

Body image and sexual function in women with polycystic ovary syndrome: a case-control study

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SUMMARY

OBJECTIVES: The study aimed to determine the impact of polycystic ovary syndrome on women's body image and sexual function.

METHODS: In this case-control study, 97 women with polycystic ovary syndrome and 95 healthy women were interviewed in a hospital using the Personal Information Form, Body Image Scale, and Female Sexual Function Index.

RESULTS: The total score of body image of women in the polycystic ovary syndrome group was found to be 132.11±19.44 and it was 133.35±21 in the control group; there was no statistically significant difference between them ($p>0.05$). In this study, 74.23% of the women with polycystic ovary syndrome (+) experienced sexual dysfunction. Sex drive, arousal, lubrication, orgasm, and averages of pain subscales and female sexual function index total score were found to be significantly lower in the polycystic ovary syndrome group than in the control group ($p<0.05$).

CONCLUSION: The findings suggest a difference between women with polycystic ovary syndrome and healthy women in terms of sexual function, while body image was similar in both groups. Our data suggest that the polycystic ovary syndrome has a negative effect on the sexuality.

KEYWORDS: polycystic ovary syndrome; body image; sexual dysfunction; Turkish women.

INTRODUCTION

Polycystic ovary syndrome (PCOS) is an endocrine disorder that affects women's lives negatively, with short- and long-term risks, usually beginning in the peripubertal period. Its frequency is reported as 6–21% among women of reproductive age and approximately 15% in the Turkish population^{1,2}. Typical clinical symptoms include oligomenorrhea or amenorrhea, hirsutisms, acne, seborrhea, hair loss, infertility, and obesity, although these are not found to the same degree and frequency in each patient. Although PCOS is a disease characterized by metabolic and cosmetic problems, it is currently evident that the disease causes psychological and reproductive/sexual problems^{3,4}. The diagnosis of PCOS is difficult as well as challenging in similar cases. Therefore, the recommendation of criteria diagnosis and exclusion of other affection are necessary⁵.

Body image is a concept that covers an individual's health status, physical appearance and skills, and attitudes and perceptions related to their sexuality, forming the physical nature of the self⁶. In many societies, characteristics such as youth and beauty can be considered the most important individual characteristics. Factors such as the individual's age, sex, personality structure, the value given to the changing body part, and whether the change is visible can influence the response to the change in the body⁷. In this respect, it is obvious that the

physical and psychological changes observed in women with PCOS may affect their body image. In the literature, it is stated that changes in body appearance in women with PCOS negatively affected body image compared with healthy women^{8,9}.

It has been reported that changes in a woman's external appearance negatively affect their behavioral orientation and interpersonal relationships¹⁰. In Erbil's study on women of reproductive age, it was found that positive body image also positively affected sexual functions¹¹. It has been reported that the impact of PCOS on sexual functions was related to the effect of menstrual irregularity, acne, hirsutism, alopecia, and androgen-dependent obesity on the female identity of the patient. In addition, long-term health risks, infertility, and changes in the physical appearance and body are considered to induce sexual dysfunction by causing psychological stress¹². The possible negative effects of PCOS on sexual life are generally associated with menstrual irregularity and other clinical findings. These women feel more depressed and less feminine because they think their feminine image is being affected. Sexual function, physical, socioemotional, and intellectual aspects depend on integration¹³. In the study by Silva et al., it was stated that this syndrome in women with PCOS did not affect the initiation of sexuality, forms of expressing sexuality, intimate communication with their partners, and sexual

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satisfaction. It seems that the literature is not solid on the sexuality of women with PCOS¹⁴.

As a result, there are insufficient data to understand the relationship between body image and sexual functions in PCOS. The aim of this case-control study was to evaluate the body image and sexual function of women with PCOS using healthy women as the control group.

METHODS

Design

This was a case-control study performed on 192 women [97 with PCOS (study group), 95 healthy volunteers (control group)], who were admitted to the Şişli Kolan Hospital Reproductive Health and Family Planning Center in Istanbul between January 2019 and June 2019.

Sample

The minimum sample size was calculated using the Power Analysis and Sample Size 11 (PASS) statistical software (NCSS LLC, Kaysville, Utah, USA). The sample size was calculated according to the frequency of an event when the population size was unknown. There was only one study investigating the prevalence of sexual dysfunction in Turkish women with PCOS, which found that 57% of women with PCOS experienced sexual dysfunction¹⁵. Accordingly, the sample size was calculated as $\alpha=0.05$, $\beta=0.20$ and $1-b=0.80$, $p=0.5$, basic risk=0.20, and the sample number for each group was determined as at least 92.

The inclusion criteria in this study were determined according to the aims of this study and a literature review.

The PCOS group: Patients who were diagnosed as having PCOS according to the Rotterdam criteria (oligoanovulation, clinical, and/or biochemical hyperandrogenism findings, polycystic ovaries shown on ultrasonography, and other etiological causes ruled out)¹⁶, who agreed to participate in the study, were ≥ 18 years old, ≤ 40 years old (as they are more likely to experience premenopausal and perimenopausal changes, and their sexual function decreases with age), were married or had regular sexual partners, were sexually active, and were literate were included in this group.

The control group: Women who came for regular health checks (pap smear and pelvic exam), who agreed to participate in the study, were 18–40 years old, were married or had regular sexual partners, were sexually active, and were literate were included in this group.

Data collection tools

The data were obtained using the Sociodemographic Data Form, Body Image Scale, and Female Sexual Function Index (FSFI).

Sociodemographic Data Form: The data form prepared by the researchers contained questions about identifying the characteristics of women, their body mass index (BMI), menstrual characteristics, and symptoms such as hirsutism and acne. In the study, hirsutism and acne findings were subjectively evaluated as “yes” or “no” according to the patients’ statements.

Body Image Scale (BIS): The answers to 40 items are evaluated and measured to determine the person’s satisfaction with the function of different body parts. The lowest score on the scale is 40 and the highest is 200. Higher scores mean that body image is evaluated positively¹⁷.

Female Sexual Function Index (FSFI): This index is a Likert-type index consisting of 19 items that assess women’s sexual dysfunction in the last 4 weeks. A maximum of 36 and a minimum of 2 points are taken from the index. The presence of sexual dysfunction is accepted in women receiving a total FSFI score of 26.55 or below¹⁸.

Application

The women who agreed to the interview and gave their written consent were directed to a private room where they completed the questionnaire. The Sociodemographic Data Form was completed through face-to-face interviews. The body image scale and FSFI were completed by the participants themselves in order to make them feel comfortable. Surveys were conducted after anthropometric measurements (height and weight) and BMI calculations were made.

Ethic approval

The study protocol was designed in compliance with the principles of the Declaration of Helsinki. Prior to data collection, necessary approvals and permissions were obtained from the Bandırma Onyedi Eylül University Non-Invasive Research Ethics Committee (Decision Date and No.: 05.12.2018, 2018-12.03) and the General Director of the Şişli Kolan Hospital, respectively. In addition, the verbal and written informed consent of women included in the study was obtained after they were informed of the purpose and method of the research.

Analysis of data

In this study, statistical analysis was performed using the NCSS (Number Cruncher Statistical System) 2007 Statistical Software (Utah, USA) package program. In addition to descriptive statistical methods (mean and standard deviation), the independent t-test was used for comparison of binary groups of variables showing normal distribution, and the chi-square test was used for comparison of qualitative data. Logistic regression was used to estimate odds ratios (ORs) and 95% confidence intervals

(CIs) of the factors that affected sexual function. The internal consistency of the BIS and FSFI was assessed using Cronbach's alpha coefficient. The significance level was accepted as $p < 0.05$.

RESULTS

The average age of patients with PCOS was 28.23 ± 4.56 years. Of the patients, 65.98% were secondary school graduates, 77.32% had a job, 58.76% had moderate-income status, 44.33% were married, 39.18% used cigarettes, and 17.53% used alcohol. The average age

of the women in the control group was 29.33 ± 5.61 years. There was no statistically significant difference between the study and control groups in terms of sociodemographic variables ($p > 0.05$) (Table 1).

Table 2 shows the total score averages of the BIS, FSFI, and their subdimensions in the PCOS and control groups. The total score averages of the FSFI and subdimensions in women with PCOS and control group were compared. The total score average of the FSFI and sexual drive, arousal, lubrication, orgasm, and pain subdimensions in women with PCOS was significantly lower than in the control group ($p < 0.05$) (Table 2).

Table 1. Demographic and clinical characteristics of patients with Polycystic ovary syndrome and control groups.

Demographic and clinical characteristics		PCOS group n=97		Control group n=95		Test
Age		Mean±SD		Mean±SD		t: 6.92 p=0.085*
		28.23±4.56		29.33±5.61		
BMI		25.08±4.3		22.34±3.74		t: 2.98 p=0.003*
		n (%)		n (%)		
Level of education	Elementary	18	18.55	15	15.79	χ^2 : 1.36 p=0.054+
	Secondary	64	65.98	47	49.47	
	University	15	15.46	33	34.74	
Employment status	Employed	75	77.32	84	88.42	χ^2 : 0.55 p=0.162+
	Unemployed	22	22.68	11	11.58	
Income level	Poor	5	5.15	18	18.95	χ^2 : 1.83 p=0.040+
	Moderate	57	58.76	56	58.95	
	Good	35	36.08	21	22.11	
Marital status	Married	43	44.33	56	58.95	χ^2 : 1.22 p=0.092+
	Single	54	55.67	39	41.05	
Cigarette smoking	Yes	38	39.18	28	29.47	χ^2 : 2.00 p=0.157+
	No	59	60.82	67	70.53	
Alcohol consumption	Yes	17	17.53	14	14.73	χ^2 : 1.22 0.269+
	No	80	82.47	81	85.26	
Menstrual irregularity	Yes	50	51.55	18	18.95	χ^2 : 22.29 p=0.001+
	No	47	48.45	77	81.05	
Acne	Yes	28	28.87	21	22.11	χ^2 : 1.15 p=0.283+
	No	69	71.13	74	77.89	
Hirsutism	Yes	29	29.90	12	12.63	χ^2 : 8.51 p=0.004+
	No	68	70.10	83	87.37	
Belly fat	Yes	40	41.24	21	22.11	χ^2 : 9.26 p=0.002+
	No	57	58.76	74	77.89	
Hair loss	Yes	18	18.56	27	28.42	χ^2 : 2.60 p=0.107+
	No	79	81.44	68	71.58	
Oily skin	Yes	24	24.74	15	15.79	χ^2 : 2.37 p=0.123+
	No	73	75.26	80	84.21	

*Independent t-test and χ^2 test. PCOS: Polycystic ovary syndrome; BMI: Body mass index; Mean±SD: mean and standard deviation. Bold values indicate statistical significance at the $p < 0.05$ level.

Table 2. Comparison of mean total body image scale and female sexual function index scores between the Polycystic ovary syndrome and control groups.

Body Image Scale and Female Sexual Function Index	PCOS group n=97 Mean±SD	Control group n=95 Mean±SD	t-test	p-value*
Total Score Body Image Scale	132.11±19.44	133.35±21	-0.42	0.670
Total Score FSFI	16.65±5.93	18.89±6.53	3.26	0.001
Desire	3.41±1.15	3.85±1.13	3.65	0.009
Arousal	2.53±1.21	3.19±1.16	3.30	0.002
Lubrication	2.36±0.95	3.5±0.69	-3.11	0.001
Orgasm	2.49±0.67	3.51±0.66	-4.16	0.003
Satisfaction	2.37±1.07	2.43±1.14	-0.39	0.299
Pain	3.31±1.37	4.97±1.17	3.31	0.001

*Independent t-test. PCOS: Polycystic ovary syndrome; Mean±SD: mean and standard deviation. Bold values indicate statistical significance at the p<0.05 level.

In the study, it was determined that 74.23% of the women in the PCOS group and 44.21% of the women in the control group experienced sexual dysfunction, and the difference was statistically significant (p<0.05).

There was a positive correlation at weak and very weak levels between the body image of women and the total score averages of the subdimensions of desire, arousal, and sexual satisfaction in the FSFI in the PCOS group (r=0.380, p=0.001; r=0.234, p=0.026; r=0.257, p=0.016). A logistic regression analysis was completed using the variables that were significant according to the estimated relative risk calculation. In this study, irregular menstruation (AOR: 2.99; 95%CI 0.60–14.98; p=0.018) and the presence of hirsutism (AOR 2.43; 95%CI 0.01–4.58; p=0.011) were identified as risk factors affecting sexual function (Table 3).

DISCUSSION

This study was conducted to determine the relationship between body image and sexual function in healthy women diagnosed as having PCOS. Current studies have shown conflicting results, indicating that PCOS is either “ineffective” or “moderately effective” on sexual function. Studies related to body image and sexual function are very limited^{10,19,20} and have never been discussed earlier in the Turkish population.

The sexual function of women is provided by the balanced interaction of many factors. Endocrine disorders and disturbances in emotional and social areas can cause sexual dysfunction. Hyperandrogenic dermatopathy and the feeling of being unattractive due to being overweight can cause low self-esteem and problems in sexual relations with partners. Studies have shown that body image levels are similar in healthy women and women with PCOS^{7,21,22}. In contrast to these studies, Himelein and Thatcher compared the body image of women with PCOS and infertile women and found that the body image level of

Table 3. Factors affecting sexual function in the Polycystic ovary syndrome group according to the logistic regression model.

(n=97)	β	SE	AOR (95%CI)	p-value*
Age				
<30	0.04	0.09	1.04 (0.88–1.22)	0.683
>30			Ref	
BMI				
< 24.9	-0.15	0.12	0.86 (0.68–1.09)	0.216
≥ 25.0			Ref	
Irregular menstruation				
Yes	1.09	0.82	2.99 (0.60–14.98)	0.018
No			Ref	
Acne				
Yes	0.30	0.96	1.35 (0.21–2.92)	0.999
No			Ref	
Hirsutism				
Yes	1.50	0.94	2.43 (0.01–4.58)	0.011
No			Ref	
Alopecia				
Yes	1.37	0.57	0.34 (0.23–1.99)	0.590
No			Ref	
Belly Fat				
Yes	0.43	0.79	0.95 (0.20–2.61)	0.892
No			Ref	

SE: standard error; AOR: adjusted odds ratio; 95%CI: confidence interval; BMI: Body mass index. *p-values derived from Wald test for each variable overall. Bold values indicate statistical significance at the p<0.05 level.

women with PCOS was lower than that of infertile women²³. It is inevitable that the health problems caused by PCOS in the short and long term will affect women psychosocially as well as physically. Body image, especially in the early reproductive period, is an effective factor in the acceptance of young people in society. Health professionals should address this issue

in detail because the problems associated with the disease can cause more serious social problems, especially in this age group.

In our study, it was determined that 74.23% of women in the PCOS group and 44.21% of healthy women experienced sexual dysfunction. Similar to our study, Murgel et al. and Pastoor et al. concluded that sexual function and feelings of sexual attractiveness were significantly affected in women with PCOS in their meta-analyses^{13,24}. In one of the most extensive (n=30,000) studies on the prevalence of female sexual problems conducted in the United States, 43% of women reported having some degree of sexual dysfunction²⁵. Although these findings show that sexual dysfunction is an existing problem in women, the presence of PCOS alone appears to be an important factor affecting sexual function. It is thought that personal knowledge and thoughts are important in the formation of differences in incidence rates of sexual dysfunction along with social factors.

Clinical factors such as high BMI, acne, lubrication, hair loss, and hirsutism in patients with PCOS can affect an individual's perception of sexual attractiveness⁸. In our study, hirsutism and irregular menstruation were findings about which women with PCOS complained constantly, and they were the most important factors affecting sexual function. Anger et al. found that there was a negative correlation between high BMI and sexual function in women with PCOS²⁶. Women's sexual dysfunction is affected by biological, psychological, medical, and many other factors, so it is expected that there would be differences in the results of the studies.

Body image is the strongest predictor of appearance-related distraction during sexual intercourse in men and women. Anxious behavior during sexual intercourse, conscious focus on body image, and avoidance of certain positions are behaviors that damage sexual function. In our study, a positive weak relationship between body image and sexual function was determined. As the body dissatisfaction of women in the PCOS group increased, their negativity about sexual function also increased. In addition to these findings, it was found that menstrual irregularity and hirsutism, which are clinical findings in women with PCOS, affect sexual function. In their research, La Rocque and Cioe observed that women who reported negative body image were more likely to avoid sexual intercourse than those who reported positive body image²⁷. Hoyt and Kogan reported that people who did not enjoy their sex life were less satisfied with their body appearance than those who had sexual satisfaction²⁸. In their study, van den Brink et al. observed a significant relationship between body image and sexual satisfaction²⁹. However, their study emphasized that a positive body image was equally important for both women and men in shaping positive sexual experiences. Recent studies show that PCOS symptoms

such as changes in body weight, acne, and hirsutism negatively affect body image and sexual health¹⁰. The findings reported in our study support the results in the literature.

Strengths and limitations of the study

One of the key strengths of this study is that this is the first study to evaluate body image and sexual function in women with PCOS in the Turkish population. In addition, the comparison of the data obtained with the PCOS group with the healthy control group is another strength of this study.

This research has certain limitations. One of these limitations pertains to the omission of biochemical assays (plasma concentration of estradiol, testosterone, and androstenedione) in the analysis. One of the most important factors affecting body image in women with PCOS is hirsutism. An important limitation is that the Ferriman-Gallwey score was not used in the determination of hirsutism in this study. In addition, another limitation of this study is related to the nature of cross-sectional studies as having statistically significant associations between sexual dysfunction and body image is not sufficient to prove the existence of a causal relationship.

In recent years, there has been a growing interest in the impact of PCOS on women's health-related quality of life. Currently, due to the lack of definitive treatment for PCOS, the management of the disease aims at alleviating symptoms, preventing long-term complications, and improving quality of life. Health professionals working with adolescents, and women in particular, need to be informed about the signs and symptoms of PCOS, the bio-psycho-social effects on women, diagnosis and treatment methods, and management of the disease.

CONCLUSION

In our study, it was determined that the body image level of women with PCOS was above average and that three out of every four women experienced sexual dysfunction. The presence of irregular menstruation in women with PCOS was found to increase the risk of sexual dysfunction by 2.99 times and the presence of hirsutism by 2.43 times. A satisfying sex life is as important for healthy women as it is for women with PCOS. Our findings suggest that sexual function should be part of the clinical evaluation of every woman with PCOS.

AUTHORS' CONTRIBUTIONS

YAA: Conceptualization, Supervision, Writing – original draft, Writing – review & editing. **BAS:** Data curation, Supervision, Writing – original draft, Writing – review & editing.

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