

# A Study to Assess the Prevalence of Depression among Women Suffering from Polycystic Ovarian Syndrome

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**Abstract:** Aim: Women with PCOS have menstrual irregularities associated with unwanted facial hair growth, acne, weight gain, infertility which are distressing to them and reduce their quality of life. Women with PCOS having such symptoms have a strong predilection for mental health issues like depression, anxiety and other psychiatric comorbidities. The aim of this study is to assess the prevalence of depression among women suffering from Polycystic Ovarian Syndrome. Methodology: The present cross-sectional questionnaire-based study recruited 40 patients diagnosed with PCOS from department of Obstetrics & Gynaecology, Tertiary care Hospital. Presence of distress was assessed using cut-off scores on General Health Questionnaire (GHQ-12). Binary logistic regression analysis was used to find the independent predictors of having psychological distress as per GHQ-12. Depressive symptoms were assessed using Hamilton Depression Rating Scale (HAM-D) among patients who were found to be distressed as per GHQ-12. Result: As per GHQ-12 cut-off psychological distress is seen in 60% of the study population out of which 42.5% had mild depression while 17.5% had moderate depression based on the Hamilton Rating Scale for depression. Discussion: The present study suggests that prevalence and risk of depression is significantly high in women with PCOS. Some of the factors that positively correlated with the presence of depression include being married, infertility, self-perception of attractiveness and family history of depression. Conclusion: The clinical implication of this study is that clinicians treating women with PCOS should be aware that these women are at a high risk group for depression.

**Keywords:** PCOS, Depression, Menstrual irregularities, Infertility

## 1. Introduction

Polycystic ovary syndrome (PCOS) is a heterogeneous gynaecological endocrine disorder characterized by chronic anovulation, hyperandrogenism and hyperinsulinism with insulin resistance which affects about 6–10% of women in reproductive age<sup>(1–3)</sup>. These women are at an increased risk for insulin resistance, type II diabetes mellitus, dyslipidemia, metabolic syndrome and demonstrate early evidence of atherosclerosis<sup>(4-7)</sup>

Women with PCOS are frequently characterized by hirsutism, acne, alopecia, obesity and irregular periods with infertility. They are at an increased risk for psychological distress, body dissatisfaction and reduced quality of life<sup>(8-10)</sup>. The relationship between androgen excess and mood remains still controversial because clinical and biochemical parameters of hyperandrogenism seem not directly cause of depression.<sup>(11)</sup>

According to previous studies, 56.9% of women with PCOS have at least one psychiatric disorder<sup>(12–14)</sup>, and higher incidences of psychiatric disorders have been observed in women with PCOS, particularly depressive disorder, bipolar disorder, and anxiety disorder.<sup>(15–17)</sup>

One of the main goals of reproductive health is to promote women mental health and especially women with diseases affecting reproduction including PCOS, and to identify

factors related to it. The aims of the present study was to estimate the prevalence of depression in women with PCOS and also intended to examine a range of predictors for depression those relevant to PCOS such as BMI, physical appearance, infertility and general predictors, such as socio-demographic status.

## 2. Methods

### 2.1 Setting and sample

The present cross-sectional questionnaire based study was conducted in the outpatient department of obstetrics & gynaecology in a tertiary care hospital in south India. The inclusion criteria were patients fulfilling the Rotterdam criteria for PCOS of 18 to 40 years of age and willingness to participate in the study. The exclusion criteria were those previously diagnosed with psychiatric illness, Hypothyroidism, chronic medical illness and those not willing to provide informed consent.

### 2.2 Procedure

40 Subjects were recruited in the study after the approval from the institutional ethics committee which included 20 married and 20 unmarried women attending Obstetrics and Gynaecology clinics. After obtaining the informed consent sociodemographic profile was collected using a Semi structured Proforma and PCOS was diagnosed based on the

Rotterdam criteria. General Health Questionnaire (GHQ-12) was administered to assess the psychological distress. Patients were then screened for the presence of Depression and severity of Depression was rated based on the 17-item Hamilton Depression Rating Scale (HAM D) and results were analysed.

**2.3 Statistical Analysis**

Statistical analysis was done using IBM, SPSS Version 22. Prevalence of depression was considered as outcome variable. Demographic parameters, clinical features, GHQ12 were considered as explanatory variables. Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency and proportion for categorical variables. The association between categorical explanatory variables and quantitative outcome was assessed. ANOVA was used to assess statistical significance. Chi square test was used to test statistical significance. P value < 0.05 was considered statistically significant.

**3. Results**

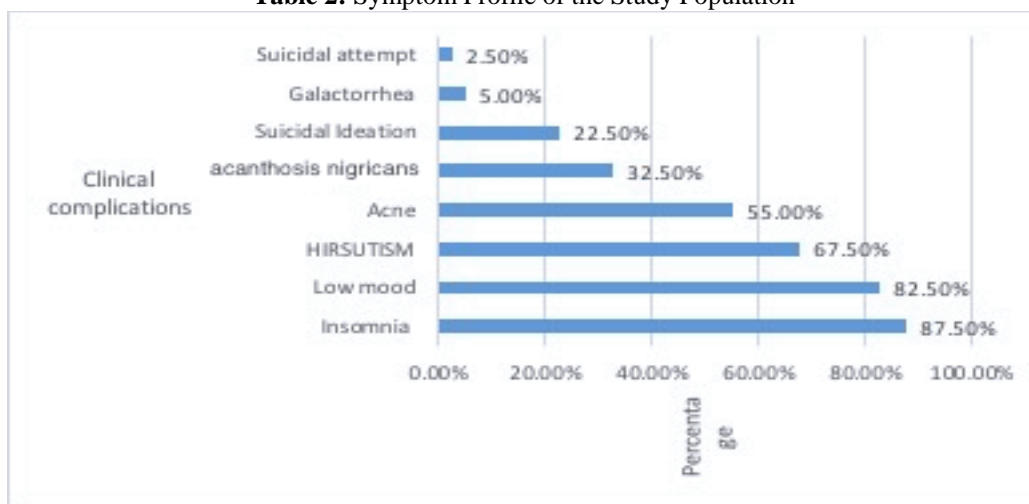
Study included 40 subjects and their demographic variables are described in table 1. The mean age was 24.63 ± 4.21. Minimum age was 15 and maximum was 33 in study population. The majority of the samples were graduates, currently not employed, belonging to upper middle class

and the most common reason for consultation in the obstetrics and gynaecology clinic was anxious to conceive, primary infertility. As per GHQ-12 cut-off psychological distress is seen in 60% of the study population.

**Table 1: Sociodemographic Profile**

Variable	N %	
Age	24.63 (± 4.21)	
Education	UPTO 10 <sup>th</sup>	5%
	Intermediate	7.5%
	Graduation	65%
	Post-graduation	22.5%
Occupation	Currently not employed	40%
	Student	25%
	Professionals	30%
	Others	2.5%
Marital Status	Married	50 %
	Unmarried	50 %
Socioeconomic Status	Upper	22.5%
	Upper middle	35%
	Lower middle	27.5%
	Upper lower	12.5%
	Lower	2.5%
Reasons for Consultation	Anxious to conceive	45%
	Irregular menstrual cycle	40%
	Amenorrhea	15%
Primary Infertility	Present	37.5%
	Absent	62.5%
Secondary Infertility	Present	12.5%
	Absent	87.5%

**Table 2: Symptom Profile of the Study Population**



**Table 3: The Clinical Parameters of the Sample**

Parameter	N %	
Body Mass Index	Normal	30%
	Overweight	45%
	Obese	25%
Lh:Fsh Ratio	Normal	47.5%
	Increased	52.5 %
Prolactin	Normal	97.5%
	Increased	2.5%
Ultrasonogram Pelvis	Bilateral Polycystic Ovaries	100 %

**Prevalence of depression**

Analysis of the study revealed that 42.5% had mild depression while 17.5% had moderate depression based on the Hamilton Rating Scale for depression. Out of which 55%

and 15% had mild and moderate Depression respectively among married while 30% and 20% had mild and moderate Depression respectively among Unmarried. According to the socio economic status mild depression is common among women from the upper middle class (50%) and moderate depression is more common among women from the upper lower socioeconomic status (60 %).

Among the people with normal BMI 41.7% had mild depression and 16.7% had moderate depression. People who were overweight showed 73.9% of mild depression and 16.7% of moderate depression. Among Obese people 50% had mild depression and 20% had moderate depression. The correlation between BMI and prevalence of depression was not statistically significant. 47.5% had a normal LH:FSH

ratio and 52.5% had increased LH:FSH ratio. The severity of the depression between the two groups varies, however it is not clinically significant.

Women with primary infertility had 66.7% mild depression and 20% had moderate depression. Those with Secondary Infertility had 20% mild depression. The correlation between primary infertility and prevalence of depression was statistically significant. (P value 0.022)

Features of Acne showed 31.8% and 27.3% mild and moderate depression respectively. Those with hirsutism showed 48.1% mild and 14.8% moderate depression. Acanthosis Nigricans had 38.5% mild and 23.1% moderate depression. Though significant number of woman with acne, hirsutism and acanthosis nigricans had depression the prevalence wasn't statistically significant.

#### 4. Discussion

Extensive studies have been carried abroad on depression in women suffering from PCOS but only very few studies have been conducted in India. The present study suggested that there is an increased evidence of clinically significant psychological distress among women suffering from PCOS. This suggests that a substantial proportion of patients with PCOS might be suffering from symptoms of anxiety and depression which might go undetected. On further assessment using depression rating scale it was evident that more than one third of the total sample had symptoms of mild to moderate depression.

This study also found that physical appearance related consequences and primary infertility were the significant symptoms associated with increased distress. Results of the study done by *Barnard L et al*<sup>(18)</sup> reported that women with PCOS had lower quality of life on all seven factors of the modified PCOS Questionnaire (emotional disturbance, weight, infertility, acne, menstrual symptoms, menstrual predictability, and hirsutism)

Rassi et al.<sup>(12)</sup> observed depression in 26% of the patients whereas Hollinrake et al.<sup>(14)</sup> found 21% prevalence of depression in PCOS. In an Indian study, 23% PCOS patients had major depressive disorder compared to 7.5% of control.<sup>(19)</sup> In our study, more than one third of the sample had scores suggestive of mild to moderate depression using HAM-D and the findings are consistent with earlier studies both in India and abroad. Some of the factors that positively correlated with the presence of depression included being married, infertility, self-perception of attractiveness and family history of depression. The peak incidence of depression is during the reproductive years, gynaecologists are the front-line professionals in the effort to identify and treat women with PCOS who have depression.<sup>(20)</sup>

The limitations of this study were the small sample size, a cross-sectional design and not having a control group to compare the variables causing depression. The focus of the study was on prevalence of depression while other psychiatric morbidity weren't taken into consideration. Only a restricted number of clinical/biochemical parameters were investigated to correlate with Depression.

#### 5. Conclusion

The findings of our study suggests that the prevalence and risk of Depression is significantly high in women with PCOS. Women with Primary Infertility had an increased prevalence of Depression. Appearance related consequences of the syndrome, fuel harsh self-perceptions of attractiveness, which in turn increased the likelihood of depression. The clinical implication of this study is that clinicians treating women with PCOS should be aware that these women are a high risk group for Depression. Ensuring Routine screening of Depression and treating it in PCOS women would improve their Quality of life.

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