), family income ($P<0.001$), and exercise ($P<0.001$). Also, they showed a higher number of pregnancies ($P<0.001$), deliveries ($P<0.001$), vaginal delivery ($P<0.001$), episiotomy ($P<0.001$), and neonates with a weight of ≥3.5 kg ($P=0.002$). In both groups, midwives and doctors were the most important sources of information about the appearance and function of reproductive system. However, the genital self-image and sexual function of the two groups did not differ significantly ($P>0.05$).

Conclusion: No difference in sexual self-image and lack of difference in sexual function after cosmetic procedures show the need to pay attention to recommending and selecting these procedures. Public awareness about the diverse and natural forms of the female genitalia, education about the variety of the factors affecting sexual function, reduction of unnecessary interventions, increase in physiological births, retraining doctors and midwives, and multidimensional counseling can help to choose more appropriate candidates for cosmetic procedures.

Keywords: Cosmetic surgery, Plastic surgery, Body image, Sexual dysfunction

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Introduction

Female genital cosmetic procedures constitute a wide range of procedures done for altering the appearance of female genitalia as well as strengthening and reconstructing the tissue of this region without medical reasons.[1] Indeed, the aim of this procedure was not the treatment of medical disorders or structural or functional abnormalities such as uterine prolapse, urinary incontinence, and sexual dysfunction. Rather, it only focused on the appearance of the female genitalia and enhancement of sexual function.[2] It has been established as a way to boost self-confidence and self-esteem as well as sexual pleasure for women.[1] Female genital cosmetic procedures involve different methods such as labiaplasty, vaginoplasty, perineorrhaphy, reduction of the clitoris hood size (hoodoplasty), enlarging and shrinking the labia major, fat injection into the labia major, strengthening G spot, vaginal rejuvenation, etc.[3] Today, the applicants for such measures are increasing, and annually tens of thousands of women undergo surgery to have the physical appearance of their genitalia changed.[4] According to the report of the American Cosmetic Surgeons' Association in 2018, the female genital cosmetic procedures with 53% growth have been among the fastest-growing procedures over five years.[5] Also, according to the statistics published by the Australian Government, between 2001 and 2013, only vaginoplasty has grown by 140% in this country.[6] Iran is also known as one of the countries with a high rank in cosmetic procedures in the world.[7] However, there are no precise statistics available regarding the rate of such surgeries since many cases of vaginoplasty, labiaplasty, and perineoplasty are done in private clinics and offices by surgeons and non-surgeons.

Concerns over genital appearance and the tendency to regain body image are among the major motivations behind undergoing female genital procedures for women.[8] Genital self-image refers to the throughs and emotions as well as beliefs of the person about her own genitalia, including the appearance and function of the genitalia and its health.[9-11] Low genital self-image is associated with low levels of sexual satisfaction in the person as well as perceived sexual dissatisfaction with the sexual partner in the sexual relationships.[12-14] It can cause sexual dysfunction and lower self-esteem in sexual relationships.[15] Meanwhile, sexual function is an effective factor on the psychological status of people;[16] diminished sexual function for any reason would have numerous negative effects on the personal and social life of the person.[17] Further, higher sexual function leads to increased intimacy between the couples and their enhanced satisfaction with each other, thereby boosting their psychological health.[18] Although many factors are involved in the female sexual function such as psychological and psychiatric disorders, musculoskeletal, endocrine, cardiovascular problems, infection diseases, or consumption of selective serotonin reuptake inhibitors (SSRIs) and many others,[19] some individuals think that lack of sense of sexual satisfaction and intimate relationship between them and their spouse results from their physical weaknesses. Accordingly, many women seek female cosmetic procedures.[20] Indeed, in 2015, the Australian Royal College released a guideline entitled "Female genital cosmetic surgery", a resource for general practitioners and other health professionals in response to the severe increase in the demand for this kind of surgery and the need for the existence of guidelines in this regard for healthcare providers. This is because healthcare providers play a central role in training women about the normal differences of the external genitalia. Furthermore, the complications of these procedures should be noted to women, and they should be asked about all causes leading to sexual dysfunction before deciding on undergoing such procedures for improving sexual function.[6, 21]

Based on the investigations performed so far, female genital cosmetic procedures are performed both in hospitals and extensively in private clinics and offices by individuals with varying degrees of expertise in Iran; very few

studies have dealt with this issue involving women with different times elapsed from female genital cosmetic procedures and the variety of the surgeon skills. A study in Iran compared the sexual function of 160 women with a history of cosmetic surgery with normal women, but the genital self-image of the women was not studied.[20] Due to lack of information, the present study was performed to compare the genital self-image and sexual function of women with and without a history of female genital procedures referring to female cosmetic and healthcare services.

Materials and Methods

This is a cross-sectional study. The statistical population of this research consisted of women who referred to female cosmetic and healthcare services (office of midwives; office of gynecologists; skin, hair, and cosmetic clinics, as well as women's hair salons) in Alborz province and the data collection lasted 3.5 months from early February 2023 to mid-May 2023. To determine the minimum sample size required at a confidence interval of 95% and test power of 80% and to compare the sexual function in women with and without genital cosmetic procedures with the accuracy of 1.5 and standard deviations obtained from the paper by Eftekhar et al. after setting the values in the following formula, the sample size was obtained 105 subjects.[22] Since the ratio of women without cosmetic procedures was almost twice as high as that of women with such procedures, 105 women with cosmetic procedures and 210 women without cosmetic procedures were included in the study.

$$n = \frac{(z_{1-\alpha/2} + z_{1-\beta})^2 \times (s_1^2 + s_2^2)}{d^2}$$

$z_{0.975} = 1.96$

$z_{0.8} = 0.84$

d=1.5

$s_1 = 4.2$

$s_2 = 3.5$

$$n = \frac{(1.96 + 0.84)^2 \times (4.2^2 + 3.5^2)}{1.5^2} \approx 105$$

The inclusion criteria were literacy and ability to complete the questionnaire, Iranian nationality, sexually active women (women with a history of permanent marriage, temporary marriage, etc.) for whom three months and more of one or several cases of surgical procedure or nonsurgical methods of cosmetics or rejuvenation of the genital area and vagina had been passed, sexually active women (women with a history of permanent marriage, temporary marriage, etc.) with no history of undergoing surgical or nonsurgical cosmetic or rejuvenation surgery for the female genitalia, lack of the history of other surgeries in the genital area, and pelvic cancer or pelvic radiotherapy. The exclusion criteria included incomplete questionnaires (more than 10% of items) and withdrawal from participation in the study after completing the questionnaire. Convenience sampling and purposeful method were used, and the response to questionnaires was in the form of self-report. The sampling was done from both groups of women with and without a history of genital cosmetic procedures concurrently. As to confidentiality, the questionnaires were placed inside envelopes, where the number on the envelope matched the number on the questionnaire. Additionally, the written consent forms signed by the study participants were in these envelopes. Also, a brief description was written on the envelopes about the type of study as well as inclusion criteria, the ethics code of this study, as well as the researcher's phone number to respond to the possible questions. These questionnaires were placed, with prior coordination with the owners of the cosmetic and healthcare providers centers of Alborz province and their notification about the type of study and its goals as well as gaining their consent. Sampling was possible with the help of the owners of these centers and with their efforts in informing the clients about this study. That is, they asked the clients to answer the questionnaires if they met the inclusion criteria. These centers included 35 midwifery offices, two gynecologist offices,

12 hair, skin and cosmetic clinics, five laser service-providing centers, five women's sports clubs, and 53 women's hairdressers and epilation centers. Furthermore, during the sampling stage of this study, to find the subjects with a history of genital cosmetic procedures, we also used snowball sampling method. In fact, the midwives who helped the study researchers in taking samples from the clients of their offices, when identifying each person with a history of genital cosmetic surgery, asked her to introduce people with a similar history, if she knew, to the study researchers. In case any person with a history of genital procedures was identified, through referral to their commute place, attempts were made to provide the questionnaire to them as well. In addition, during the sampling, incomplete questionnaires were excluded from the study. To investigate the adequacy of the number of subjects taken, the researcher frequently presented to the mentioned centers, whereby the completed questionnaires were collected and investigated, so that finally the predetermined sample size of this study would be achieved. Furthermore, to appreciate the participants of the study, the phone number of the researcher was provided to the participants, so that in case they needed sexual and midwifery consultation in the scope of expertise of the researcher, they could send SMS to this number for their request and coordination for telephone counseling. 28 phone contacts were made for giving consultation to the participants of the study. The research instrument was a demographic and baseline questionnaire prepared by the researchers, and its validity was determined based on content validity. This way, at first, this questionnaire was prepared using reliable and new sources and articles and based on the required information according to special characteristics of Iranian women's life; then, it was given to 10 faculty members (reproductive health specialists and midwives); after that, amendments were made according to the opinion of these professors. The questionnaire included individual characteristics (age, weight, marital status, history of malignancy in the genital area, pelvic surgery and radiotherapy, education, personal income, family income, employment, doing Sports); fertility characteristics (gravida, history of abortions and stillbirths, number of births, type of deliveries, history of episiotomy, giving birth to a neonate ≥3/5 Kg); questions about the history of performing cosmetic procedures in other parts of the body (i.e., rhinoplasty); questions related to the factors affecting the choice of genital cosmetic procedures; questions about sources of information about the genital appearance and sexual function; and questions about the type of genital cosmetic procedure performed and the time it was performed.

Female Genital Self-Image Scale (FGSIS) was developed by Hernebik et al. (2010). It contains seven items scored using a four-point Likert scale ranging from absolutely disagree (1), disagree (2), agree (3), and absolutely agree (4), with the minimum and maximum scores of 7 and 28, respectively. This questionnaire has no cutoff point, and higher scores represent positive perceptions and feelings about the genitalia. The FGSIS development study found a one-dimensional structure with adequate internal consistency (α=0.91); test-retest reliability was not performed in the original FGSIS study.[23] The Persian version of this questionnaire was developed by Pakpour et al. in 2014, and its reliability and validity were confirmed using Cronbach alpha of 0.7 and more. Good to excellent internal consistency reliability, test-retest reliability, and convergent and construct validity were found in this study.[24]

Female sexual function index (FSFI) was developed by Rosen et al. in 2000;[25] it consists of 19 items in six areas: sexual desire or libido, arousal, lubrication, orgasm, satisfaction, and pain. The Persian version of this questionnaire was developed by Heydari et al. in 2008, the reliability and validity of which have been confirmed with Cronbach alpha of 0.7 and more. The scores considered for the items of the sexual desire or libido are1-5, those

for arousal, vaginal lubrication, orgasm, and pain are 0-5, and those for satisfaction were 0 or 1-5. Zero score suggests that the person has had no sexual activity over the past four weeks. The scores of each domain are obtained by summing up the items of that domain and multiplying that by the factor number. The factor numbers for the desire; vaginal arousal and lubrication; and orgasm, satisfaction, and pain are 0.6, 0.3, and 0.4, respectively. By summing up the scores of the six domains, the total score of the scale will be obtained. Indeed, regarding the scoring, higher scores represent better sexual function. The minimum score for the desire is 1.2, that for arousal, vaginal lubrication, orgasm, and pain is 0, that for satisfaction is 0.8, and that for the total scale is 2. Since the domains are of the same weight, the maximum score for each domain is 6 and for the total scale is 36. The cutoff point for the desire is 3.3; that for arousal, vaginal lubrication, and orgasm 3.4, for satisfaction and pain 3.8, and the total scale is 28. In other words, scores lower than the cutoff point show sexual dysfunction, while higher scores represent normal sexual function.[26]

The present study was approved by the ethics committee of the faculty of nursing and midwifery as well as the rehabilitation faculty of Tehran University of Medical Sciences (code: IR.TUMS.FNM.REC.1401.161) and other permissions from Alborz University of Medical Sciences. All necessary approvals for performing the research were obtained from the relevant administrators. Written informed consent forms which were put with questionnaires in the envelopes were also signed by all the participants. The right of voluntary participation and withdrawal from the study was preserved. All participants were assured of data confidentiality.

Data analysis was performed using SPSS 16, with $P<0.05$ as the statistically significant level. Mean and standard deviation were used for the quantitative variables including age, weight, and the time elapsed from the female genital cosmetic procedure. Frequency was employed for the qualitative variables including other items of the questionnaire. Assuming the normality of the data, for the analysis, Chi-square, Fisher exact test, and logistic regression tests were employed.

Results

Overall, 580 questionnaires were distributed in this study, and 315 questionnaires were completed. 48 questionnaires were excluded due to incomplete information and 217 questionnaires were not answered. Out of 315 women participating in the study, 105 (33.33%) had a history of such procedures while 210 (66.67%) did not have this history. Of 105 women with a history of genital cosmetic procedures, 96 had a history of genital cosmetic surgery, while 9 women reported non-surgical genital cosmetic procedures. Perineoplasty with (N=28) 29.2% was the major surgical procedure, while the use of laser for tightening the vagina with (N=9) 77.77% was the major non-surgical procedure. The mean and standard deviation of the time elapsed from the surgical and non-surgical procedures were 4.79±3.60 years and 1.13±0.74 years, respectively. The minimum and maximum time elapsed from the surgical procedure and non-surgical procedure were 4 months to 15 years, and 4 months to 3 years, respectively (Table 1).

As reported in Table 2, the personal characteristics of the participants with and without cosmetic procedure groups were compared with each other. The mean age in the group of women with a history of procedures was 39.45±10.38 years, while it was 37.4±7.85 in women without this history ($P=0.023$). There was a statistically significant difference in the level of education of the two groups and women in the group of having a history of genital procedures were lower ($P<0.001$). Also, lower levels regarding to family income ($P<0.001$), and exercise ($P<0.001$) were seen in the group of women with a history of genital cosmetic procedure.

Table 3 shows the fertility characteristics

Table 1: The type of procedure in women with a history of genital cosmetic procedure group and the time elapsed since it

Variable	N (%)
Surgical procedure	
Perineoplasty	28 (29.2)
Labiaplasty	19 (19.7)
Multiple pelvic surgeries at the same time (Cystocele+Perineoplasty)	17 (17.7)
Anterior and posterior Colporrhaphy+Perineorrhaphy	16 (16.6)
Vaginoplasty	15 (15.6)
Shrinking the labia major+Vaginoplasty	1 (1.04)
Non-surgical procedure	
Laser for tightening the vagina	7 (77.77)
Injection of gel to the labia major	1 (11.11)
Multiple non-surgical procedures at the same time	1 (11.11)
Time elapsed from procedure	Mean±SD
Surgical procedure	4.79±3.60
Non-surgical procedure	1.13±0.74

Table 2: Individual characteristics in the two groups of women with and without a history of female genital cosmetic procedures

Variable	Non-genital cosmetic procedure group	Genital cosmetic procedure group	P value
Age (year), Mean±SD	37.04±7.85	39.45±10.38	0.023*
Weight (kg), Mean±SD	67.59±10.10	67.52±9.3	0.985*
Marital status, N (%)			0.903**
Permanent marriage	185 (88.1)	92 (87.6)	
Temporary marriage	25 (11.9)	13 (12.4)	
Education, N (%)			<0.001**
Elementary	16 (7.6)	23 (21.9)	
High school and diploma	102 (48.6)	59 (56.2)	
University	92 (43.8)	23 (21.9)	
Family income, N (%)			<0.001**
Low	13 (6.2)	20 (19.0)	
Medium	106 (50.5)	60 (57.1)	
Good	74 (35.2)	20 (19.0)	
Very well	17 (8.1)	5(4.8)	
Employment, N(%)			0.05**
Employed	75 (35.7)	26 (24.8)	
Housewife	135 (64.3)	79 (75.2)	
Exercise, N(%)			<0.001**
Yes, regular	42 (20.0)	13 (12.3)	
Yes, sometime	74 (35.2)	25 (23.8)	
Yes, little	36(17.1)	19 (18.1)	
No, I used to exercise	36 (17.1)	16 (15.2)	
No, never	22 (10.4)	32 (30.5)	

*T test, ** Chi-square

of the two study groups. Indeed, (N=50) 47.7% of women with a history of genital cosmetic procedures against (N=53) 25.3% of the women without the history had more than three pregnancies in the past (P<0.001). Based on the study results, in the group of women with a history of procedure (N=68) 64.8% and in the other group (N=57) 27.1% had a history of vaginal delivery (P<0.001). In the group of women with a history of procedure, (N=46) 43.8% and in the group of women without the history only (N=55) 26.2% had a history of giving birth to a neonate above 3.5 kg (P=0.002).

Table 3: Frequency distribution of fertility characteristics in the two groups of women with and without a history of female genital cosmetic procedures

Variable	Non-genital cosmetic procedure group N (%)	Genital cosmetic procedure group N (%)	P value
Gravida			<0.001*
0	39 (18.6)	5 (4.8)	
1	44 (21.0)	23 (21.9)	
2	74 (35.2)	27 (25.7)	
3	30 (14.3)	28 (26.7)	
≥4	23 (11.0)	22 (22.0)	
Abortions and Stillbirths			0.720*
0	148 (70.5)	68 (64.8)	
1	37 (17.6)	22 (21.0)	
2	21 (10.0)	12 (11.4)	
≥3	4 (1.9)	3 (2.9)	
Number of births			<0.001*
0	50 (23.8)	5 (4.8)	
1	53 (25.2)	29 (27.6)	
2	89 (42.2)	40 (38.1)	
3	14 (6.7)	21 (20.0)	
≥4	4 (1.9)	10 (9.5)	
Type of delivery			<0.001*
C/S[a]	90 (42.9)	22 (21)	
NVD[b]	57 (27.1)	68 (64.8)	
Both	13 (6.2)	10 (9.5)	
None	50 (23.8)	5 (4.8)	
Episiotomy			<0.001*
Yes	57 (27.1)	71 (67.6)	
No	153 (72.9)	34 (32.4)	
Newborn Weight ≥3.5 kg			0.002*
Yes	55 (26.2)	46 (43.8)	
No	155 (73.8)	59 (56.2)	

*Chi-square; [a]Caesarean section; [b]Normal vaginal delivery

The mean score of the genital self-image score in the group of women with female genital procedures was 20.69±2.89, while it was 20.58±3.34 in the other group. According to the independent t-test results, the mean score of genital self-image did not differ significantly between the two study groups (P=0.764). Table 4 shows the result of the logistic regression model comparing the genital self-image in two groups of women with and without a history of female genital cosmetic procedures by adjusting for confounding variables.

Findings showed that the mean score of sexual function was 23.74±8.92 and 24.7±7.77 in the groups of women with and without a history of cosmetic procedures, showing no significant difference regarding sexual function (P=0.455). Based on the FSFI questionnaire scoring, (N=64) 61% of the participants in the study who had a history of undergoing female genital cosmetic procedures had sexual dysfunction, while in the group of women without this history (N=127) 60.5% had sexual dysfunction. Furthermore, regarding lubrication and pain, (N=26) 24.8% and (N=42) 40% of women with the history had dysfunction, respectively. However, in the other group (n=39) 18.6% and (N=72) 34.3% had dysfunction (Table 5). Moreover, the results of logistic regression after modifying the confounding variables in the two groups did not show any statistically significant differences in the sexual function of the two groups of women (P>0.05).

Table 4: The results of the logistic regression model comparing genital self-image in the two groups of women with and without a history of female genital cosmetic procedures by adjusting for confounding variables

Variable	EXP(B)	Confidence interval	P value
Education			
Elementary	1.178	(0.376-3.692)	0.778
High school	0.860	(0.406-1.128)	0.693
University	Ref		
Family income			
Low	2.164	(0.447-10.487)	0.338
Medium	1.215	(0.333-4.432)	0.768
Good	0.996	(0.250-3.963)	0.996
Very well	Ref		
Exercise			
Yes, regular	0.371	(0.126-1.090)	0.071
Yes, sometime	0.269	(0.108-0.671)	0.005
Yes, little	0.580	(0.211-1.590)	0.289
No, I used to exercise	0.346	(0.120-0.999)	0.050
No, never	Ref		
Gravida			
0	2.619	(0.165-41.473)	0.495
1	1.494	(0.319-7.001)	0.610
2	0.556	(0184-1.685)	0.300
3	0.961	(0.293-3.152)	0.948
≥4	Ref		
Number of births			
0	0.317	(0.003-29.809)	0.620
1	0.615	(0.070-5.396)	0.661
2	0.633	(0.106-3.775)	0.616
3	1.095	(0.172-6.967)	0.923
≥4	Ref		
Type of delivery			
CS[a]	2.053	(0.034-124.536)	0.731
NVD[b]	4.762	(0.072-314.609)	0.465
History of both	3.870	(0.050-298.796)	0.542
None	Ref		
Episiotomy			
Yes	0.457	(0.164-1.270)	0.133
No	Ref		
Newborn Weight≥3.5 kg			
Yes	0.514	(0.260-1.017)	0.056
No	Ref		
History of Procedure in relatives			
Yes	0.727	(0.345-1.533)	0.402
No	Ref		
Suggestion from partner			
Yes	0.375	(0.130-1.081)	0.069
No	Ref		
Surfing on Internet			
Up to an hour per day	0.917	(0.420-2.001)	0.827
Two hours per day	0.614	(0.274-1.376)	0.236
More than three hours per day	Ref		
Online Shopping			
Yes	0.851	(0.420-1.722)	0.653
No	Ref		

Using the Internet to obtain medical information			
Yes	0.599	(0.278-1.293)	0.191
No	Ref		
The most important source of information about the function of the reproductive system			
Doctor and Midwife	4.222	(1.074-16.601)	0.039
Social media and Websites	3.354	(0.717-15.683)	0.124
People around and the person herself	3.277	(0.493-21.781)	0.219
Doctor and media	Ref		
The most important source of information about the appearance of the genitals			
Doctor and Midwife	0.723	(0.159-3.282)	0.674
Social media and Websites	1.092	(0.210-5.678)	0.917
People around and the person herself	5.873	(0.614-56.221)	0.125
Doctor and media	Ref		
Age	0.985	(0.946-1.026)	0.461

[a]Caesarean section; [b]Normal vaginal delivery

Table 5: Comparison of sexual function and its dimensions in the two groups of women with and without a history of female genital cosmetic procedures

Sexual function	Non-genital cosmetic procedure group N(%)	Genital cosmetic procedure group N(%)	P value
Sexual desire			0.931*
Has a disorder	65 (31.0)	33 (31.4)	
Has not a disorder	145 (69.0)	72 (68.6)	
Arousal			0.932*
Has a disorder	69 (32.9)	34 (32.4)	
Has not a disorder	141 (67.1)	71 (67.6)	
Lubrication			0.231*
Has a disorder	39 (18.6)	26 (24.8)	
Has not a disorder	171 (81.4)	79 (75.2)	
Orgasm			0.926*
Has a disorder	51 (24.3)	26 (24.8)	
Has not a disorder	159 (75.7)	79 (75.2)	
Satisfaction			0.999*
Has a disorder	56 (26.7)	28 (26.7)	
Has not a disorder	154 (73.3)	77 (73.3)	
Pain			0.32*
Has a disorder	72 (34.3)	42 (40.0)	
Has not a disorder	138 (65.7)	63 (60.0)	
Sexual function			0.935*
Has a disorder	127 (60.5)	64 (61.0)	
Has not a disorder	83 (39.5)	41 (39.0)	

*Chi-square

Table 6 shows the frequency distribution of the sources used to obtain information about the function of the female reproductive system and its appearance in the participants of this study. Although the two groups had statistically significant differences in the sources used to get informed about the function of the reproductive system (P=0.003) and sources of information about the genital appearance (P=0.006), both groups of women with a history of genital cosmetic surgery and without it mentioned doctors and midwives as the most important sources of information.

Discussion

In this study, the participants were divided into two groups: those with a history of undergoing

Table 6: Frequency of the sources of information about the function of the female reproductive system and its appearance in the two groups of women with and without a history of female genital cosmetic procedures

Variable	With history of cosmetic procedure N (%)	Without history of cosmetic procedure N (%)	P value
Sources of information about the function of the reproductive system			0.003*
Doctor and midwife	72 (68.6)	124 (59.0)	
Social media and websites	18 (17.1)	30 (14.3)	
People around and personal information	9 (8.6)	10 (4.8)	
Doctor and media	6 (5.7)	46 (21.9)	
Sources of information about the appearance of the genital			0.006*
Doctor and midwife	71 (66.7)	142 (67.6)	
Social media and websites	21 (20.0)	37 (17.6)	
People around and personal information	9 (8.6)	4 (1.9)	
Doctor and media	5 (4.8)	27 (12.9)	

*Chi-square

any genital cosmetic procedure (surgical or nonsurgical) and women without a history of female genital cosmetic procedures. The results of the comparison of the two groups showed no difference regarding genital self-image and sexual function between women with a history of female genital cosmetic procedures and those without this history.

Enhancement of genital self-image is one of the reasons behind undergoing genital cosmetic procedures in women. Indeed, many factors such as body image, organ loss, genital hygiene practice, sexual function, vaginal infections, culture, developmental stages, obesity, and media affect the women's genital self-image. Especially with the development of technology, the effect of media on women's genital self-image is increasing, and exposure to images of genitalia on the Internet has affected women's interest in genital cosmetic surgery.[27] However, some studies have suggested that women with low sexual satisfaction may benefit from therapeutic procedures to enhance their genital self-image.[9] Also, Goodman et al. argue that there is some kind of dissatisfaction with the body with genital centrality; surgery may respond to that.[28]

However, according to the theory of the dynamic and flexibility of women's genital self-image and its change during life and even its improvement, it is very important to know that strengthening women's negative perception of their genitals will motivate them to undergo unnecessary genital cosmetic surgery.[29]

As we see in the result of the comparison of women's genital self-image in the two study groups of this study, there was no higher score in the group with a history of the procedure. Therefore, it should be noted that ignoring other influencing factors on women's genital self-image and insisting on the effect of surgery on increasing genital self-image is not always true. Possibly, if the person knows that her sexual genitalia are within a wide range of the normal genitalia of women, she may no longer intend to undergo surgery. Thus, counseling the candidates before undertaking genital cosmetic procedures seems to be essential.

Meanwhile, today there is a high demand for undergoing female cosmetic surgical or non-surgical procedures to improve the sexual function of women. In the study by Goodman et al., more than 90% of women without any actual complaint of genitalia disorder underwent the surgery.[30] Some studies showed improvement in female sexual function after female genital cosmetic surgery, but in these studies, mostly the sexual function investigation, instruments have not been valid enough, and the follow-up duration of the subject has also been limited.[31] In the

present study, the sexual function did not differ significantly in women with and without a history of female genital cosmetic procedures. Even the score obtained in lubrication and pain was lower in the group of women with a history of genital procedures compared to the other group. This result is in line with the findings of another study in which women undergoing labiaplasty were compared with another group of women without this operation history regarding sexual function for six months. Despite the improvement of the sexual function scored three months after the operation, in the six-month investigation, no difference was observed.[32] Furthermore, the study by Goodman et al. showed progress in the extent of sexual satisfaction three months following genital cosmetic surgery, while the six-month investigation did not suggest progress in sexual satisfaction.[28]

However, based on the results of several studies, a dramatic improvement in sexual function can be seen after genital cosmetic surgeries in women who suffer from disorders such as pelvic organ prolapse and vaginal laxity.[22, 28] It is important to consider that such results cannot be generalized to all healthy women, including those without any pelvic complications. In other words, it is not correct to advise all women to perform female genital cosmetic procedures to improve their sexual function. As seen in the present study, the level of sexual function of women with and without a history of female genital cosmetic procedures was not statistically different. Therefore, it can be concluded that women who have suffered from disorders such as vaginal laxity have benefited from female genital cosmetic procedures, and after these procedures, they reach a level of sexual function that is higher or similar to that of the general population of women in the society. However, calling the diverse appearance of female genitalia pathological and promoting surgery as a powerful solution to improve sexual function have ethical challenges that require serious attention.[33, 34]

The results of comparing the demographic characteristics also indicated that women in the group with a history of genital procedures had a higher mean age. This result can be caused by the increased desire of people to slow down the aging process. However, regarding the level of education, family income, and exercise, those with a history of this surgery were lower than the women without this history. It means they were women who had primary and high school education and were in an average economic status with less experience of exercising. These findings are in the same line with those of Eftekhar et al.; they found that older women with higher education as well as average economic status sought genital procedures more.[35] It seems that these results are because in Iran women with a higher level of education and those with a better economic status are less inclined to have children, and the rate of vaginal childbirth and episiotomy in them is lower than Cesarean section; therefore, they suffer less perineal damage during the delivery. However, the low frequency of having a history of exercising in women with a history of genital cosmetic procedures can be justified by the hypothesis that people who exercise have higher muscle strength and self-confidence. Also, it is in line with the results of several other studies.[22, 36, 37]

In the present study, women with a higher number of pregnancies, deliveries, vaginal delivery, history of episiotomy, and delivery of a neonate above 3.5 kg had a greater history of female genital cosmetic procedures. Some studies have shown an increase in damage to the pelvic floor muscles after vaginal delivery, especially delivery of a baby weighing more than 3.5 kg or delivery with instruments compared to Cesarean section.[38] This issue may affect the women's sexual life, and sometimes mild depression is seen in these women, which reduces their quality of life and sexual satisfaction and causes them to resort to female genital cosmetic procedures.[38] This suggests the importance of paying more attention to performing physiological delivery and taking care of the perineum before, during, and postdelivery to prevent serious injuries to

the pelvic muscles, especially in the perineum during childbirth. Other studies such as that of Griffiths and Berrett have also had such a recommendation.[38,39] Furthermore, the present study results showed that the most important source of acquisition of information about the appearance and function of the genitalia in the group of women with a history of female genital procedures included gynecologists and midwives. This result indicates the importance of the existence of a suitable educational program for midwives and gynecologists to increase their knowledge about the wide range of normal appearance of the female genitalia, the effect of genital cosmetic procedures on the women's sexual function, familiarity with the complications of these procedures, and increase in the competence for providing proper and effective counseling, which can be one of the best solutions for raising proper awareness among women about the female genital cosmetic procedures.

One of the strengths of the present study was the examination of the genital self-image and sexual function of women with a history of female genital cosmetic procedures without considering the time limit after surgery and the limitations related to performing surgery by certain professional surgeons; also, we were able to compare these characteristics with women without such a history. However, the most important limitation of this study was the lack of information about their genital self-image score and female sexual function before surgery and the extent of its change after surgery. Therefore, it is suggested that other similar studies should be conducted in order not to have such limitations.

Conclusion

The results of this study showed no difference in sexual self-image and lack of difference in sexual function after cosmetic procedures. These results indicate all influential factors on women's genital self-image and their sexual function should be considered important at the time of consultation with women who are inclined to undergo genital cosmetic procedures. Therefore, counseling by a sexual health specialist is recommended before cosmetic surgery to inform women about the diversity in natural genital shapes. Additionally, adjustment of expectations and evaluation of all physical, psychological, and marital factors affecting sexual function are recommended. Doctors and midwives have been the main information sources for women about their genital self-image and sexual function, so it is necessary for them to accept the differences in female genital appearance as a normal variation and to give proper information to women. In addition, the inconclusive results of cosmetic procedures on genital self-image and sexual functions and their ethical challenges should be included in the retraining programs of doctors and midwives.

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