

## Epidemiology of Depression and Quality of Life in Polycystic Ovarian Syndrome Patients Diagnosed with Depression

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### Abstract

**Objective:** To study the epidemiology of depression and quality of life in polycystic ovarian syndrome patients diagnosed with depression.

**Methods:** This hospital-based single-centered observational study enrolled 80 women with PCOD based on eligibility criteria. The occurrence of depression is prevalent in patients with PCOS, and this study concurs with the guidelines recommending screening such patients for these disorders.

**Results:** The results of this study show that certain symptoms of PCOS are associated with depression. Out of 59 patients with depression; 13 had mild (22.03%); 26 had moderate (44.07%); 20 had severe depression (33.90%). Upon carrying out multivariate logistic regression analysis, it was found that there was no significant association between PCOD with and without Depression among age group. Similarly, in case of marital status, educational qualifications, occupations, residence, family type and socioeconomic status there was no significant association between patients with PCOD with or without depression. The symptoms of PCOS may change throughout the course of the illness.

**Conclusion:** It is vital that screening for psychiatric morbidity be incorporated as an ongoing process rather than a one-time assessment. The likelihood of depressive symptomatology was shown higher in PCOD women with depression. However, PCOS subjects also experienced depression due to body image so this may be a sign of psychiatric illness in PCOS, which needs to be treated as a high priority to improve the quality of life of PCOS patients.

**Keywords:** Polycystic Ovarian Syndrome, Depression, World Health Organization (WHO)

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### Introduction

The polycystic ovarian disorder is a very common endocrine disorder of childbearing age with an occurrence of around 6–8% in the reproductive years. The total prevalence of polycystic ovarian syndrome (PCOS) exhibits it to be the

widely renowned endocrine disorder among women of reproductive age. There is a lot of alteration in the occurrence of PCOS around the world due to diverse diagnostic criteria and racial antithetic groups. And to overcome these major investigative

dissimilarities it is essential to consider racial and culturally specific approaches to PCOS. PCOS is characterized by an irregular menstrual cycle, barrenness, androgen superfluous, and insulin resistance. Polycystic ovarian syndrome has long-term risks such as cardiovascular illnesses, type-2 Diabetes Mellitus, dyslipidemia, and endometrial carcinoma. [1-2]

Obesity and negative self-esteem have shown an association with depression in PCOS compared to normal persons. Also, PCOS with Hyperandrogenism symptoms including excessive body hairs and acne have more chances of negative personality perceptions than non-PCOS. Displeased physical appearance perceptions of PCOS include disappointment with general body look, loss of femininity, and a sense of less sexual appeal. Feelings of self-confidence may help in managing new and chronic illnesses, whereas lack of confidence is associated with anxiety, depression, and general psychiatric symptoms. [2-4]

The World Health Organization (WHO) has assessed that by the end of the year 2020, depressive disorders will be recognized as the leading mental disability in women worldwide. In some published data prevalence of depression globally is about 40% in women with PCOS. PCOS patients are at high risk of negative body image perception and low self-esteem as compared to the general population which may cause serious damage to social, professional, and intimate affiliations. PCOS women were associated with the possibility of higher body discontent at age of 31 and 46. [3-5]

## Materials and methods

**Study design-**A observational study in tertiary care hospital located in central India

**Study setting-**Patients diagnosed with PCOS in Obstetrics and gynecology OPD of Chirayu medical college and hospital were taken as samples for the study

**Sample size-**The estimated sample size was calculated as 80 taking the prevalence of Depression in Polycystic Ovarian Syndrome as 25% at a 10% level of error and 95% level of significance.

### Inclusion criteria:

- Patients in the age group 18 to 45 years referred from Obstetrics and Gynecology OPD diagnosed with polycystic ovarian syndrome.
- Patients have at least primary education.
- Patient willing to give informed consent.

### Exclusion criteria:

- Patients having any other psychiatric co-morbidities.
- Patients having any substance use disorder (except Nicotine and Caffeine).
- Patients with any previous medical co-morbidities.

### Data collection tools-

After taking informed consent; sociodemographic and clinical data were collected in a pre-designed semi-structured questionnaire.

### Observation chart

**Table 1: Age distribution**

Age Groups			
		Frequency	Percentage
Valid	<20	2	2.5
	20-40	77	96.3
	>40	1	1.3
	Total	80	100.0

**Table 2: Marital status of the study population**

Marital status			
		Frequency	Percentage
Valid	Married	45	56.3
	Unmarried	35	43.8
	Total	80	100.0

**Table 3: Educational qualifications of the study population**

Educational qualification			
		Frequency	Percentage
Valid	Illiterate	7	8.8
	Under Matric	20	25.0
	Matric	26	32.5
	Graduate	27	33.8
	Total	80	100.0

**Table 4: Area of residence of the study population**

Residence			
		Frequency	Percentage
Valid	Rural	34	42.5
	Urban	46	57.5
	Total	80	100.0

**Table 5: Family type of the study population**

Family type			
		Frequency	Percentage
Valid	Joint	27	33.8
	Nuclear	53	66.3
	Total	80	100.0

**Table 6: Socioeconomic status of the study population**

Socioeconomic status			
		Frequency	Percentage
Valid	Lower	9	11.3
	Lower Middle	33	41.3
	Upper Lower	19	23.8
	Upper Middle	19	23.8
	Total	80	100.0

**Table 7: Occurrence of depression among the study population**

Occurrence of Depression			
		Frequency	Percentage
Valid	With Depression	59	73.8
	Without Depression	21	26.3
	Total	80	100.0

**Table 7.1: Severity of depression**

	Count	Percentage
Mild	13	22.03%
Moderate	26	44.07%
Severe	20	33.90%

Total Participants (with depression)	59	100.00%
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**Table 8: Occurrence of PCOD with or without depression among the studypopulation**

		PCOD With Depression		PCOD Without Depression		P- Vale
		Count	Row N %	Count	Row N %	
Age Groups	<20	0	0.0%	2	100.0%	0.05
	20-40	58	75.3%	19	24.7%	
	>40	1	100.0%	0	0.0%	
Marital status	Married	36	80.0%	9	20.0%	0.15
	Unmarried	23	65.7%	12	34.3%	
Educational qualification	Illiterate	7	100.0%	0	0.0%	0.40
	Matric	18	69.2%	8	30.8%	
	Under matric	15	75.0%	5	25.0%	
	Graduate	19	70.4%	8	29.6%	
Occupation	Unemployed	37	71.2%	15	28.8%	0.68
	Employed	21	77.8%	6	22.2%	
	Professional	1	100.0%	0	0.0%	
Residence	Rural	25	73.5%	9	26.5%	0.96
	Urban	34	73.9%	12	26.1%	
Family type	Joint	21	77.8%	6	22.2%	0.55
	Nuclear	38	71.7%	15	28.3%	
Socioeconom icstatus	Lower	7	77.8%	2	22.2%	0.11
	Lower Middle	26	78.8%	7	21.2%	
	Upper Lower	10	52.6%	9	47.4%	
	Upper Middle	16	84.2%	3	15.8%	

## Results

In this study nearly 77 (96.3%) participants belonged to the age group 20-40 years. This was followed by 2 (2.5%) participants who belonged to the age group less than 20 years. Only 1 patient belonged to the age group above 40. In this study, it was observed that out of 80 participants, 45 participants were married and the remaining 35 participants were unmarried. In this study, most of the population were just graduates, they comprised 33.80% of the total study population. 32.50% participants studied till their matriculation and 25% of them did not complete their matriculation. Remaining 8.8% of the population were illiterate.

In this study most of the study participants were from the urban area. They comprised 46 (57.50%) participants and the remaining 34 (42.5%) participants were from the rural area. In this study, it was observed that 53

(66.3%) participants from a nuclear family set up and the remaining 27 (33.8%) participants came from a joint family set-up. In this study, it was observed that 33 (41.3%) participants belonged to lower middle class. 19 (23.80%) patients each belonged to upper lower class and upper middle class. Only 9 (11.3%) participants belonged to lower class. In this study, 59 (73.8%) participants had Depression and remaining 21 (26.3%) participants did not have Depression.

Out of 59 patients with depression; 13 had mild (22.03%); 26 had moderate (44.07%); 20 had severe Depression (33.90%). Upon carrying out multivariate logistic regression analysis, it was found that there was no significant association between PCOD with and without Depression among the age group. Similarly, in case of marital status, educational qualifications, occupations, residence, family type and socioeconomic

status there was no significant association between patients with PCOD with or without Depression.

#### **Statistical analysis:**

The collected data was summarized by using frequency, percentage, mean & S.D. To compare the qualitative outcome measures Chi-square test or Fisher's exact test was used. To compare the quantitative outcome measures independent t test was used. If data was not following normal distribution, Mann Whitney U test was used. SPSS version 22 software was used to analyse the collected data. p value of <0.05 was statistically significant.

#### **Discussion**

The present study was a cross-sectional study done at the tertiary care hospital. This study aimed to examine severity of depression and quality of life in polycystic ovarian syndrome patients diagnosed with depression. The Physical aspect of PCOS has been the subject of numerous research in the past. However, there is a dearth of literature discussing the psychological aspects of PCOS, which is a very important aspect and is a cause of mental stress and depression due to the appearance of embarrassing symptoms such as hirsutism, obesity, and acne. [6-9]

After the exclusion, 80 patients who consented to the study were taken for the final analysis. Out of them after applying the ICD 10 criteria, only 59 women suffering from PCOS were found to have depression, who were then taken for the final analysis. This study was mainly conducted on PCOS women with depression since it is frequently analysed by behavioral scientists studying PCOS (132). In addition, there is a high rate of depressive disorders in the general population as well as in patients suffering from PCOS. This was more evident during the time of covid-19 pandemic in which the prevalence of depression in the Indian population was found to be 40.7%.

**Tools/Instruments Use:** A Semi-structured Performa was specifically devised in consultation with the Supervisor and Co-supervisor and was validated. It is used for collecting the sociodemographic details of patients meeting the requirements of the objectives of the study. A brief and focused history and mental state examination of the patient was also done.

#### **Socio-demographic characteristics of the sample:**

In the present study, we found the majority of study participants were between the age group of 20-40 years, This finding was in agreement with earlier studies such as the one by Sassi et al which reported that the majority of patients belong to the age group 18 to 35 year. This is an important finding because it shows how PCOS affects the most reproductive age group in society. In the current study, it was found that most women were married (Table 2), and educated beyond high school. It may be due to the Indian culture and a strong marital system. Bazarganipour et al in their study found that most of the PCOS women had education beyond high school. Sana et al in a study reported a similar finding. Along with this, the majority of study participants were from an urban residence, the majority of them belong to a nuclear family and economically were from the lower middle class. Moynul et al and Zinab et al in there study reported a similar finding. It can be because most patients attending the hospital belong to urban areas. [10,12]

#### **Depression in women with PCOD**

In our study, the proportion of PCOS women with depression was 73.8%, which was significantly higher. In previous studies, it has been reported that about 14–67% of women with PCOS suffer from depression. In our study prevalence was high as compared to another study like the one by Anuja Dokras who found an overall prevalence of 40% (24/60) and the percentage of the participants with mood disorders was 56.6%. This can be due to the

difference in sample size which was more than our study and the tool used for diagnosis was different than the one which was used in our study. Sundhindra et al reported a prevalence of 64.1%. This difference can be due to the sample size which was more than our study and the diagnostic tool was also different. In a study by Rassi et al 57% of the patient had at least one psychiatric disorder. Among them, the prevalence of mood disorders was 78% and the most prevalent disorder was major depression (26.4%). This can be due to the differences in methods and tools for screening and diagnosis, population differences, different classification systems, the influence of covariates such as BMI, infertility, and use of medication, along with the time of COVID-19 Pandemic during which the prevalence of depression was high and most study was conducted at that time, which acted as a major factor in the results. [13-15]

A systematic review and meta-analysis on anxiety and depression in PCOS concluded that women with PCOS tend to experience mildly elevated anxiety and depression, which concurs with the findings of the present study. Comparisons across studies are difficult due to vast differences in methodology. Also; the occurrence of depression was not significantly associated with sociodemographic characteristics like age, marital status, education, occupation, residence, family type, and socioeconomic status of patients. This could be due to the small sample size to find the risk factor association., also previous studies have noted the same finding. Along with this in our study the severity of depression among the women with PCOS was significantly high, this finding is in agreement with the meta-analysis by Laura G et al the prevalence of moderate or severe depressive symptoms showed 4.18-increased odds in women with PCOS. [16-20]

The reasons for the higher prevalence of depression in PCOS are complex due to

various reasons such as high BMI and demoralization faced by patients with PCOS in society, which when severe may lead to social withdrawal. In addition, studies carried out by Hollinrake et al determined some more reasons for the increased risk of depression among patients with PCOS than in the control group. Patients with a family history of infertility and depression along with high BMI factor and sleep disturbances and exhaustion followed by decreased interest in daily chores and appetite changes were the most common factors of depression among patients with PCOS. [21-23]

The high prevalence rate of depression in this population suggests that the initial evaluation of all women with PCOS should also include an assessment of mental health disorders. Along with this, treatment of PCOS must include psychological intervention to improve mental health status. [24]

### **Conclusion**

Further research on this subject could throw more light on these connections. Finally, the symptoms of PCOS is associated with depression which, in turn, are associated with poorer QOL. The symptoms themselves did not appear to contribute to the poorer QOL. This could mean that perhaps the psychiatric morbidity is the mediator for poorer QOL in patients with PCOS. There is, thus, a clear indication to treat these disorders whenever they are present.

### **Limitations of our study**

This study has certain limitations. It is a cross-sectional study carried out by hospital visited patients, hence their characteristics may not be shared by the general population. There was no control group for comparison with the study population. This could be due to the small sample size. Hence, future research is suggested to conduct studies on a large sample and make use of longitudinal research design so that possible

confounding of variables could be controlled.

### Declarations

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