



THE PREVALENCE OF STRESS AND ANXIETY IN PATIENTS WITH POLYCYSTIC OVARIAN SYNDROME: A CROSS-SECTIONAL STUDY:

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Introduction

PCOS (polycystic ovarian Syndrome) is the common disorder among female in reproductive age. It affects 13% women, worldwide, of reproductive age.[1] It is characterized by psychological and clinical abnormalities. Clinically characterized as hyperandrogenism, hirsutism, ovulatory and menstrual dysfunction, diabetes type 2 and cardiovascular risks. Prevalence exceeds the 10%–13% confirmed in the 2023 PCOS diagnosis standards [2]. The diagnostic standards that were applied could be the cause of the discrepancy. According to the best current data, PCOS should be diagnosed when at least two of the following occur: ovulatory failure, polycystic ovaries on ultrasound, clinical or biochemical hyperandrogenism, or elevated anti-Mullerian hormone (AMH) [2].

Rural living, low levels of education, having a high body mass index (BMI), being single, and not having children are all factors linked to the psychological burden of PCOS [3,4,5].

Regretfully, people who are already dealing with chronic illnesses are more likely to experience psychiatric illness (6). Furthermore, PCOS women are more susceptible to mental health issues such stress, anxiety, and depression (7). Psychotic problems in female adults and adolescents with PCOS have been documented in a number of investigations. [8,9] Given that adolescence is the cause of more than half of mental illnesses in adults, [10] Hormonal changes, the bothersome symptoms of PCOS, or a combination of these things may be the cause of PCOS. Gaining more knowledge on the likelihood of mood problems in PCOS-afflicted women may lead to innovative treatment strategies. Because of this, the Androgen Excess-Polycystic Ovary Syndrome Society called for action in 2018 to prioritize research on mental health in relation to PCOS. [11] Among the PCOS patients prevalence of depression is 37% as compare to 14.2% healthy women and prevalence of anxiety is 42% as compare to 8.5% healthy women.[12] These women suffer from Social Phobias , stress and anxiety. They have issues to cope with their personal relations and feelings of social stigma caused by this disease.[13]

PCOS can raise concerns on fertility and femininity of female (body image) , this cause mental health problems in youngsters. This issue must be addressed and pointed out on large scale to prevent them from mental health problems. [15] In Pakistan the prevalence of PCOS in women is much higher i.e

52%.[14] It is because of the lack of awareness and education about the PCOS. Other factor involved is shyness, stigma of society, peer pressure etc.[16]

Methods and Materials:

A cross-sectional study was carried out at the Khyber Teaching Hospital (KTH) and Hayatabad Medical Complex (HMC), Peshawar. A total of 200 PCOS patients were selected from the Gynecology and obstetrics departments of the respective hospitals through convenient sampling. Highly reliable and valid questionnaires were used for data collection, i.e , the Perceived stress scale and Beck Anxiety Inventory. Ethical approval was taken from the Ethical Board Review committee of Khyber Teaching Hospital and Hayatabad Medical Complex. Informed consent was obtained from each patient who was asked to complete the questionnaires. Data were analyzed through SPSS Version 26.0.

Results:

Figure 1 : Demographics of the Participants

		Frequency
Age	14-24	105 (52.5%)
	25-35	76 (38%)
	36-46	19 (9.5%)
Marital status	Married	104 (52%)
	Unmarried	96 (48%)
Region	Urban	101 (50.5%)
	Rural	99 (49.9%)

Figure 2 :

	N	Mean	SD	T	95% confidence interval		P value
PSS	200	22.66	4.491	71.363	Lower	Upper	<0.005
					22.03	23.09	
Anxiety	200	49.61	11.581	60.581	Lower	Upper	<0.005
					48.00	51.22	

Figure 3

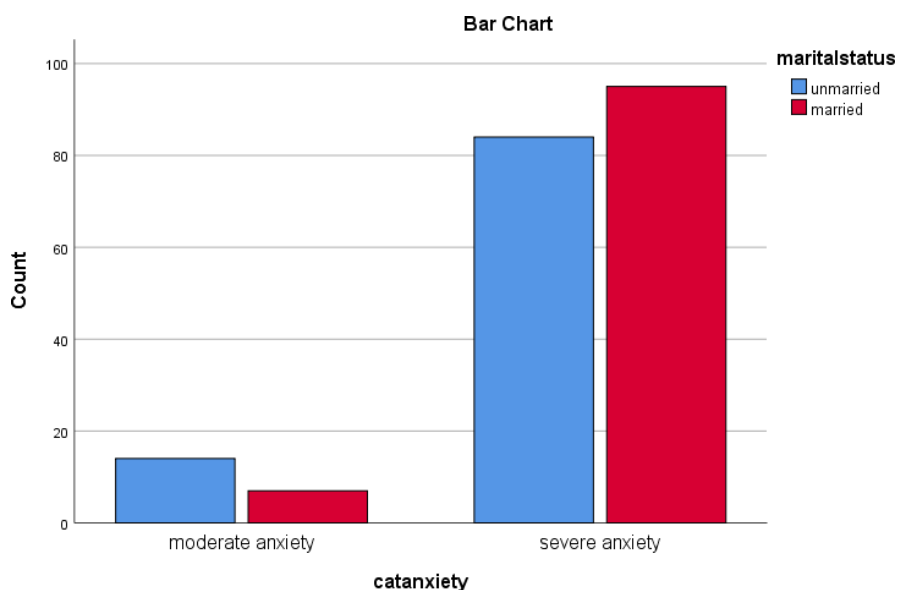
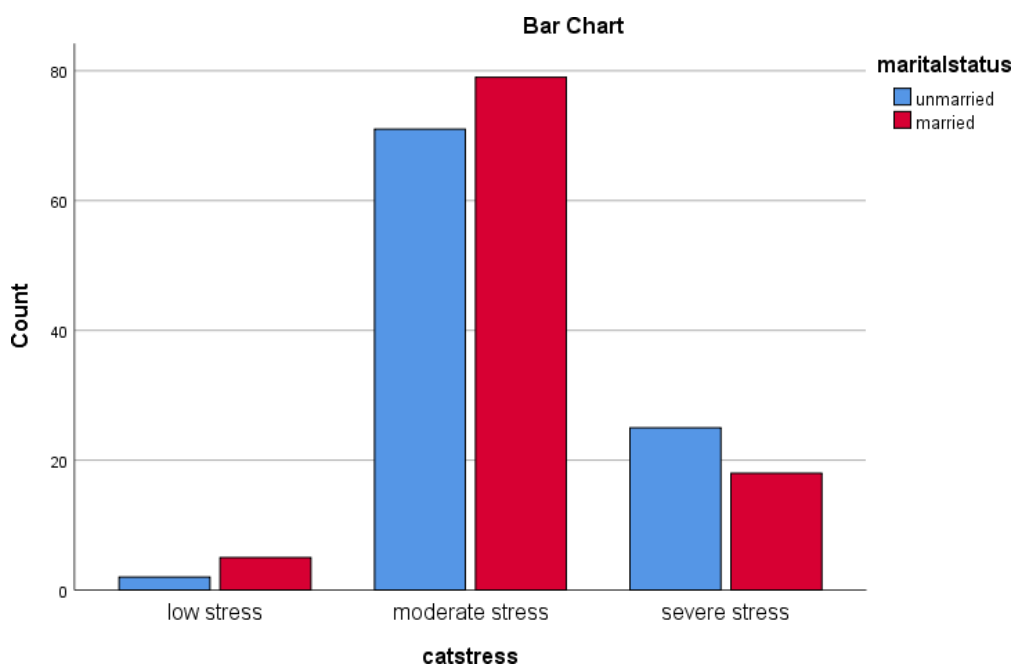


Figure 4**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.930 ^a	1	.087		
Continuity Correction ^b	2.194	1	.139		
Likelihood Ratio	2.975	1	.085		
Fisher's Exact Test				.108	.069
Linear-by-Linear Association	2.916	1	.088		
N of Valid Cases	200				

Figure 5**Figure 6****Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.773 ^a	2	.250
Likelihood Ratio	2.820	2	.244
Linear-by-Linear Association	2.628	1	.105
N of Valid Cases	200		

Figure 7

Anxiety Category	N	Mean Age	T test	P value
Moderate Anxiety	21	25.63	0.156	0.876
Severe Anxiety	179	25.38		

Figure 8

Stress Category	N	Mean Age	T test	P value
Low Stress	7	32.43	1.780	0.123
Moderate Stress	150	25.69		
Severe Stress	43	24.19		

This study was conducted on 200 patients with PCOS. As mentioned in **Figure 1** we have 52.5%, 38% and 9.5% of participants aged 14-24 , 25-35 and 36-46 respectively. Of all the participants 52% were married and 48% unmarried. 50.5% of them belongs to urban area and 49.9% from rural.

Perceived Stress Scale divided stress into three categories less stress , moderate stress and highly perceived stress, score ranging from 0-13 , 14-26 and 27-40 respectively. Our results lie in moderate stress i.e 22.66.

Beck Inventory Anxiety divided anxiety into three categories low anxiety , moderate anxiety and potentially concerning levels of anxiety , score ranging from 0-21 , 22-35 and 36 above respectively. Our results lie in potentially concerning of anxiety i.e 49.61.

The assessment of stress and anxiety levels, presented in **Figure 2**, revealed significant findings. The mean score on the Perceived Stress Scale (PSS) was 22.66 (SD = 4.491), which falls within the 'moderate stress' category. Concurrently, the mean score on the Beck Anxiety Inventory was 49.61 (SD = 11.581), which is classified as a 'severe' or 'potentially concerning' level of anxiety. The highly significant p-values (<0.005) for both scales indicate that these scores are statistically significant and not due to chance.

Further analyses explored the association between demographic factors and psychological states. **Figure 3** and its corresponding Chi-Square test in **Figure 4** show no statistically significant association between marital status and anxiety levels ($p = 0.087$). Similarly, **Figure 5** and **Figure 6** indicate that the distribution of stress levels did not differ significantly across the three age groups ($p = 0.250$). Supporting this, the t-tests in **Figure 7** and **Figure 8** confirm that there was no significant difference in the mean age of participants across different anxiety categories ($p=0.876$) or stress categories ($p=0.123$).

Discussion:

This cross-sectional study underscores the substantial psychological burden carried by women with Polycystic Ovary Syndrome (PCOS), aligning with the high prevalence of mental health comorbidities highlighted in the introduction. Our findings, which demonstrate a state of moderate stress and severe anxiety among 200 patients, resonate strongly with global literature. For instance, the introduction cited that the prevalence of anxiety in PCOS patients is 42% compared to 8.5% in healthy women [12]. Our results, with a mean anxiety score of 49.61, not only corroborate this but suggest that the studied population in Peshawar may be experiencing an even more severe level of anxiety, pointing to a critical healthcare concern.

The demographic profile of our participants offers insights into the population dynamics of PCOS in this region. The high proportion of young patients (52.5% aged 14-24) is particularly concerning, as the introduction noted that adolescence is a critical period for the onset of mental health issues that can persist into adulthood [10]. The near-equal distribution from urban and rural areas allowed for a broad assessment, yet the lack of a significant association between demographic factors like age or marital status and psychological distress (**Figures 4, 6, 7, 8**) was a notable finding. This suggests that the experience of stress and anxiety in PCOS is pervasive and cuts across these demographic boundaries, potentially being more directly linked to the syndrome's intrinsic biological and psychosocial challenges rather than these specific sociodemographic variables.

The core findings of moderate stress and severe anxiety can be interpreted through the multifaceted etiology of PCOS discussed in the introduction. The severe anxiety scores likely stem from a combination of factors, including the hormonal imbalances inherent in PCOS [6] and the profound psychosocial impact of its symptoms. As introduced, concerns about fertility, femininity, and body image are significant triggers for mental health problems in youngsters with PCOS [15]. In the local context, this is exacerbated by a lack of awareness, shyness, and social stigma [16], particularly concerning reproductive health, which places an additional, unique psychological burden on unmarried women.

In conclusion, this study confirms that Pakistani women with PCOS are experiencing alarming levels of psychological distress, specifically moderate stress and severe anxiety. The universality of this distress across different age and marital groups underscores that PCOS itself is a significant risk factor

for mental health issues. These results call for a paradigm shift in the management of PCOS, moving beyond purely gynecological and metabolic care to integrate routine psychological screening and mental health support. As inferred from our observation that educated patients were more cooperative and aware, implementing large-scale public health initiatives, including awareness seminars, is imperative. Such efforts are crucial to dismantle stigma, empower patients, and ultimately alleviate the profound psychological burden of this common endocrine disorder.

Conclusion:

Women with PCOS experience a significantly high burden of stress and anxiety, reflecting the profound psychological impact of the disorder. The findings affirm that PCOS is not only a reproductive and metabolic condition but also a serious mental health concern. Early recognition and management of psychological symptoms are therefore essential alongside clinical treatment. Integrating mental health screening into routine PCOS care could greatly improve patients' overall well-being.

Limitations:

Since our study is a cross-sectional study, it only shows a snapshot of tobacco use at one point in time and cannot prove cause-and-effect relationships. The data was self-reported, so some students may have underreported their tobacco use, especially females, due to social or cultural reasons. The study was limited to medical students in Peshawar, so the results may not apply to students in other cities or fields. We did not use any medical tests to confirm smoking habits, which could affect the accuracy of the results. Also, factors like stress were not measured using standard tools, and we did not follow students over time to see how their behavior changed. Lastly, the study did not look into college policies or anti-smoking campaigns, which could also influence tobacco use.

Conflict of Interest:

None

Funding Source:

None

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