

ASSOCIATION OF POLYCYSTIC OVARY SYNDROME WITH STRESS AND LIFE SATISFACTION AMONG YOUNG FEMALE UNIVERSITY STUDENTS

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ABSTRACT

Background: PCOS is a widespread endocrine disease in women of reproductive age, which is accompanied by severe metabolic and reproductive dysfunctions. In addition to its physical expression, it is also becoming known to have a psychological toll, such as stress and decreased satisfaction in life. **Objective:** The research paper aimed to examine the relation between polycystic ovary syndrome (PCOS) and perceived stress and life satisfaction in female university students. **Methods:** The cross-sectional design was used, and 400 students aged 18-25 years were used to gather the data through convenience sampling. Symptoms of PCOS were evaluated with the help of the Polycystic Ovary Syndrome Questionnaire (PCOSQ), whereas stress and life satisfaction were measured with the help of Perceived Stress Scale (PSS-10) and Satisfaction with Life Scale (SWLS), respectively. **Results:** The descriptive statistics, Pearson correlation, and linear regression analyses were performed. Findings showed that perceived stress ($\beta = .34, p < .001$) and life satisfaction ($\beta = -.15, p < .05$) had a significant relationship with PCOS symptoms. PCOS had a variance of 12% in the stress and 2% in life satisfaction. **Conclusion:** The results indicate the mental cost of PCOS in young women and emphasize the importance of a combined health intervention.

INTRODUCTION

Polycystic Ovary Syndrome (PCOS) is a widespread endocrine disorder in women of reproductive age and is a significant worldwide public health issue.¹ The World Health Organization estimates that PCOS occurs in about 10-13% of women around the globe, with opinions about prevalence of 5-20% based on diagnostic criteria, population differences, and geographic change.^{2,3} Despite high prevalence, around 70 percent of PCOS women are undiagnosed, which shows a high level of awareness and screening deficiency, as well as access to healthcare.³ Menstrual abnormalities, hyperandrogenism and polycystic ovarian morphology are clinical features of PCOS according to the Rotterdam criteria.⁴ Besides reproductive dysfunction, PCOS is also being cited as a complex

multisystem disorder associated with infertility, insulin-resistance, type 2 diabetes, metabolic syndrome and cardiovascular disease among other short and long-term health consequences.^{3, 5} PCOS epidemiology has been demonstrated to be quite heterogeneous worldwide. As it appears in meta-analyses, the South Asian and Middle Eastern populations appear to be more prone to the disease than Western ones, which is attributed to a difference in genetic dispositions, environmental exposures, lifestyle choices, and diagnostic processes.^{6,7} The differences in estimates are also explained by inconsistency in the diagnostic criteria like Rotterdam, NIH, and AE-PCOS definitions.³ Asia is showing a high burden of PCOS especially in adolescents and young women with prevalence estimates of around 6-20%.^{7,8} In Pakistan, the data is relatively low and mostly based on the hospital-based studies on women with reproductive complaints which can overestimate the prevalence and not reflect the trends at the community level.^{9,10} Stigma related with menstrual health, lack of awareness and access to reproductive health care facilities are other sociocultural barriers that contribute to delay in diagnosis and underreporting.¹¹ Besides the physical effects, PCOS has severe psychological effects, which adversely affect the quality of life. Women with PCOS are more prone to stress, anxiety, and depression and lower self-esteem and low life-satisfaction than their counterparts without the disorder.^{12,13} The weight of this burden is especially high in relation to young groups of the population like university students as they are passing through the most critical stage of their development, and whose biological, social and psychological factors interact. Some of the physical effects will include acnes, hirsutism, and weight gain, which will negatively impact body image and social functioning, fertility and poor health risk issues can also lead to emotional distress. It is important to note that another common mechanism by which stress may either promote PCOS or the other way around is the hormonal/metabolic dysregulation, which implies that there is a mutual relationship between PCOS and mental health.^{14, 15} There is evidence that university students have high rates of stress and mental health issues, and this can be exacerbated in individuals with chronic illnesses like PCOS.^{16,17} There is therefore a great need to examine the PCOS among young women in universities. Early diagnosis and management during this age may potentially prevent reproductive and metabolic issues that may be undergone later in life PCOS.³ Based on these gaps, the aim of the current research will be to determine the occurrence of Polycystic Ovary Syndrome (PCOS) among young female university students in Pakistan and to determine the relationship between Polycystic Ovary Syndrome (PCOS) and stress and life satisfaction. In particular, the study is aimed at comparing stress and satisfaction with life in students with PCOS and without it and examining the correlation between PCOS status and these two psychological outcomes to obtain a full picture of the physical and psychosocial burden of the condition among the population.

MATERIALS AND METHODS

Research Design: The present study was conducted using a cross-sectional research design.

Settings: The data was collected from multiple private and public sector colleges or universities of Lahore, Pakistan.

Duration: The data was collected from January 2025 to July 2025.

Sampling Strategy: The data collection was done using non-probability convenience sampling method.

Sample: A total of 400 females from multiple colleges and universities comprised the sample size. The age of the participants ranged between 18 to 25 years. The following inclusion and exclusion criteria were used in selecting the sample of the study.

Inclusion criteria: The study sample consisted of college and university students within age range of 18 to 25 years, enrolled in any private and public sector colleges or universities of Lahore, Pakistan. The sample was strictly comprised of the females diagnosed with PCOs.

Exclusion criteria: students above and below the given age range were excluded from the study. Those who were not clinically diagnosed with PCOs were also not included in the study.

Data Collection

The study used a demographic questionnaire and the Polycystic Ovary Syndrome Questionnaire (PCOSQ), Perceived Stress Scale (PSS) and Satisfaction with Life Scale (SWLS) to establish the association between PCOS and stress and life satisfaction among female university students.

Demographic Form

A demographic questionnaire was self-administered. It consisted of such variables as age, education, marital status, family system, occupation and the age at which the first menstrual cycle began.

Polycystic Ovary Syndrome Questionnaire (PCOSQ)

Polycystic ovary syndrome questionnaire (PCOSQ) was initially created by Cronin et al. (1998) to measure health related quality of life among women with PCOS. The tool measures the five areas; emotional well-being, body hair concerns, weight issues, infertility, and menstrual irregularities. It is a 26-item questionnaire that aims at measuring the subjective influence of PCOS symptoms on the functioning of the individual on a day-to-day basis. The answers are noted on a Likert scale type and the more the score the better the quality of life. The PCOSQ has demonstrated good psychometric properties, with reported internal consistency (Cronbach's alpha) ranging from 0.70 to 0.92 across domains, indicating acceptable to excellent reliability.^{18, 19} The item responses are averaged within a domain and on the scale to obtain a score.

Perceived Stress Scale (PSS-10): The Perceived Stress Scale (PSS-10), which is a highly popular indicator of perceived psychological stress was used. It evaluates how people feel their lives to be unpredictable,

uncontrollable, and overloaded within the past one month. The scale includes 10 items to be rated using a 5-item Likert scale with the following scale: 0 (never), 1, 2, 3, 4 (very often). Items with positive statements (4, 5, 7, and 8) will be reverse-coded and sum total scores will be added, which implies that the larger the score, the greater is perceived stress. The psychometric properties of the PSS-10 have been established as good with the reported Cronbach alpha reliability of between 0.78 and 0.91 across diverse populations implying good internal consistency.^{20, 21}

Satisfaction with Life Scale (SWLS)

Satisfaction with Life Scale (SWLS) is a 5-item scale created by Diener et al. (1985) to assess global cognitive evaluations of life satisfaction. It has seven items rated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). It calculates the total of all the items and high scores indicate a high level of satisfaction with life. The SWSWP has also shown superior psychometric qualities in different populations, and Cronbach's alpha reports have been reported to be between 0.79 and 0.89 which is good internal reliability and validity (Diener et al., 1985; Pavot and Diener, 1993).^{22, 2}

Written Consent Form

The written consent was signed by the participants before the commencement of the study. The participants were briefly informed rationale of the study. They were also assured about the privacy and confidentiality of their information, and their right to withdraw from the study.

Statistical Analysis

The analysis was conducted with the Statistical Package for the Social Sciences (SPSS) version 24.²⁴ The sample was described using the descriptive analysis. Pearson Product moment correlation was conducted to establish the nature of the relationship and to approximate the correlation between PCOS, stress, and life satisfaction among female university students. Linear regression analysis was used to examine the relationship between PCOS and stress and life satisfaction. The individual differences between the stress and life satisfaction of female bachelor and master students were determined by the independent sample t-test.

RESULTS

The sample of the study comprised 400 participants with a mean age of (M=22.76, SD=2.14). Of the total participants, 201(49.9%) were enrolled in MS programs and 199(49.4%) were in BS programs. The majority of the participants 334(82.9%) were single, while 66(16.4%) were married. Regarding family system, 258(64.0%) were living in a separate/nuclear family system and 142(35.2%) belonged to a joint family system. In terms of employment status, 324(80.4%) participants were unemployed and 76(18.9%) were employed. The mean age at menarche was (M=13.55, SD=1.65) (Table 1). The correlation analysis revealed meaningful associations between PCOS symptoms and psychosocial outcomes. Across all domains of the PCOSQ, higher symptom severity was

consistently associated with greater perceived helplessness on the PSS ($r = .25$ to $.36$, $p < .01$), suggesting that women who experience more emotional, physical, or reproductive difficulties related to PCOS also tend to feel more overwhelmed by life stressors. In contrast, significant negative correlations were found with self-efficacy ($r = -.17$ to $-.22$, $p < .05$), indicating that PCOS symptoms reduce confidence in managing stress effectively.

With regard to well-being, PCOSQ subscales showed small but consistent negative correlations with life satisfaction ($r = -.09$ to $-.21$, $p < .05$). The strongest associations emerged for the emotions ($r = -.18$) and body hair ($r = -.16$) domains, suggesting that both psychological distress and visible physical manifestations of PCOS have a particularly adverse impact on perceived quality of life.

Finally, the stress subscales themselves were strongly linked with life satisfaction. Perceived helplessness was negatively correlated with life satisfaction ($r = -.34$, $p < .01$), while self-efficacy was positively correlated ($r = .29$, $p < .01$). These findings highlight the role of stress appraisal as a psychological mechanism through which PCOS symptoms influence overall life satisfaction (Table 2). The regression analysis indicated that PCOS significantly predicted stress among young female university students, $F(1, 398) = 52.13$, $p < .001$. PCOS accounted for 12% of the variance in stress ($R^2 = .12$). The results showed that PCOS was a significant positive predictor of stress ($\beta = .34$, $p < .001$), suggesting that higher PCOS scores were associated with greater perceived stress (Table 3, Figure 1).

Regression analysis showed that PCOS was significantly predictive of life satisfaction among young female university students $F(1, 398) = 6.25$, $p < .05$. PCOS explained about 2 percent of the variation in life satisfaction ($R^2 = .02$). The findings showed that life satisfaction had a strong negative predictor of PCOS ($\beta = -.15$, $p < .05$) where PCOS increased its scores associated with lower life satisfaction (Table 4, Figure 1).

Table 1: Description of the Sample's Demographic Characteristics

Variables	<i>f</i> (%)	<i>M</i> (<i>SD</i>)
Age		22.76(2.14)
Education		
MS	201(49.9)	
BS	199(49.4)	
Marital Status		
Single	334(82.9)	
Married	66(16.4)	

Family System		
Separate	258(64.0)	
Joint	142(35.2)	
Occupation		
Unemployed	324(80.4)	
Employed	76(18.9)	
At which age your menstrual cycle started		13.55(1.65)
Unemployed	324(80.4)	

Table 2: Pearson product moment correlation among study variables and subscales (N = 400).

Variables	1	2	3	4	5	6	7	8	9
1. PCOSQ E	—	.41**	.36**	.39**	.44**	.31**	.32**	-.21*	-.18*
2. PCOSQ BI		—	.38**	.32**	.37**	.29**	.28**	-.19*	-.16*
3. PCOSQ W			—	.34**	.35**	.33**	.30**	-.22*	-.15
4. PCOSQ I				—	.41**	.35**	.27**	-.17*	-.09
5. PCOSQ M					—	.36**	.31**	-.20*	-.11
6. PCOSQ A						—	.25**	-.18*	-.14
7. PSS H							—	-.34**	-.28*
8. PSS SE								—	.29**
9. SWLS									—
<i>M</i>	4.85	4.68	4.92	4.71	4.59	4.66	21.10	19.80	20.75
<i>SD</i>	1.42	1.33	1.51	1.47	1.29	1.37	4.92	4.66	4.84

Note. PCOSQ = Polycystic Ovary Syndrome Questionnaire, PCOSQ E = Subscale Emotions, PCOSQ BI = Subscale Body Hair, PCOSQ W = Subscale Weight, PCOSQ I = Subscale Infertility, PCOSQ M = Subscale Menstrual, PCOSQ A = Subscale Acne, PSS = Perceived Stress Scale, PSS H = Subscale Helplessness, PSS SE = Subscale Self-Efficacy, SWLS = Satisfaction with Life Scale.

* $p < .05$, ** $p < .01$.

Table 3: Linear regression comparisons of PCOS as predictor of stress.

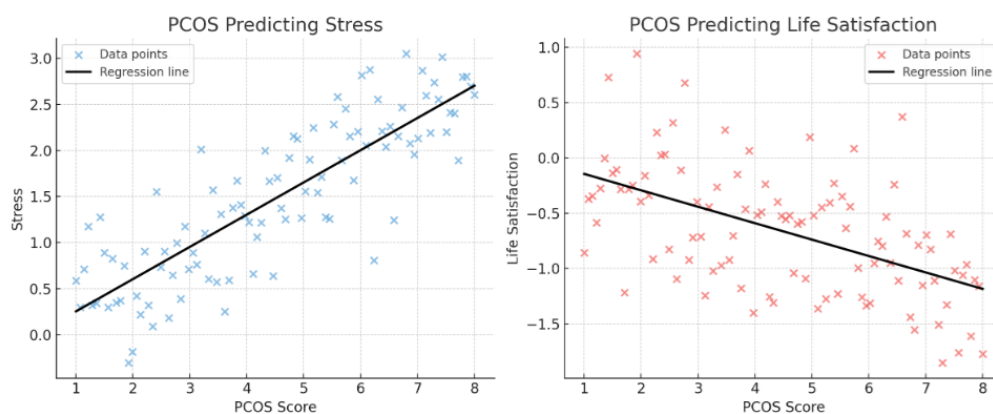
Variable		Stress	
	<i>B</i>	<i>SE</i>	<i>B</i>
PCOS	.34***	.05	.34
<i>R</i> ²	.12		
<i>F</i>	52.134		

Note: *** $p < .001$, R^2 = Adjusted R square, B = unstandardized coefficient, SE = Standard error, β = Standardized beta coefficient, PCOS = Polycystic Ovary Syndrome.

Table 4: Linear regression analysis predicting life satisfaction from PCOS (N = 400).

Variable	Life Satisfaction		
	<i>B</i>	<i>SE</i>	<i>B</i>
PCOS	-.45*	.18	-.15
<i>R</i> ²	.02		
<i>F</i>	6.25		

Note: * $p < .05$, R^2 = Adjusted R square, B = unstandardized coefficient, SE = Standard error, β = Standardized beta coefficient, PCOS = Polycystic Ovary Syndrome

**Figure1.** Regression Results, PCOS Predicting Stress and Life Satisfaction

DISCUSSION

The current research was focused on the correlation between polycystic ovary syndrome (PCOS), perceived stress, and life satisfaction in female university students. The results established that PCOS was greatly linked to an increased level of perceived stress and a decreased level of life satisfaction. Regression analyses also established that PCOS was a strong predictor of higher levels of stress and lower levels of life satisfaction with variation in the proportion of explained variance depending on the outcome. Such results are consistent

with the most recent evidence on PCOS emphasizing the fact that it is a multidimensional condition that has significant psychological and emotional implications outside its endocrine implications.^{3,25} The demographic profile of the study participants is a valuable background information. The majority of the respondents were young, unmarried, university students, who were already at the stage of development linked with academic, identity-making and psychosocial adjustment. Sociocultural demands on femininity, marriage, and fertility may exacerbate the psychological load of PCOS in South Asian countries like Pakistan. Symptoms such as menstrual irregularity, hirsutism, acne, and concerns about infertility often carry stigma, which can further contribute to emotional distress and reduced life satisfaction.^{26, 27} Correlational analysis indicated that the higher the burden of PCOS symptoms, the higher the perceived stress and lower the life satisfaction. Women with more severe symptoms had a greater helplessness and less self-efficacy, which means decreased perceived stress coping. This is in line with the recent systematic reviews which have proven that women who have PCOS have a much greater risk of experiencing a state of psychological distress, such as anxiety, depression and a lower degree of emotional wellbeing.^{25, 27} Moreover, observable effects, including weight gain and hirsutism have been closely associated with the body image dissatisfaction and decreased self-esteem, which directly leads to the decrease in the quality of life²⁸. Notably, it is seen that perceived helplessness is a central mediating variable between PCOS symptoms and psychological outcomes, which is important to consider the role of cognitive appraisal in determining emotional consequences. The regression analysis showed that PCOS was a significant predictor of perceived stress that explained 12 % of the variance. This result is in line with the recent findings that indicate that women with PCOS experience high levels of stress because of the chronic symptoms burden, hormonal dysregulation, and reproductive anxiety.^{25, 28} The uncertainty of the symptoms of PCOS can be a constant stress factor especially to university students who already have academic and social pressures. Recent meta-analytic evidence also confirms that infertility-related concerns significantly contribute to psychological stress in women with PCOS.²⁵

The second regression model was that PCOS had a negative predictive value of life satisfaction with a 2-% variance. This less significant effect indicates that it is a weaker effect indicating that life satisfaction depends on other wider psychosocial factors such as social ties, academic performance, and financial security other than just health status. Recent cross-sectional studies have also found similar results with university populations with PCOS being related to lower quality of life, especially emotionally and physically).^{28, 29} The comparatively low effect size could also be associated with the young age of the participants because they might not be exposed to the long-term effects of PCOS on reproductive and marital outcomes. All in all, the results lend credence to the biopsychosocial theory of PCOS, which argues that the biological malfunction is the interacting factor with the psychological and sociocultural pressures to influence the mental health

outcomes.³ According to the recent literature, stress and hormone dysregulation are mutually connected, and endocrine imbalance is exacerbated by chronic stress, which leads to a vicious cycle of psychological and physiological suffering.^{25, 27}

Implications

These results indicate that women with PCOS should receive sensitization activities and counseling services at the university level. Psychological effects of these conditions could be reduced with the help of early screenings and stress management interventions, which would ensure improved quality of life. Moreover, peer networks and support groups may be used to alleviate the feeling of isolation and stigma that are part of the disorder.

Limitations and Future Directions

The research contains many good insights but it is not deprived of limitations. The cross-sectional study restricts the capacity to cause and effect and the use of self-report might have caused biases of responses. The next research may use longitudinal designs to observe the changes in stress and life satisfaction over time especially where the students are proceeding with their lives and are in later adulthood. The investigation of the moderating variables that could include coping styles, social support, and health behaviors could also enhance the insights into the effects of PCOS on the mental well-being of young women.

Conclusion

The current research showed that PCOS is a major cause of increased stress and reduced levels of life satisfaction among female university students. The results indicate that although predictive power was greater when stress was involved compared to life satisfaction, PCOS has significant implications on both psychological and social health. These results indicate that medical care should be coupled with psychological interventions and campus-based interventions to young females with PCOS. By means of awareness building, early intervention and by providing the environment that assists in reducing stress and enhancing the overall quality of life, it is possible to achieve the reduction of stress and improvement of the overall quality of life in this vulnerable population.

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