

Original Research Article

Exploring self-esteem, body perception, stress and emotional regulation in women with PCOS: a comparative study of women with PCOS and the general population

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ABSTRACT

Background: Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder in women of reproductive age, often associated with physical symptoms such as acne, hirsutism, and weight fluctuations, which may impact psychological well-being. Prior research suggests potential psychological consequences including low self-esteem, body dissatisfaction, stress, and emotional regulation difficulties.

Methods: A cross-sectional study was conducted with 102 women aged 18–45 years (51 with PCOS and 51 without), recruited from gynecology clinics, online forums, and universities. Participants completed standardized psychological measures: the General Health Questionnaire, Rosenberg Self-Esteem Scale, Body Shape Questionnaire, Perceived Stress Scale, and Emotional Regulation Scale. Independent samples t-tests and Pearson correlations were performed to assess between-group differences and variable interrelations.

Results: Findings revealed that women with PCOS reported significantly more negative body image and higher perceived stress compared to controls. No significant differences were found in self-esteem or emotional regulation. A significant negative correlation between emotional regulation and stress was observed among women with PCOS, indicating that better emotion regulation is linked to lower perceived stress.

Conclusions: The results emphasize the need for psychological support interventions targeting stress management and body image among women with PCOS. Although self-esteem and emotional regulation did not differ significantly between groups, improving emotional regulation may help manage stress. Future research should adopt longitudinal designs and include diverse samples to better understand psychological resilience and causal relationships in PCOS populations.

Keywords: Polycystic ovary syndrome, Psychological impact, Self-esteem, Body perception, Stress, Emotional regulation

INTRODUCTION

PCOS is a common chronic endocrine disorder affecting women of reproductive age. It is characterized by irregular or absent menstrual periods, elevated androgen levels, and polycystic ovarian morphology. First described by Stein et al and Leventhal et al in 1935, PCOS manifests with amenorrhea, hirsutism, and enlarged cystic ovaries.¹ PCOS

affects approximately 8–13% of reproductive-age women, with up to 70% remaining undiagnosed.² The Rotterdam criteria require at least two of the following: signs of hyperandrogenism (e.g., hirsutism, acne), irregular menstrual cycles, or ovarian morphology on ultrasound. Symptoms often include weight gain (especially central adiposity), acne, excessive facial/body hair, infertility, and menstrual dysfunction. If untreated, PCOS may lead to

long-term complications such as endometrial cancer, cardiovascular disease, hypertension, dyslipidemia, type 2 diabetes, and psychological distress. Several interrelated mechanisms contribute to PCOS. The hyperandrogenism model posits that elevated ovarian and adrenal androgens disrupt ovarian function, resulting in hyperandrogenic features and cycle irregularities.³ The hyperinsulinemia model highlights insulin resistance driving metabolic dysfunction and exacerbating hormone imbalance.⁴ Dysregulation of the hypothalamic pituitary ovarian axis particularly an elevated LH/FSH ratio impairs folliculogenesis.

Oxidative stress, inflammation, and environmental factors (e.g., diet, endocrine disruptors) further exacerbate symptoms. Genetic predisposition has also been implicated through familial and twin studies.⁵ PCOS is frequently accompanied by mental health challenges. Anxiety, depression, negative body image, and reduced self-esteem are common, influenced by stress and the stigma associated with its visible symptoms. Stress can worsen hormonal and metabolic parameters, creating a vicious cycle, whereas interventions such as mindfulness, CBT, exercise, and nutritional adjustments improve both emotional and physiological outcomes.⁶

Comprehensive management requires a multidisciplinary strategy: lifestyle modification (diet, exercise), pharmacotherapy to regulate cycles, reduce androgen levels and enhance insulin sensitivity, fertility treatments, and psychological support to address mental health and body image issues. Recent studies highlight the need for early screening and culturally appropriate interventions. For example, Athul et al found an 11.7% prevalence of PCOD in young Indian students.⁷ Building on this, research from Bangladesh emphasizes diagnostic standardization and multidisciplinary care to alleviate psychological and metabolic consequences in adolescents.⁸

Aim

To examine the relationship between self-esteem, body perception, perceived stress and emotional regulation in women with PCOS and a control group of women without PCOS.

Objective

To assess and compare self-esteem levels between women with PCOS and women without PCOS. To evaluate and compare body perception and body image satisfaction between women with PCOS and women without PCOS. To measure and compare stress levels between women with PCOS and women without PCOS. To assess and compare emotional-regulation between women with PCOS and women without PCOS. To explore the relationship between body perception, self-esteem, stress and emotional regulation in women with PCOS and women without PCOS.

Hypotheses

H1

There will be significant difference in the levels of self-esteem between women with PCOS and women without PCOS.

H2

There will be significant difference in the levels of body perception between women with PCOS and women without PCOS.

H3

There will be significant difference in the levels of stress between women with PCOS and women without PCOS.

H4

There will be significant difference in the levels of emotional regulation between women with PCOS and women without PCOS.

H5

There will be a significant relationship between self-esteem and PCOS.

H6

There will be a significant relationship between body perception and PCOS.

H7

There will be a significant relationship between stress and PCOS.

H8

There will be a significant relationship between emotional regulation and PCOS.

METHODS

Study design

This is a comparative study with a control group research design to examine the differences in self-esteem, body perception, stress levels and emotional regulation between women with PCOS and those without PCOS was conducted at Suresh Gyan Vihar University and Gautam Hospital and Research Centre, Jaipur, Rajasthan for a duration of 11 months from 1st January 2024 till 30th November 2024.

Sample

A purposive sample of 102 participants was collected based on the inclusion and exclusion criteria. All participants were able to read, write and speak Hindi and English languages. Recruitment from gynecology clinics, PCOS support groups, online forums and university students 50 participants with PCOS and 50 without PCOS were recruited.

Inclusion criteria

PCOS group

Women aged 18-45 years diagnosed with PCOS.

Control group

Regular menstrual cycles and no known chronic medical conditions. Participants who have provided consent for participating in the study.

Exclusion criteria

Participants who were not able to read, write and speak Hindi and English languages. Women with other significant medical or psychiatric conditions. The sample did not include anybody on drug or alcohol abuse. Participants on any medications that could affect reproductive hormones body metabolism.

Description of tools employed

The general health questionnaire

It is a self-report questionnaire that is used as a screening tool for assessing the psychological wellbeing including the inability to carry out normal functions and the appearance of new and distressing phenomena (Goldberg & Hillier, 1979).⁹ Each of the 12 items on the GHQ-12 uses a 4-point Likert scale (from 0 to 3) to rate the severity of a mental health issue during the previous few weeks. The score is used to generate a total score ranging from 0 to 36. With a Cronbach's alpha of 0.89, which indicates good internal consistency and high reliability and its split-half reliability of 0.91 further supports its dependability and appropriateness for repeated tests or longitudinal research by indicating consistent responses across several questions.

Rosenberg self-esteem scale

Developed by Morris Rosenberg in 1965, it is a 10-item scale that measures global self-worth by measuring both positive and negative feelings about the self.¹⁰ All items are answered using a 4-point likert scale format ranging from strongly agree to strongly disagree. With an excellent internal consistency and a Guttman scale coefficient of reproducibility of 0.92, the scale exhibits good dependability. Test-retest reliability correlations over a

two-week period are 0.85 and 0.88, indicating strong stability.

The body shape questionnaire

It is a self-report questionnaire that was developed by Evan and Dolan (1993) to measure concerns about body shape and assess an individual's dissatisfaction with their body shape.¹¹ The BSQ consists of 34 items, each describing a particular aspect of body shape perception or dissatisfaction. Participants typically respond to each item using a 6-point Likert scale ranging from 1 (never) to 6 (always). Age range for BSQ is 10 to 70. Each item asks how often the participant has felt a particular way about her appearance during the past 4 weeks. The BSQ has high concurrent and discriminant validity, and high test-retest reliability.

The perceived stress scale

Developed by Sheldon Cohen and his colleagues in 1983, the PSS-10 is a self-reported questionnaire that assesses how unpredictable, uncontrollable, and overloaded individuals find their lives.¹² The scale consists of 10 items and respondents are asked to rate how often they felt a certain way in the last month, with response options ranging from "never" to "very often. Higher scores indicate greater levels of stress. The internal consistency ranges from 0.90 to 0.92 and a test-retest reliability of 0.82.

The emotional regulation scale

It is a tool designed to measure an individual's tendency to regulate emotions through cognitive reappraisal and expressive suppression.¹³ Cognitive reappraisal items focus on changing thoughts to manage emotions positively or negatively, while expressive suppression items involve controlling emotions by not expressing them. Respondents rate their agreement on a 7-point Likert-type scale, and scoring takes the average of all the scores in each subscale. The Cronbach's alpha was found to be ranging from 0.79 and 0.91 with adequate internal validity.

Procedure

The research was done in 2 phases.

Phase 1

Phase 1 was begun with determining the research problem, choosing the variables to be taken; selecting sample size and appropriate measurement tools such as questionnaire or scales and outlining the overall methodology. Following approval from the Institutional Ethics Committee (Ref No. /SGVU/IEC/JPR/2024/008 dated 29 August 2024) Informed consent was obtained from all participants. They were ensured of any anticipated risks that may be associated and confidentiality was maintained. No individual data to be analysed and only group data was studied by the researcher. Participants were recruited from

the gynecology outpatient department of a hospital or a specialized clinic and Universities on the basis of inclusion and exclusion criteria. Data collection was administered by general health questionnaire, Rosenberg self-esteem scale, The body shape questionnaire (BSQ), Perceived stress scale and the emotional regulation scale through google form which included a total of 4 scales.

Phase 2

It was a comprehensive interpretation of statistical results which would help in exploring the self-esteem, body perception and stress in women with PCOS compared to those who do not have this medical condition.

Statistical analysis

The data collected was analyzed by SPSS 28.00 statistical software package. As inferential statistics, t-test was used to compare means or distributions of each variable between women who have the condition with those who don't. The level of significance was accepted at 0.01 and 0.05 level. Pearson correlation was used to examine the association between each variable.

RESULTS

Quantitative analysis

Socio-demographic characteristics of participants

Overview of age, marital status, educational background, and employment status of participants in both groups.

Clinical characteristics of participants

Diagnosis of polycystic ovary syndrome.

Results of self-esteem scale

Analysis of self-esteem scores in both groups, comparing mean scores and testing for significant differences.

Results of body perception scale

Body perception scores compared across groups to assess the impact of PCOS on body image.

Results of perceived stress scale

Examination of stress levels in both groups, identifying whether there are significant differences in perceived stress among women with and without PCOS.

Results of emotional regulation scale

Emotional regulation scores compared between groups, analyzing differences in emotion regulation capabilities.

Correlation between self-esteem and emotional regulation

Investigating how a person's self-esteem influences their ability to manage and regulate emotions effectively.

Correlation between body perception and self-esteem

Examining how a person's perception of their body impacts their self-esteem across the entire sample.

Correlation between self-esteem and perceived stress

Exploring how a person's self-esteem influences their experience and perception of stress.

Correlation between body perception and emotional regulation

This correlation examines how an individual's perception of their body affects their ability to regulate emotions.

Correlation between body perception and stress

Exploring how an individual's perception of their body influences their experience of stress.

Correlation between emotional regulation and stress

Examining how a person's ability to regulate emotions affects their experience and management of stress.

As it is given in Table 1, that 102 women participants were interviewed whose age ranged from 18-45 years who met the inclusion criteria of the present study. Out of this 9.8% were in the age of 36-45 years, 41.2% were in the range of 26-35 years and 49% in the age of 18-25 years. The marital status of the participants was: 30 (29.4%) were married, 72 (70.6%) were unmarried.

Amongst the participants, 98 (93.2%) were Hindu and 6 (5.8%) were Muslim. In this study all the participants were educated. 2.9% got education till 9-12 class, 43.7% were graduate and 52.4% were post graduate. Most of the population belonged to urban area (95.1 %) and rest of the population belongs to rural areas (3.1 %). Occupation wise 51% were employed and 5.9% were house wife, 5.9% were unemployed and 37.3 % were student.

Table 2 t-value (-0.440) result was insignificant at both the levels meaning there is no statistically meaningful difference in self-esteem between women with PCOS and women without PCOS. Table 3 result was significant at the $p < 0.05$ level ($p = 0.003$), thus indicating that there was a significant difference in body perception.

Women with PCOS reported higher scores on body perception, indicating more concerns about their bodies compared to women without PCOS. This was statistically meaningful, so we reject the hypothesis. Table 4 result was

significant at the $p < 0.01$, $p < 0.01$, $p < 0.01$ level ($p = 0.003$, $p = 0.003$, $p = 0.003$), indicating that the difference in perceived stress between women with and without PCOS is statistically significant. Thus, we reject the null hypothesis.

Table 5 result was insignificant at the $p > 0.05$ level meaning there is no statistically meaningful difference in

emotional regulation between women with and without PCOS. Thus, we accept the null hypothesis.

Table 6 shows that none of the correlations between self-esteem, body perception, stress, and emotional regulation were statistically significant at the $p > 0.05$ level. This indicates weak or negligible relationships among these variables. Therefore, no meaningful associations can be inferred from this data.

Table 1: Sociodemographic characteristics of participants.

Sample characteristics	N	% MSD		
Age (in years)	50	49.0	1.61	0.662
18-25				
26-35	42	41.2	1.61	0.662
36-45	10	9.8	1.61	0.662
Marital status				
Unmarried	72	70.6		
Married	30	29.4		
Religion				
Hindu	98	93.2		
Muslim	6	5.8		
Educational qualification				
Senior secondary	3	2.9		
Graduate	45	43.7		
Postgraduate	54	52.4		
Employment				
Unemployed	6	5.9		
Student	38	37.3		
Employed	52	51		
Homemaker	6	5.9		
Domicile				
Rural	4	3.9		
Urban	98	95.1		

Table 2: Mean, SD and t values for self-esteem among women with PCOS and without PCOS.

Self-esteem	Without PCOS		With PCOS		t (40)		Cohen's d
	M	SD	M	SD			
	25.28	1.9799	25.44	1.64329	-0.44	0.661	-0.088

Insignificant at both 0.05 and 0.01 levels.

Table 3: Mean, SD and t values for body perception among women with PCOS and without PCOS.

Body perception	Without PCOS		With PCOS		t (40)	P	Cohen's d
	M	SD	M	SD			
	38.34	17.49823	47.78	19.16128	-2.572	0.012	-0.514

Significant at the $p < 0.05$ level.

Table 4: Mean, SD and t values for perceived stress among women with PCOS and without PCOS.

Perceived stress	Without PCOS		With PCOS		t (40)	P	Cohen's d
	M	SD	M	SD			
	20.86	6.72798	22	7.1	2.215	0.031	0.433

(**) Significant at 0.01 level

Table 5: Mean, SD and t values for emotional regulation among women with PCOS and without PCOS.

Emotional regulation	Without PCOS		With PCOS		t(40)	p	Cohen's d
	M	SD	M	SD			
	36.46	15.03358	37.46	9.28508	0.4	0.69	-0.08

Insignificant at the $p > 0.05$ level

Table 6: Correlation between the variables.

Variable	1	2	3	4
Self-esteem	-			
Body perception	0.195	-		
Stress	-0.133	-0.171	-	
Emotional regulation	-0.119	0.062	-0.217	-

DISCUSSION

The findings of this study offer critical insight into the psychological dimensions of PCOS, particularly in relation to self-esteem, body perception, stress, and emotional regulation. Consistent with several previous studies, the results revealed that women diagnosed with PCOS reported significantly more negative body perceptions and elevated stress levels compared to their counterparts without the condition.^{14,15} These outcomes underscore the visible and often stigmatized symptoms of PCOS—such as hirsutism, acne, and weight gain that may adversely affect how individuals view their bodies and cope with daily stressors.¹⁶ Interestingly, no significant differences were found in levels of self-esteem and emotional regulation between the two groups. This implies that despite having more negative body perceptions and higher stress, women with PCOS may possess psychological buffers such as coping strategies or social support that preserve their emotional stability and self-worth, a finding that aligns with Johnson et al.¹⁷

Furthermore, the correlation analyses provided nuanced understanding of the interrelationships among the psychological constructs. Emotional regulation demonstrated a significant negative correlation with perceived stress ($r = -0.217$, $p = 0.030$), suggesting that women who are better able to manage their emotions experience less stress. This aligns with literature promoting cognitive reappraisal and emotion-focused interventions as key to improving psychological resilience in PCOS.^{18,19} However, the associations of self-esteem with stress, body perception, and emotional regulation were weak and statistically insignificant. This suggests that self-esteem may be influenced by more complex factors such as cultural norms, personality traits, and relationship dynamics, beyond the clinical symptoms alone.²⁰

Taken together, the findings reinforce that psychological support for women with PCOS should not be limited to symptom management but should include targeted mental

health strategies that address body image distress and stress regulation.²¹ The lack of significant results regarding self-esteem and emotional regulation might indicate areas of resilience in this population or areas where more sensitive measurement tools or qualitative inquiry could yield deeper understanding.²² These insights support the integration of stress reduction practices, body image therapy, and emotion regulation training in both clinical and community-based interventions for PCOS.²³ Moreover, the complexity of interactions among these variables suggests a need for longitudinal and mixed-method research to better capture temporal patterns and subjective experiences.²⁴ Understanding these nuanced psychological effects will be essential in guiding holistic and culturally sensitive treatment frameworks for women living with PCOS.²⁵

While this study offered valuable insights, it is important to acknowledge few limitations. First off, the results may not be as applicable to a larger group of women with PCOS due to the small sample size.²² More robust data and increased result reliability could be obtained with a larger and more varied sample. Second, although connections between variables were found, it is unclear if changes in one variable over time have a direct impact on another due to the study's cross-sectional design, which limits the ability to draw conclusions about causality.²⁴ To investigate these links in further detail, longitudinal studies might be helpful. Additionally, self-reported measures that evaluate stress, body image, emotional control, and self-esteem may introduce bias because participants may give answers that are more socially acceptable than ones that really reflect their experiences.^{20,21,23}

CONCLUSION

This study examined the psychological impacts of PCOS on 102 women, assessing self-esteem, body perception, perceived stress, and emotional regulation. Women with PCOS reported significantly higher body dissatisfaction and perceived stress than those without, though no significant differences emerged in self-esteem or emotional regulation. A lack of significant correlation between self-

esteem and emotional regulation suggests the need for comprehensive, multifactorial interventions. The findings highlight the importance of addressing body image concerns and stress management to improve the overall mental well-being of women with PCOS.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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